Negotiating Meaning:

Effects of Group Dynamics on Information System Development

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Submitted in fulfilment of the requirements for the degree of

Doctor of Philosophy

Deakin University

May, 2016
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Acknowledgements

This research was only able to be completed with the support and contributions of many patient and generous people and institutions. I wish to gratefully acknowledge:

The 61 TPT staff and managers who participated in interviews, the 6 managers who made up the reference-group, those many tens of staff involved in the workplace observations and those involved in the action learning projects. They were generous with their time, candour, experience and curiosity. In particular, to CBAA’s managing director, who supported the idea of the research, the ARC grant process and actively encouraged his staff to participate, as he did, in the research enquiry. It took courage to expose his large work-system to such close scrutiny and analysis. Thank you all.

My original supervisors, Professor Susan Long and John Snare, who guided me through the development and data gathering stages of the research. I acknowledge the support provided by the ARC, in the form of a SPIRT grant during this period that made the research possible.

My mid-stage supervisors, Professor Julie Wolfram Cox and Dr Linda Glassop, who encouraged and supported me to renew my connection with the research data and find a path to re-engagement.

My final supervisors, Associate Professor David Bednall and Dr Bruce Hearn Mackinnon, whose support and critique guided me through the arduous writing process. Their expert feedback helped me to refine my thinking and realistically moderate the scope I sought to cover. Emeritus Professor Douglas Kirsner for his support and reflections on complex aspects of theory. Professional editor, Sophie Dougall, provided copyediting and proofreading services, according to the guidelines laid out in the university-endorsed national ‘Guidelines for editing research theses’.

In particular to David Bednall for his support in helping me find a realistic way to narrow the research data set and analysis to a manageable thesis and for his
tireless, undemanding support for a wavering candidate. His patience and compassion in this endeavour have been beyond expression, I will be ever grateful.

My friends, colleagues and family, who have offered their encouragement and emotional support throughout this long journey. They believed it possible, which was especially important when I did not.

Above all, I am most grateful to my wife Mink and our two now adult sons, Henry and Alexander, who have provided an inordinate amount of support during my candidacy. They have suffered my unavailability, preoccupation, bad moods and despair throughout, yet somehow managed to cope and forgive me for this drain on them whilst giving back cheer, encouragement and love.
Abstract

The problem space of the research is the chronic underperformance of information systems (IS) development and the high rate of failure of IS projects—around 50-70% (Lyytinen, 1988, Standish_Group_International, 2013). The IS literature about this issue predominantly uses a rationalist engineering approach to understand the problem and to frame solutions. Forty years of intellectual investment has not seen a reduction in the failure rates of software development projects. This research uses systems psychodynamics theory to explore the social, systemic and psychological dimensions of the IS development process; endeavouring to further understand the problems of IS development performance and project failure, and where possible, how to intervene. Work-groups were the focus of the research, in particular the dynamics within and between work-groups and the impacts they have.

In what ways can systems psychodynamics apply to IS development, identify critical fracture points in the IS work-system, and develop understanding about the conscious and unconscious psycho-social dynamics and motivations that cause such fracture points?

In what ways can systems psychodynamics provide insight, tools and methods of engagement in order to intervene at the critical points in the work-system and lessen the likelihood of future IS failure?

System psychodynamics theory is reviewed, drawing on foundational literature: from Freud’s (1917) psychoanalytic theories on anxiety and defences in human systems; through to Klein’s (1959) work on object relations, defences, and depressive and persecutory states of mind; building on Klein’s work, Bion’s (1961) theory of group behaviour and their defences, and his conception of the human thinking process; Menzies’ (1970) evolution of social defence theory as defence against systemic-anxieties in groups and institutions; and, socio-technical systems theory as described by Miller and Rice (1967). These all contribute to and are used by system psychodynamics (de Board, 1978, Gabriel, 1999, Armstrong and Rustin, 2015b) in understanding group and enterprise psychic dynamics. They enable diagnosis and effective methods of intervention in the psycho-social processes and dynamics that disrupt work-group and
enterprise behaviour and performance. They form the framework for the data analysis and the interventions of this action research.

The qualitative research was a very large single case study. It explored in depth, over three years of intense fieldwork, the work-groups and dynamics in an IS department of 2500 staff—part of Trans Pacific Telecommunications (TPT), an enterprise of 50,000. The research took an interpretivist stance to delve into intra- and inter-group phenomena and other critical environmental and enterprise events that impacted the IS development process.

The research data is presented, beginning with the structures and processes operating in the research-host, with a particular focus on identifying the fracture lines through the IS work-system. This is followed by a consideration of the scale of the research-host’s IS work, and both the human and technical complexity of its IS development. Data themes drawn from 50 ninety-minute interviews taken across the work-system are discussed, followed with further data from workshops with the research’s reference-group, to validate anonymous, generalised data findings and tentative working-hypotheses. Workplace-observation and action learning processes are discussed, the latter used in research interventions to test the possibility of systems psychodynamics to ameliorate systemic-anxiety in an IS setting.

The systemic-anxieties in the IS work-system and the precursor events that create the conditions for the systemic-anxieties experienced by IS work-groups are scrutinised. Vignettes, using interview and observational data, explore the emergent defences against systemic-anxiety of groups utilising basic assumption mode behaviour. Further vignettes inspect social defences used by IS development groups to cope with the routine anxieties in the IS work-system. The impacts and disruption to task performance and links to IS delivery failure are explored.
Many sources of systemic-anxiety affecting the IS department were outside its boundary—within the broader TPT or its environment. Many of these macro-dynamics negatively impacted the IS development process. Two action learning projects are discussed, with particular attention on interventions that successfully moderated systemic-anxieties, increasing IS work-groups’ project success. This involved increasing the groups’ capacity to tolerate anxiety and reducing the sources of anxiety.

The research found that anxiety detrimentally affected the work performance of IS work-groups. This anxiety could be moderated and reduced in an IS setting. Depressive anxiety, not just persecutory anxiety, contributes significantly to systemic-anxieties. It also found that the quality of IS intra- and inter-group dynamics is an indicator of future IS task performance and delivery.

Future research would focus on: integrating systems psychodynamics diagnostic and intervention methods into IS management methodologies; developing guidelines for ameliorating anxiety in IS settings; validating the effectiveness of a broader range of systems psychodynamic interventions in IS settings; using them in the vertical integration of in-house and outsourced IS service provision; and applying them also in small and medium IS usage settings.
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Chapter 1  Introduction

Large enterprises invest huge amounts of their revenue in IS development. IS literature details how 50-70% of this investment in IS initiatives fail in some significant way (Standish_Group_International, 2013). This failure rate has been the case for more than 30 years (Lyttinen, 1988). It is important to address this wastage problem, seeking new solutions to this critical and chronic problem. Most existing solutions are rationalist engineering solutions in their nature. Whilst these tools and work practices are essential to the provision of control and order in the IS development process, they also create an orthodoxy or paradigm block about what can be done to address IS underperformance. This research explores the psycho-social dimension of IS work as a separate yet parallel frame to the rationalist engineering view. It seeks to understand what is occurring in the psycho-social fabric of the IS work-system and what interventions may be possible to further improve information systems development process (ISDP) performance and IS-Business alignment.

The purpose here is to acquaint the reader with the background and intentions of the research study. The research was a single qualitative case study exploring the effects of group dynamics on the ISDP. This process involves the navigation and negotiation of meaning across many different and diverse work-groups, with many opportunities for misunderstanding and misinterpretation in the journey from business idea to physical suite of information systems. This dissertation is a view into that research.

The research studied the behaviour of work-groups and the dynamics these created in a large IS department. Work-groups are the fabric through which work occurs; group rather than individual behaviour is the focus of the research. There are many dimensions to work life, political, economic, moral, social, and psychological, that can be utilised to address work-system problems such as IS performance. It is the group-psychological dimension that is explored in this dissertation.
1.1 Research Case

The research followed an action research approach and an interpretivist orientation. It was an enormous case study spanning four years of data collection and intervention. There was unprecedented access to the IS department (CBAA) of 2500 staff in this large telecommunications company in the Pacific Rim. The enterprise was Trans Pacific Telecommunications (TPT). At the commencement of the research it employed 50,000 people; at the end of the fieldwork this number was 28,000. It underwent numerous significant re-organisation of its resources to meet its environmental challenges whilst maintaining a stable purpose and mission. Interviews and workplace observations were the main form of data gathering. The study’s reference-group meetings and action learning projects were the main form of action intervention for the research-host. Figure 1.1 shows TPT’s business units and their relationship with the IS services department P&IS. Figure 1.2 shows the organisational chart for CBAA, the main functional groupings of this IS department within the P&IS division.

![Diagram showing business units' interactions with the P&IS division]

Figure 1.1 Business units’ interactions with the P&IS division
1.2 Organising Ideas/Terms

Central to the thesis is the notion that unconscious dynamics within and between work-groups involved in the software development process may have an adverse effect on work-group performance and contribute to failures in the development of information systems. In order to unpack the notion of unconscious dynamics, some terms are best explained as they are used in this dissertation. The term *enterprise* is used, rather than the more usual term *organisation*, to label a business, institution or government agency that is a bounded, autonomous entity with legal standing, and that undertakes some form of organised endeavour within the ecology of its environment. Enterprise is a clearer label, leaving the term ‘organisation’ available to unambiguously describe the organisation of things within the enterprise; the organisation of structure, roles, tasks and authority.

The IS department studied within TPT was the largest in the IS division. The research study occurred within the Customer Billing, Activation and Assurance (CBAA) work-system and its relations with internal business units and stakeholders; CBAA was the *research-host*. It is often described here as the *work-system*, another term used throughout. This research looks at an enterprise (TPT) and its divisions as social systems in which work is conducted. The social system is important; it is the human fabric of the enterprise; its people, individuals and groups, and the relations and relationships between them. The notion of a *work-system* endeavours to capture the human, systemic, and
collective nature of the enterprise or its parts. It represents, the concept of a work-based social system. It can be used to characterise a thing, like CBAA; emphasising those characteristics of CBAA.

*Work-group* is a term used to label a group of people in the work-system. It is used rather than group, because these groups are all formed with the purpose of doing work, doing the work-tasks necessary for the enterprise to achieve its aims. Whilst team is often synonymous with group, the term *team* is laden and saturated with meanings that imply improved performance. Improved performance requires more than just changing the signifier. Whether called work-groups, groups or teams, all are similarly affected by the dynamics of collective human behaviour. The term *psycho-social* is used to characterise the psychological factors (dynamics, defences, motivations, feelings and anxieties) affecting a group, enterprise, community or society.

### 1.3 Concepts

Unconscious dynamics are a part of what is produced in collective human behaviour (Gabriel, 1999). Pressures and tensions occur in a work-system from its internal interactions between the work-groups that constitute it, from the environment of stakeholders and other groups with their demands and expectations, and from the challenges of the technical work of the work-system. Work experiences often involve strong emotions and anxieties. With this, work-groups and group members may become drawn away from their rational thinking processes oriented to their work-tasks. They can become side-tracked and their efforts dispersed in unproductive undertakings. When their efforts are redirected from their work-tasks, the group’s mentality (Bion, 1961) functions under uncontestable, unconscious assumptions about their perceptions of their situation. This state is greatly affected by feelings, emotions and anxiety, and in this state, the work-group is unlikely to recognise that it has drifted from its task. These dynamics unconsciously impact work-groups’ behaviour. These dynamics are not readily available to the thinking processes of the work-group, and as such are difficult to identify and actively intervene in. Eventually, the tensions and
Chapter 1

Introduction

anxiety lessen and the group regains a clearer perspective of their situation, returning to their facilities for rational thought, reality testing and engagement with task. These concepts are more fully explained in chapter 3.

Systems psychodynamics theory (Gould et al., 2001) explains the unconscious processes of work-systems and work-groups, and suggests approaches to mitigate the problems that can arise from such dynamics. In this context, Can systems psychodynamics be applied to the IS development problem space and to identify areas in the IS work-system that are under strain because of psycho-social factors, making them likely to critically dysfunction? Can systems psychodynamics provide tools and the means to intervene at the critical points in the work-system and to lessen the risk of future failure?

There are several currencies in use in enterprises, with money and time of obvious importance. Money, in the form of revenue, profit, costs, investment in projects, is like oxygen to an enterprise. Without sufficient money to support its operations an enterprise will collapse. Time is another resource that is spent. No enterprise has the time to do all it aspires to. Choices about how to use the time of employees are made constantly as circumstances and priorities change. A third, often ignored, currency in enterprises is anxiety. It is a by-product of most collective work activities. Like carbon dioxide, it builds up in the work-system and can become toxic. On reaching certain levels, systemic-anxiety has undesirable and disruptive effects on the functioning and motivations of work-groups. Whilst the research focuses on the economy of systemic-anxiety in the IS work-system, it recognises that this work sits within a broader enterprise context of money and time. IS work gets done to enable new revenue opportunities or to reduce costs. Money is central to enterprise life, functioning and success. But it is not the only currency to be accounted. Where systemic-anxieties are ignored in complex, high risk and high cost settings, like IS, the likelihood of failure is dramatically amplified.
1.4 Thesis Style

Chapters commence with an overview of purpose and the topic areas explored. Each concludes with a summary of the exploration and further questions emerging from the chapter.

Quotations from interviews and observations are provided in double quotation marks and annotated as (interview-number, role, CBAA area or TPT area), for example (I-26, senior manager, Release Management). Field notes are annotated as (fieldnote-type-number, role), for example (FN-0-81, analyst 1). There are five types of fieldnotes referenced for data gathering: interview (I), observation (O), ad hoc discussion (A), action learning project (ALP), and reference-groups (RG). They all follow a similar format.

There were many acronyms used by TPT and CBAA, and as such are used in the dissertation. They are expressed in long form where first used in each chapter. A glossary of these terms is provided in Appendix 1.

The data is discussed in the past tense. Participants are referred to as their gender indicates. Pseudonyms are used where they are named. The researcher is referred to as the researcher unless subjective data about the research, from the researcher’s inner world, transference or counter-transference, is being introduced, when the researcher is referred to in the first person.

1.5 Thesis Structure

The dissertation has two sections. The first section, consisting of chapters 1 to 4, discusses a range of important contexts that apply to the research. The second section, consisting of chapters 5 to 9, discusses the research data, its analysis and interpretation within the confines of the earlier context chapters.

Section one looks at important contexts for the research. Following the broad introduction of Chapter 1, Chapter 2 considers the problem space the research looked at: the chronic underperformance of IS development and failure of IS
projects. This remains an important area of further study for industry. The chapter reviews the IS literature on how this problem area is conceived by IS researchers and the solutions and remedies that have been applied to date—almost wholly rationalist engineering solutions. The chapter introduces the domain of systems psychodynamics theory, considering settings it has been successfully applied in and suggesting its application to further understand and intervene in the problem of IS development performance and failure.

Chapter 3 discusses the foundations that underpin the system psychodynamics domain of theory. It draws on Freud’s (1917) theory on anxiety and defences in human systems; the work of Klein (1959), extending Freud’s ideas into object relations and the depressive and paranoid-schizoid states of mind; the extensions to Klein’s work by Bion (1961) into the processes of thinking and his theory of group behaviour and defences. The chapter then focuses on the further developments of social defence theory (Menzies, 1970), socio-technical systems theory (Miller and Rice, 1967) and various forms of diagnostic and intervention methods to understand and work with the psycho-social processes that disrupt work-group and enterprise behaviour and performance.

Chapter 4 presents the research design and the research methods used, including the reasoning for the design choices. The aptitude and skills required of a researcher using a qualitative, interpretivist framework are considered with respect to the research design’s methods for data collection and analysis. It introduces the research-host and the critical environmental and organisational changes that deeply impacted it (CBAA) and the enterprise (TPT).

Section two looks at the research data, its analysis and interpretation. Chapter 5 considers the structures and processes operating in the research-host, particularly identify the fracture lines through the IS work-system. It presents the thematic data analysis drawing on the 50 ninety-minute interviews from across the work-system. The workshops with the reference-group to validate this data are discussed.
Chapter 6 explores systemic-anxiety in the IS work-system and precursor events that appear to produce the systemic-anxieties experienced by these work-groups. Case vignettes are used, from extensive interview and observation data, to show examples of defensive behaviour in work-groups as they attempt to cope with experiences of extreme systemic-anxiety in their work.

Chapter 7 investigates situations where the defensive group behaviours have become fixed or routinised in the ongoing day-to-day work practices of groups in the IS department. Whilst they assist work-groups to cope with the systemic-anxiety, they also constrain and disrupt task performance, introduce new anxieties into the work-system, and amplify dysfunction. Despite being smart, experienced and capable people, the work-groups and their members are often diverted from successfully performing their tasks by the perceived systemic-anxieties they unconsciously protect themselves against.

Chapter 8 explores some of the broader causes and sources of systemic-anxiety within the enterprise and its environment impacting on IS development. Next, the action learning projects of the action research are discussed, with particular attention on the successful moderation of systemic-anxiety on work-groups, increasing their capacity to tolerate anxiety and reducing sources of anxiety.

Chapter 9 concludes the thesis, integrating the key elements of the thesis’ argument as explored in earlier data discussions, considering what was learned about the research questions and the key findings of the research and finishing with implications for further research and practice.

To begin, the next chapter reviews the IS literature on the development process and the performance and failure problems still experienced with it.
Chapter 2  The IS Context

This chapter sets out in general terms the processes involved in providing ongoing information systems (IS) services in a large enterprise such as in this case study. The processes are of themselves technically complex (Lytyinen and Newman, 2008). In a very large and technologically dependent enterprise, there is also significant complexity in organising the information systems development (ISD) process and in organising its inter-working with the business planning processes that initiate information system changes.

The role of the information systems department is to support the work of business units in realising the enterprise’s purpose and goals, and in ensuring its continued viability. Changes to products or processes usually require information system changes. In large enterprises, this usually affects many systems. The timeframe to change information systems is far longer than the business timeframe to recognise the need for a change to a product.

In large enterprises, the ISD process is extremely complex. It involves a lot of interdependency and interaction between work-groups supporting its information systems. Classically within the IS industry, there have been many highly engineered work-processes used to change and review information systems: they were established to control and manage all aspects of IS development and fall within the rationalist framework. The thesis shows that these processes have been insufficient to control large-scale projects or ensure their success.

Business staff often believe that IS departments are inefficient, costly and notoriously unreliable in delivering information system solutions and enhancements to business (Lytyinen, 1988). There is much evidence that supports these broad claims of IS underperformance (Dwivedi et al., 2015b). While there is a substantial research base that looks at IS project failure (Pan et al., 2008), focusing on IS methodologies and tools, little attention has been given to the dynamics of the IS department and their impacts on performance. The
existing research largely focuses on rationalist approaches IS failure (Orlikowski and Baroudi, 1991, Walsham, 2012).

This chapter introduces the research questions and explains why they are important. It looks at the information system development process and the methodologies used to inform and guide the ISD process. It considers the fundamental process of translation that occurs in the ISD process; the translation of business meanings into an information system. The chronic issues that affect ISD are discussed with respect to the research question.

What appears to be missing in the academic literature on IS development are the impacts the psycho-social dynamics of groups have on ISD; an intensely human activity which is social, interactional and knowledge based. IS development is very complex. It is indispensable in modern enterprises. There are issues about IS development failure that are not considered in most accounts. Most explanations leave out important factors that have bearing on IS failure. This research explores them. These are the systems psychodynamic and emotional factors that deal with group behaviour, unconscious communication, group motivation and resistance. This dimension is not only largely ignored, its neglect indiscriminately aggravates IS work performance, as will be seen in the case data.

Wastell (1999) has shown applications of system psychodynamics to IS projects, but not to larger IS work-systems. These findings about problems with IS projects offer an encouraging beginning. This research explored the possibility that IS development problems have some genesis in the dynamics of higher order work-systems, the IS department and its relations with its client business units. The research focuses on IS work-groups, IS-business relations, and the IS department, using systems psychodynamics as the lens of enquiry. Systems psychodynamics is then explained in preparation for the detailed discussion in the next chapter of its core elements and their origins, including the impacts systemic-anxiety has on work-group performance.
2.1 IS-Business Relations

Relations between IS services and the business units (BUs) of an enterprise at the strategic level are well described (Luftman and Kempaiah, 2007, Earl, 1988). It aims to ensure alignment between IS investments and the enterprise’s strategic objectives. Information systems are integral to the success of most enterprises, but the investment costs are very high (Hintom and Kaye, 1996, Nevo et al., 2010). Equally important are the interactions and participation of BU personnel in the planning and development of information systems in all business initiatives (BIs). This is less well-explored and described in the literature (Orlikowski and Baroudi, 1991, Mumford, 2000, Coughlan et al., 2005). Ineffectiveness in these lower and middle level IS-BU relations contributes to software delivery failure (Smith, 2001).

2.1.1 Interactions Between Divisions

The development of an information system can be thought of as a co-creative process involving ongoing input, participation and accountability of both IS and BU managers to ensure sound decisions are made in software development.
Many problems encountered in IS development are the product of contradictory expectations between business groups and IS groups participating in translating business requirements into information systems (Wastell and Newman, 1993, Cybulski and Lukaitis, 2005). These differing expectations have not been sufficiently explored nor resolved by the current IS research literature, where business and IS interactions are minimised within the context of the rhetoric of efficiency. The result, all too often, is that IS work is done by the IS department in isolation from the client and their dynamic business environment (Cybulski and Lukaitis, 2005, Schwaber and Beedle, 2002), with the result being that at the time of delivery, the information system is insufficiently fit-for-purpose in the mind of the client.

There is often strong user resistance to IS initiatives, often based on past negative experiences by IS users in their current or past enterprise. Resistance behaviours follow if they perceive the information system or the IS development
process to be threatening to them individually or their group (Lapointe and Rivard, 2005). The psychological contract between IS and the business is often upset through events and situations that emerge in the ISDP, putting the relations between the two groups under strain, sometimes to the point of breakdown. These breaches of ‘trust’\(^1\) contribute to a negative identification with systems and the IS department, creating alienation towards IS in general (Klaus and Blanton, 2010).

2.1.2 Competing Interests

There are many competing interests in the IS development process. The most fundamental is the IS department’s imperative to ensure stable information technology platforms to run business processes on. This means controlling changes to and performance of information systems. A most pressing interest of the business is for stable business initiatives. This means that all support, including IS support, for the business initiative must be delivered as planned: on time, at cost, and fully functional. These two imperatives of business stability and IS platform stability are regularly at odds with each other (Hirschheim et al., 1995, Sabherwal and Hirschheim, 2003).

The relationship between the business and their IS providers is often characterised as highly divisive (Coughlan et al., 2005). In developing software, many complex ideas must be communicated across departments and workgroups with different ways to make sense of the world and differing perspectives on what is important, often leading to conflicts and failure to co-operate effectively (Liu et al., 2009).

Across the IS development process, complex sets of responsibilities need to be balanced (Elbanna, 2013); this balance is rarely set or fixed, rather it is dynamic. Research shows that closing the gap between IS and the business units takes time, is impacted by people’s histories regarding IS experiences in the enterprise (Peppard, 2001, Peppard and Ward, 1999) and requires community building and

\(^1\) breaches of the psychological contract
establishing equal partnership between the IS department and business units (Coughlan et al., 2005).

### 2.1.3 IS-Business Alignment

Alignment is how well information systems development and infrastructure satisfy and enable the needs of the enterprise, its processes and objectives at a point in time (Keil and Montealegre, 2000). Alignment emerges and cannot be forced. It is “best described not as a uni-dimensional phenomenon but as a superset of multiple, simultaneous component alignments that bring together an organization’s structure, strategy and culture at multiple levels, with all their inherent demands” (Chan, 2002, p.99). Good alignment is difficult to achieve. It is multidimensional and is done in the context of major transformations of the organisation (MacDonald, 1991).

Project failure is often due to poor alignment (Luftman and Kempaiah, 2007, Ezingeard et al., 2007, Chan and Reich, 2007). The following six criteria (Luftman, 2000) identify the areas that must work well for mature functional alignment between IS and the business: communications, quantifying value, governance, partnership, scope and architecture, and skill. It involves IS strategy aligning with business strategy, with processes that enable co-operation between IS and business planning. Business involvement is essential in all levels of IS development, as is fearless communication about IS progress and obstacles by IS managers with their customers at all levels (Lukaitis, 2010). Despite its centrality to IS development success being well understood, even if it is in mechanistic terms, it is often poorly executed or insufficiently followed up (Yardley, 2002).

Alignment represents the mutual understanding between business and IS, as a social process (Ezingeard et al., 2007). It is inherently dynamic in nature, located across many roles and groups. It is not an event, but a continuous process of engagement (Henderson and Venkatraman, 1993, Luftman, 2003, Chan, 2002).
2.1.4 Quality After the Fact

In essence quality is about a product, like a suite of information systems, being fit for purpose. IS quality is a process (Yardley, 2002), and begins with understanding the customer’s expectations of system quality. These expectations can vary over function, performance, cost, delivery time, security, compatibility, reliability, maintainability and extensibility. There are many quality frameworks, including ISO 9001, TickiT and TQM (Kitchenham and Pfleeger, 1996). All these quality management systems (QMS) involve processes for quality planning, quality control and quality assurance. Assurance is done through inspections, reviews and walkthroughs of the work-products of the systems development life-cycle (SDLC) created by the various IS work-groups (Simmons, 1996, Yardley, 2002). All aspects of quality pertain to technical concerns. Compliance to time and budget is done by some form of self-assessment and is subject to the same corrupting psycho-social forces as are other work-tasks (Orlikowski and Baroudi, 1991). In this modality, it is not possible to know the status now, it is only possible to know it then, which may have been some days ago. All assessments occur after the work has been completed (Yardley, 2002).

It would be advantageous to know during a work-task what the quality of the work-product is likely to be, in-flight rather than after the fact. Work-products are produced by work-groups. The psychological health of a work-group of knowledge workers is likely to give some guide into their capacity to deliver a work-product of sufficient quality on time due to the complexity they have to cope with. Understanding the disruption to a work-group’s capacity to think and work at its task, is a function of the level of systemic-anxiety it is exposed to and its anxiety-tolerance (Long, 2013, Hirschhorn, 1991, de Board, 1978). If the disruption to the work-group is high, it is likely to negatively impact work-product quality (Long et al., 2000, Krantz and Gilmore, 1990).
2.1.5 IS Department Structures

Empirical case studies about the nature of IS development suggest that it is best described as a socio-political process; IS development is characterised as pluralistic, ambiguous and riddled with conflict (Newman and Noble, 1990, Markus, 1983, Lyttyinen, 1988). Despite these obvious phenomena, Markus (1983) describes most IS development theories and processes of engagement as best categorised as unitary or rationalist. That is, theories and practices with an orientation at odds with empirical observations about the ISDP. From the rationalist stance, resistance and conflict are seen as aberrant or pathological rather than an aspect of the contrasting, sometimes competing, narratives about business products or technology that are difficult to reconcile.

IS projects are often large, poorly defined and complex. Large projects involve hundreds of staff, tens of system interfaces to other systems, and huge budgets. They often require clarification of very different understandings, meanings and narratives; firstly from different business unit communities; secondly from different functional groups within the IS community. There is an ever-present risk in all these sensitive and complex negotiations, within the power structures of the enterprise or industry, of damage to reputations, careers and/or self-esteem of the participants (Wastell and Newman, 1993).

2.1.5.1 Specialised Teams

The IS department is a collection of formally organised groups, each contributing to the provision of IS services to the enterprise. They have common expectations about the conduct of the ISD process. IS personnel have specific roles and tasks; they have clear relations to other roles and tasks within the IS department (Friedman and Cornford, 1989).

These components of IS development form a complex interdependent nexus of social, technical and cultural phenomena (Lyytinen and Newman, 2008). ISD is often seen as a homogenous totality, but it is a series of complex interactions carried out between many actors with their own differences, agency and subjective influences. This illusion of a unitary nature or totality of the software
development process is subject to confusion, conflict and disruption from within the IS department and from its setting\(^2\) (Hirschheim et al., 1995, Schwaber and Beedle, 2002).

People have viewpoints that allow them to perceive these object systems differently from each other—from their different contexts, such as from business planner versus IS developer or systems analyst versus programmer. These viewpoints are determined by the range of concepts in use in their respective setting. This forms the basis for differences in perspective and meaning formed by different groups about the events that occur during the ISD process (Checkland, 1981). As such, ISD has political aspects which are often better navigated by more experienced developers—staff who have had more exposure to the different conceptual perspectives of different stakeholders in the ISD process (Vitalari, 1985).

### 2.1.5.2 Work Related Stressors

There are many stressors experienced in the ISD endeavour, and there is very little in the literature about the subject of emotional factors in ISD (Liu et al., 2009, Wastell, 1996, Wastell and Newman, 1993). There are considerations about the physical environment at work for health and safety, but in most offices in the first world, these are extremely minor. Of much greater impact and concern are the psycho-emotional factors that affect individuals and work-groups (Miller, 1995b). Wastell and Newman (1993) suggest sources of workplace stress include ambiguity, mistranslation, conflict, work overload, interpersonal conflicts, job insecurity, politics and organisational change. For work-groups, these cause weak orientation towards their work-task, basic assumption behaviour, groupthink and intergroup conflict.

Considering the first three, there are many sources of ambiguity in the IS work-system. For example, there may be different perspectives held by different work-groups about an important business rule that must be enabled to support a product. The completeness and detailed definition of that rule matters greatly to the business units.

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\(^2\) the business units
a programmer, but can have some vagueness and still be tolerable for an IS-analyst. What is imprecise and vague to one is clear and sufficient to another (Hirschheim et al., 1995). This type of dissonance between perspectives creates stress and tension.

Opportunities for mistranslation of business intentions into systemic requirements and then into technical specifications are considerable. IS methodologies and tools endeavour to eradicate such ‘noise’ but human agency, time pressures and ambiguity all strain the translation process and its verification (Friedman and Cornford, 1989). This noise is amplified by work-group dynamics, leading to mistranslation and the introduction of errors into the information system. Trying to combat this tendency is a significant stressor.

Conflict is easily surfaced in IS development (Liu et al., 2009). Errors and ambiguity cause delays for work-groups, delaying their work-products to downstream work-groups which put them under time and quality pressures, often causing conflict (Yardley, 2002). Strongly held views, from different parts of the work-system lead to differing and conflicted priorities of importance for certain IS work-tasks. These can be intense and drawn out, provoking substantial stress within the work-system. The psycho-emotional stressors involved in software development, as in all knowledge based work, can have an adverse effect on behaviour, cognition, attention and critical thinking (Kessler and Ustun, 2008).

2.1.6 Prioritisation of IS Changes

All enterprises require a mechanism to prioritise changes to its suite of information systems (Watkins, 1998). The nature of this mechanism depends on the size of the enterprise and the scale of its IS services and IS budget. It can be an informal mechanism for simple situations, but it is usually a highly formalised process (Earl, 1988). It endeavours to cope with the political forces competing over IS investments, to shape the best future for the enterprise. There is a lot at stake for the enterprise and errors are expensive (Watkins, 1998).
2.2 The Information System Development Process

2.2.1 Overview

Keen (1981) describes the software development process as political by its nature, requiring the management of ambiguity, inconsistencies and conflict across its work products (specification and system objects), and the management of ambiguities across multiple stakeholder groups. This social character of IS development (ISD) is not consistent with the objective nature of the natural sciences (such as physics or geology) where objects are viewed as inanimate (Hirschheim et al., 1995). The objects of ISD are qualitatively different from those of natural science. The objects are developers, users and other roles within the enterprise and society, each having agency and sentience. These characteristics are important to the social communication and sense-making through which shared meanings are formed, meanings which are the basis for the software design. It requires a different approach according to Hirschheim et al. (1995) to that of mathematics and the natural sciences which cannot address the importance or ethics of the many different lived experiences in enterprises. There are ontological differences between machines, organisms, and social or psychic systems (Luhmann, 1987).

The IS department is an agent of change within an enterprise, symbolising transformation and change, often radical but nearly always at the behest of the business. It is not surprising that IS often gets a harsh backlash for the consequences of its unsatisfactory endeavours. Yet the ISD process itself is not immune from the usual enterprise wide demands for improved efficiency and performance: to produce more that is useful, using fewer resources, in a shorter timeframe (Lukaitis, 2010, Earl, 1988).

Information systems enable the creation and exchange of meanings that are socially defined by those using the system. The meanings may be abstract or linguistically explicit. Information systems are typically seen from two perspectives, functional or structural (Hirschheim et al., 1995). From a structural
perspective it is made up of people, processes, technology, data, models, formalised languages and control structures to serve an enterprise purpose (Davis and Olson, 1985). The functional perspective sees it as technological substrate deployed for storing and communicating structured and abstract meaning (Goldkuhl and Lyytinen, 1982). From the perspective of this research, people are included within the boundary of the information system; as such, it is dependent on human contribution, capabilities and limitations.

2.2.2 Transposing Meaning

Welke (1983) defines information systems development as a change process actioned on an object system in a set of environments by a development group to achieve certain objectives (new or existing). The object system consists of phenomena perceived by the developers—physical objects (having an independent reality) or models (social constructs)—and used to achieve an enterprise purpose or objective. It is made up of objects, their properties and the relationships between the objects (its structure and controls).

The characteristics of the change process are intentionality, reflecting a change planned by the enterprise’s management; intersubjectivity, a social process, harmonising the multiple interpretations of meaning of a change to a mutual and accepted understanding and its subsequent coordination across all participants’ actions; and uncertainty, change being contingent on interactions between many forms of agency. Developers may be uncertain about whether the planned requirement can be supported or if the resulting object system will have the desired properties that accord with the business intention (Hirschheim et al., 1995). Whilst ideally IS development is not deterministic, its practice and methodologies very often are (Yardley, 2002).

At its most fundamental level, the ISD process is one of taking a business intention with its inherent meanings and transposing those meanings faithfully into an information system with its additional meanings associated with technical coherence. This process of transposition from idea to structured
technology system occurs through many layers of translation, each open to the introduction of ‘noise’ that may corrupt the meaning passed on. The conceptual interactions of this process between the actors and object system are shown in Figure 2.2 below.

![Figure 2.2 Actors and Interactions in Transposing IS Meaning - derived and extended from Hirschheim et al. (1995, p.16).](image)

Methodologies and modelling of systems are used to improve the fidelity of the representation of business meaning; to use diagram and schemata that may be clearer than natural language (Hirschheim et al., 1995). They have been and remain important in the evolution of IS development (Friedman and Cornford, 1989). However “the complexity of IS development cannot be captured in some formal model” (Hirschheim et al., 1995, p.2) or framework. It must be resolved through improved communications and praxis between IS work-groups and between IS and BU work-groups. Models for communications practice may be formalised but not always (Schwaber and Beedle, 2002).

### 2.2.3 Business Requirements and System Change

The ongoing provision of information systems support for an enterprise usually involves changes to an information system or many information systems for a
new business initiative. The greater the number of systems involved the more complex the change is, particularly the coordination of the change across the many work-groups involved in all the systems. In large complex settings like the research-host, over a hundred distinct information systems may need coordinated changes to support a single business initiative. Often many business initiatives are worked on and deployed to operational use at the same time. Coordinating the successful deployment in a common window of software changes for multiple business initiatives across a suite of many tens of information systems is a very complex organisational undertaking.

Changes to information systems, even in the most organised and orderly settings will take many months—or years—to design, make, test and deploy. They are dependent on the stability of the initial set of business requirements. Business environments are often very volatile, resulting in responsive changes to products and processes (Takeuchi and Nonaka, 1986). In a turbulent business environment, these business requirements that IS must support may change, affecting tens of information systems and causing rework and redesign in these systems. Changes to systems do not happen in any similar order of magnitude of timeframe that it takes for a business team to change the definition of the business requirements; systems are like supertankers, very slow to turnaround.

Figure 2.3 below is an entity relationship diagram that explores and represents the relationships between business units and the IS department as seen from the vertex of Business initiatives (BI)—that is the formalised business ideas that have been prioritised to have investments made in information systems changes.
The E-R diagram\(^3\) above shows two types of relationships: many-to-many and one-to-many. Many-to-many relationships between objects, such as between ‘business initiative’ and ‘software release’. In particular a business initiative ‘is supported by’ between 1 or many software releases, and a software release ‘supports’ between 1 or many business initiatives. One-to-many relationships between objects, such as between ‘business initiative’ and ‘software release’. In particular a business initiative ‘has’ between 1 or many business requirements, but a business requirement only ‘belongs to’ 1 business initiative.

2.2.4 Other Layers of Meaning

Whilst the primary meanings being worked with and translated in the IS development process are those of the original business intention for a product or business process, there are other enterprise meanings that influence the

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\(^3\) Entity-Relationship diagram or data model
discourse or narratives of the enterprise and its divisions. The financial
discourse plays a substantial part in determining the viability of the initial
business idea and in monitoring the IS development costs. Business continuity
discourse around the stability of the information systems and ensuring system
changes do not threaten this stability. Unstable information systems have
dramatic impacts on provision of products and the enterprise’s credibility and
reputation.

Whilst these contending discourses interact, they can also produce disruptive
dynamics within parts of the enterprise, including the IS work-system. What
stems from this is a largely unconscious discourse of resistance; resistance to
change, to compromise, to identity (Hirschhorn and Gilmore, 1992, Gabriel,
1999). This goes on in all divisions of an enterprise.

2.3 Information System Development Methodologies

In response to this complexity, IS development methodologies have developed
over the decades to provide structures that support the representation and
communication of important business meaning in systems form, to control and
order the work process for greater success, and for the effective utilisation of
ever increasing information technology capabilities.

2.3.1 Types of Methodologies

There are three principal ways of perceiving an information (object) system:
static, dynamic, and hybrid (Hirschheim et al., 1995). In static, the class of objects
modelled are the data entities and the relationships between them that will be
stored in the subsequent information system. Data modelling records the
properties or attributes of the entities (the objects of interest to the business)
and the relations between them (Date, 1990). Dynamic modelling focuses on the
processes and transformations that are required to occur in the information
system. The processes are connected by flows of data that are passed between
processes to enable subsequent processes (DeMarco, 1979, Yourdon, 1989, Gane
and Sarson, 1979). In hybrid modelling, the information system is seen as a
series of actors (each with an atomic set of actions) that react to events or stimuli
from the environment or other actors. In this frame, information systems is seen
as a population of actors that together characterise the full set of required
system behaviours (Hirschheim et al., 1995).

2.3.2 Development Methodology

The purpose of an IS development methodology is to assist development groups
in changing the object or information system in accordance with the stated needs
and requirements of their clients. To do this in a predictable way in terms of
timeframe, cost and scope; to do it in such a way that the information system can
be extended or changed in the future, such that the information system fits into
the IS department’s broader plans for the suite of all information systems—the
IS Architecture. Methodologies recommend a collection of methods, languages
and techniques for representing and implementing a change; they also
recommend tools, skills and technologies for developing software. In short, they
are “an organised collection of concepts, methods, beliefs, values and normative
principles” (Hirschheim et al., 1995, p.22). Methodologies are in effect pre-
planned procedures with the goal to streamline the development of information
systems.

2.3.2.1 Ways of Seeing the World

The predominant view of the world for commercial ISD is the functionalist
paradigm (Orlikowski and Baroudi, 1991). Functionalism seeks to provide
rational explanations; it is positivist and deterministic. It makes ‘objective’
statements about what is observed with no reference to the subjective
experiences of the participants being observed (Burrell and Morgan, 1979). It
contrasts with interpretivism that tries to understand the world as is, with the
participant as the frame of reference rather than the observer of the action
(Burrell and Morgan, 1979). Functionalism sees the world of IS as objects that can be controlled (Hirschheim et al., 1995) and is likened to engineering or manufacturing (Schwaber and Beedle, 2002). It is highly rational and seeks to impose ‘order’ on the IS setting, where that ‘order’ is defined by explanations and learnings from other places, with other actors, at another time, and with other specific technology. The functionalist paradigm minimises, almost ignores, the differences in the settings and focuses on similarities to the point of treating them as functionally identical (Orlikowski and Baroudi, 1991). This functionalist or rationalist view is problematic for the complex, ambiguous and uncertain process of software development (Schwaber and Beedle, 2002). It is a simple framework of cause-effect, problem-'prescribed solution'. It lacks the adaptability to address the emergent dilemmas inherent to IS development (Mumford, 1995).

The functionalist perspective sees software development as a science of software engineering, consistent with the natural sciences (i.e. physics, chemistry, geology) and the world of objects. It assumes the successes of the natural sciences can be applied to systems development if the methods of the natural sciences are emulated. Hirschheim et al. state that “this view is held by the majority of computer scientists, industrial engineers and academics in the area of information systems” (1995, p. 235). In a broad industry analysis, Denning et al. (1989) identified the core approach to computer science as theoretically grounded in mathematics, engaged through experimental scientific method (deduction), and design being grounded in engineering principles. Yet such a unified ontology ignores the differences that exist between different software domains and settings. Not all software applications are about efficient automation, some are about exploring better mutual understanding, as is the case for some MIS applications or virtual collaborative workspaces.

In their survey of the literature and practice of university teaching and textbooks about information system development, Hirschheim et al. found them to be

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4 systems, data, deliverables, work practice, staff’s experiences

5 learnings not made in this setting, but rather from other different settings
“virtually entirely functionalist in their orientation” (1995, p.237) and that academic IS communities consciously and unconsciously perpetuate this functionalism (Walsham, 2012, Orlikowski and Baroudi, 1991). Importantly, different user communities have often quite different views about the nature of the environment (the reality) a suite of information systems is established to support. Developing understanding about such complex and often internally divergent perspectives on reality is not easily followed from within the tenets of functionalism. Most IS management and development practices conform to McGregor's Theory X of applying direct control to situations (Hedberg and Mumford, 1975, Yardley, 2002).

Reality is socially constructed through continuous interactions between agents: people in roles and groups. Reality is emergent and at odds with simple cause and effect rationale (Hirschheim et al., 1995, Stacey et al., 2000). As technology sophistication increases through the world-wide-web, trans-enterprise distributed databases, EAI, 'big' data to name a few, the level of social complexity interacting through it—enabled by it—increases too. As Hirschheim et al. suggest these “will increase the anxiety level, ... stress and other frustrations created by information intensive environments to new unprecedented levels” (1995, p.238). This view is echoed by other IS researchers (Schwaber and Beedle, 2002, Mumford, 1995, Lukaitis and Cybulski, 2005). They strongly suggest that a functionalist or rationalist approach to IS development will continue to exacerbate these problems. Unfortunately, beyond these insights about current limitations to practice, they offer little more to the IS practitioner than to use a methodology that draws philosophically on the interpretivist way of seeing the world. Such a methodology is ETHICS (Mumford, 2000), developed by her at Manchester Business School. It has had very little application or impact in information systems development. It tries to reconcile the technical with the social needs of design. To do this it suggests using communicative action (Habermas, 1984) as a process to explore intersubjective views of the world—in this case of software development. A problem with such methodologies and processes of engaging with business users' realities is that they consume large amounts of time and are usually beyond the resources constraints of commercial
IS projects (Hirschheim et al., 1995, Mumford, 1995) and the functionalist orientation of the participants.

Most approaches to information systems development are functionalist. They are seen primarily as technical systems and with limited social consequences. This orients the focus of attention onto the technical complexity, often ignoring broader enterprise change management until the system’s deployment. It orients IS development to technical solutions using rationalist tools, methods, models and principles. An alternative view is to see IS development as a social technology depending on the social constructs of language, meaning, norms of behaviour; recognising that social influence occurs. IS development has the social purpose of improving processes or products (Hirschheim et al., 1995). A rationalist approach sees all IS development as fundamentally the same and all IS development actions as predetermined rather than distinct and responding to a specific context.

2.3.2.2  Structured Methodologies

An IS development methodology is a detailed description of the work practices and work-products required to take a business idea and represent it in an operational information system. It is typically made up of a number of phases with each phase building on the work done in earlier phases. It is often described as a waterfall lifecycle (see Figure 2.4) and is the most common approach—however there are other lifecycles\(^6\) for software development (Laplante, 2007).

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\(^6\) RAD (rapid application development), Agile, Spiral, Incremental, Rapid Prototyping
Each phase contains a number of activities and creates or refines a number of deliverables (Stair and Reynolds, 2014, Davis, 2013). Together and then successfully followed to conclusion, this process leads to a new or changed information system, a so-called ‘All-at-Once’ model of software delivery (DeGrace and Stahl, 1990). During systems development there is great variation as to which detailed activities actually get done, their sequencing and the specific role or group which does them (Hirschheim et al., 1995). These structured methodologies for the development of or change to information systems have been developed to formalise and to impose greater order and reliability onto the ISD process. Methodologies provide a well-defined set of methods, techniques, models and tools for use by staff involved in the IS development process (Yourdon, 1989, DeMarco, 1979).

Structured methodologies were introduced to address a number of problems:

- the lack of a standard approach to ISD work resulting in information systems failures;
- the difficulty in getting meaningful user input, where both analyst and user are overwhelmed by the volume of unstructured specifications;
- many specifications are out of date as soon as they are created, becoming noise in the documentation;
training new IS analysts and designers requires a long and costly apprenticeship (Hirschheim et al., 1995) to develop knowledge, skills and experience.

Prototyping methodologies offered greater user involvement in and visibility of the development processes but their application is limited to small systems. It also introduces other problems such as user expectations that the working model of the proposed system could be or is the actual production system, rather than just a sophisticated model not optimised or scaled to production conditions. Prototyping is an iterative and adaptive approach to developing information systems where users see what the system will look like and do as it is being developed (Lantz, 1986). There are limitations on the size of systems that can be developed efficiently with this approach.

2.3.2.3 The Evolution of Structured Techniques

In considering the evolution of ISD methodologies, Cougar (1982) describes their precursors of structured techniques. Structured techniques evolved in response to increases in computing hardware power. Cougar describes five generations, all being modelling techniques to capture and represent information and processing steps that were becoming increasingly complex due to the rapidly growing power of computer hardware: CPU, and memory. These system development techniques evolved to solve the problems posed by each successive generation of hardware and the problems that remained unsolved from earlier generations. Improvements in hardware stimulated improvements in the IS development process (ISDP). Hardware improvements made new software possible, which in turn required different forms of organisation to control the software process and the cost of labour in their development.

Structured methodologies brought a form of engineering standardisation and control to ISDP. They sought more orderly and manageable systems development with the aid of deliverable ‘walk throughs’ and ‘sign-offs’ with
business unit representatives\textsuperscript{7}. These permitted better user understanding of what the eventual system would be like. There were significant communications gaps between the IS professionals and the business professionals which in turn were amplified by increases in complexity of systems.

Friedman and Cornford (1989) considered information systems as an agent of change. The changing costs and capabilities of hardware, labour and management controls are interlinked and influence the organisational form of enterprises and of IS departments. They envisaged four phases of IS development; the first constrained by hardware; the second by software; the third by business user relations; and they hypothesised the fourth to be constrained broader enterprise environment factors\textsuperscript{8}, each with commensurate methodologies to guide and control IS work.

### 2.3.3 Development Methodologies

Development methodologies were formed out of the structured development techniques described by Cougar (1982) to formalise early IS work-practices. These structures techniques enabled software developers to leverage the early improvements in hardware power that were occurring, whilst ensuring some form of control over the development process. The main forms of development methodologies in use are discussed in three sections, with the fourth (section 2.4.3.4) being the only truly non-functionalist approach to software development.

#### 2.3.3.1 Traditional Methodologies

The traditional approach to software development has been a sequential process as described by the waterfall model (see Figure 2.4). Each phase is performed and completed in sequence. Order is central, with no phase beginning until its preceding phase is completed (Yardley, 2002). This often leads to delays across

\textsuperscript{7} users

\textsuperscript{8} which we see today as the world wide web and other connection/communication technologies
the whole process when one phase is held up for some reason. The preceding phases are assumed to be correct by the next phase, but this becomes problematic when the software change is required to be varied because of new information or a changing business context. Most large system software development follows this template (Hirschheim et al., 1995). Structured Systems Analysis and Design Methodology (SSADM) is one such example of a traditional methodology that is widely used.

2.3.3.2 **Iterative Methodologies**

Dynamic Systems Development Methodology (DSDM) is an iterative approach with a strong focus on users and their participation in the software analysis and design processes. The development proceeds iteratively, making it possible to revisit earlier analysis or design decisions and update them with new information (see Figure 2.5). It is incremental because it breaks down the development task into a series of smaller deliverable elements that can be worked on independently (Yardley, 2002).
Figure 2.5 Iterative model for IS development

The origins of this approach come from RAD, rapid application development; this in turn had its origins in JAD, joint application development (Orlikowski and Baroudi, 1991). These methods were effective for small, comparatively independent systems. Users were heavily involved in the design process where often working prototypes were constructed. These became the specification for the operational system to be built from. For many business staff, these prototypes were thought and hoped to be the end of the process, but they only tested the idea of the system and how people would work with it, they were not scaled for, nor resilient enough for operational use and volumes.

2.3.3.3 Agile Methodology

The Agile Methodology is of note in that it endeavours not to take a functionalist approach to the work of IS development. Agile is a fifth generation methodology, giving greater control of and responsibility for the IS development process to business sponsors.
It does this by creating a tightly defined list of business requirements called the Product Backlog. From these, a list of requirements to be worked on and delivered in the next 30 days is created by the team of software developers that will do the work (Schwaber and Beedle, 2002, Hobbs and Scheepers, 2010). The team is called a ‘scrum’ and their work for the next 30 days is called a ‘sprint’. In that 30 days they work to produce the software parcel, but they must produce at least a working parcel and demonstrate it to their business clients.

Each day the leader of this team and sprint, called the ‘scrum master’ holds a meeting to hear from team members and discuss progress, obstacles and how to rebalance workloads in the face of emerging problems in the development that had not been foreseen. Anyone in the enterprise with an interest in or concern about the sprint can attend this meeting—making it highly transparent to clients (Leffingwell, 2011). The scope of the sprint is never changed.

At the end of the sprint, a ‘sprint review’ meeting is held to demonstrate the software to the client, to discuss issues and problems with the sprint and to learn from this (Schwaber and Beedle, 2002, Leffingwell, 2011). Again, anyone interested can attend and its final task is to set up the scope for the next sprint from the product backlog list. In this, it is like a form of action research (discussed in Chapter 4), a cyclic method of enquiry where the goals are reviewed at the end of blocks of work (Coghlan and Brannick, 2014, Pasmore, 2001).

Agile has limits in its practical application. It works very well for well-bounded standalone applications such as web development. It can be used with multiple scrums, with a super-ordinate scrum coordinating across the work efforts. This configuration could involve up to 60 IS staff. It is unable to support complex, large-scale, multi-system software development (Davis, 2013).
2.3.3.4 ETHICS

Mumford used socio-technical systems theory\(^9\) to improve user involvement in IS development and satisfaction with the systems developed (Ehn and Kyng, 1987). Her view of design differed from the technocentric orientation of traditional software design. It recognised the social and technical elements of a system, that they mutually shaped each other, and one needed to be designed with the other in mind (Orlikowski, 2010). Using the separation of the human system from the technical system, this interpretivist approach to IS development generated a quantum of research around the ETHICS methodology and actual software projects in Scandinavian countries (Briefs et al., 1983).

2.4 IS Development Failure

2.4.1 Examples of Failure

There are many examples of IS implementation failures (Nelson, 2007) causing negative consequence and financial losses for enterprises (Laumer and Eckhardt, 2012). The London Stock Exchange's (LSE) Taurus project to automate share transfer was a complete failure. Version I commenced in 1987 and was abandoned in 1988 with the loss of nearly £10m. Version II commenced in early 1989. It was expected to cost £50m and be completed in 1991. After a series of problems and delays the project was abandoned in 1993 having cost LSE £75m and other involved companies £200m (Yardley, 2002, Drummond, 1996). This was a dreadful failure, but embedded with it is the opportunity cost of other business initiatives the LSE could have undertaken with its lost money, time and management attention. The harm to the IS-business relationships was immeasurable, taking years to repair trust.

The UK passport office system replacement in the late 1990s failed spectacularly. The automation failed to manage the process complexity, resulting in 50 day delays for passports, a 500,000 backlog of passport applications, inability to

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\(^9\) discussed in the next chapter
process visas, and chaos in government. The system failed in its first trial, yet its full operational rollout proceeded. Apart from the direct cost of the failed system, it cost the UK Passport Agency over £12m in measures to correct the operational failures, almost half of this was additional labour to manually clear the backlog (Yardley, 2002).

GOV.UK, an initiative to integrate and streamline all UK government websites into a single mega-environment was a complete failure in 2015. It was underestimated in size and complexity. All work was abandoned and all costs wasted for no gain. What was meant to be a cost savings program became a relationship debacle with constituents as they lost online functionality (Orlowski, 2015). Hewlett-Packard’s failure in 2004 to deploy an integrated ERP system had many moderate problems that coming together as they did, resulted in a tsunami problem that had a $160m impact on the company (Koch, 2007). Nike’s failure in a $400m project for supply chain and ERP systems resulted in $100m in lost orders and a 20% share-price fall (Koch, 2004).

RMIT University scrapped a new student administration computer system, the $47m cost lost—nearly 4 times its planned budget (Fearnside, 2003). It corrupted the university’s financial records and caused delays in administration and billing functions to students. Review processes described it as poorly implemented with little senior executive oversight. The university’s VC is quoted to have said “we all thought that this project was actually going OK” (Ketchell, 2003). The Victorian Education Department commissioned an Ultranet for use across all primary and secondary schools, intended to have 1.5 million users (teacher, students and parents) and to be a ubiquitous platform for education. It failed to work reliably and had very poor uptake. Its cost of $180m, some 300% over budget, was lost and wasted. Government auditors identified serious probity issues about the tender process that was central to continuing this unviable project (Preiss, 2014).
2.4.2 Scale of Failure

IS work-groups often fail to deliver the expected work outcomes to their businesses, with between 50 and 70% of IS projects failing (Standish_Group_International, 2013, Lyytinen, 1988, Gladden, 1982), along with the associated wastage of the enterprise’s money, time, commitment and social capital. This occurs despite these work-groups being staffed by people with the correct set of skills, competencies, knowledge and experience to achieve the assigned outcomes (Wastell and Newman, 1993, Wastell, 1996). IS failure and its wastage continue throughout the decades, insufficiently checked or abated by the rationalist technical solutions currently available to address them. An explanation for such failures may lie in the psycho-social fabric of the work-groups involved in building information systems; the dynamics and resistances that are a consequence of work tasks in this setting. These possibilities form part of the research questions (section 2.7.2) and are explored by the research.

IS failures are often spectacular, with massive cost blowouts, enormous time overruns and often vicious conflicts over reduced functional scope (Liu et al., 2009). These issues are highlighted in numerous project case studies: Mitev’s (1996) enquiry into the French rail network’s failed reservation system and Drummond (1996) and the failed Taurus share dealing system of the London Stock Exchange. The reasons for these failures are not resolved (Lyytinen, 1988), but clearly there remain deficiencies in the theories, methodologies and tools of the IS development domain (Hirschheim et al., 1995).

Failure of IS projects can be defined as the implemented systems not meeting the user expectations or the inability to create a working or functional systems (Ewusi-Mensah, 2003), to do this in accordance with the approved work-plan with respect to time, cost and risk. Failure is a matter of judgement. IS staff can perceive a software release as a success and describe it such, but the same release can be judged a failure by the business unit that funded the software and depended on it for new business functions (G arrity, 2001). IS projects are highly complex, technically and managerially. The intermeshing of multiple systems and their respective work-groups to support a business initiative makes the
whole IS department’s operation and organisation extremely exacting for
management. They demand high cognitive capacity, tolerance for high levels of
risk, uncertainty and political strife and the capacity to work with multiple
stakeholders who are often at odds with each other and have no homogenised
narrative with respect to their IS needs (Wastell, 1999).

As many as half of all IS projects fail (Dooley, 1998, Lyttinen, 1988). Gladden
(1982) suggests this failure rate may even be higher, with Hammer and Champy
(1985) claiming 70% of all IS change projects fail in some respect. The Standish
Group (2013) looked at 50,000 IS projects; they found that in 2004 71% failed, in
2012 61% failed, and in 2012 90% of large\textsuperscript{10} IS projects failed. This failure rate
has been shown in the literature for the past 35 years. It has been a driving force
in IS methodology evolution. Why is it so difficult to bring IS projects to
successful endings? New systems are regularly resisted and rejected by users,
why? These concerns are critical to commercial enterprises, and they are
extensively researched by universities (Wastell and Newman, 1993).

2.4.3 Reasons for the Chronic Failure

1. The research informing IS development comes from a narrow paradigmatic
front. The lack of progress in reducing IS failure rates is related to the way IS
failure has been researched (Orlikowski and Baroudi, 1991); the research
paradigm in nearly all cases was functionalist (rationalist). Typically
questionnaire based, they are constrained by their questions, that is by the
limits of the researchers’ knowledge and experience in IS development
practice. They cannot explain why things are as they are (Newman and
Robey, 1992, Tait and Vessey, 1988); the reasons that motivated the
behaviours that caused the failures.

\textsuperscript{10} Large projects were defined as having greater than USD10m labour cost over their development timeframe
2. There is significant complexity in IS development processes. It is not a straightforward engineering process going from a clear beginning to a clear ending. It is a complex process “characterised by conflict and ambiguity, by contradictions and crises, by flux and transformation” (Wastell and Newman, 1993, p.123).

The complexity of the human work-system to undertake this activity is enormous. The pressures and tensions on staff and managers, individuals and groups to succeed despite the technical and organisational scale and complexity are often overwhelming. It is entwined with disruptive and often emotionally charged enterprise processes—change, uncertainty, conflict; threatened vested interests and careers; win-lose power struggles and outright refusal to cooperate. Despite all this turmoil, most research considering these issues do not consider emotional factors (Dickson and Simmons, 1975, Markus, 1983), nor the psycho-social dimension. Wastell and Newman suggest that many of the individual and group behaviours evident in IS development can be “interpreted as arising from the trauma that is involved” (1993, p.124). Emotion does not always override reason, but as this research posits, this is often the case, adversely impacting software delivery.

3. The scale of IS projects and programs is frequently very large, with many tens of systems integrated by many hundreds of system interfaces. The scale of the technical environment, its corresponding development environment and the volumes of transactions and interactions the suite of systems is expected to support is vast. The demanding deadlines for, and numbers of changes to, these technical architectures and landscapes pose many confronting dilemmas for ISDP. Once an IS project has begun, business units struggle to resource it with business experts (Wastell and Newman, 1993). User involvement is a critical technical necessity to IS development success, yet users regularly complain about their involvement and attempt to minimise their participation. This lack of user involvement is frustrating and often harrowing to IS staff and it is a critical point of failure for IS projects (Klaus and Blanton, 2010, Newman and Noble, 1990).
The above three are central to IS failure, but there are many other factors: weak business ownership, immature technology, lack of user participation, poor communication, weak business case, poor planning, changing requirements, inexperienced staff or management, poor development practices and a lack of senior management support (Yardley, 2002). IS failures are attributed to deficiencies in social and organisational structures (Yeo, 2002, Lytinen and Hirschheim, 1987); communications, process and interaction patterns; intra-project factors and project methodology (Nelson, 2007); and incongruence between IS and enterprise elements such as functionality, data, usability, culture and control (Strong and Volkoff, 2010, Al-Ahmad et al., 2009). Yet many billions have been spent to address these culprits, through university and industry research and the deployment of technical, engineering, rationalist solutions in industry. Yet failure rates remain very high and seemingly unshiftable.

2.4.4 Wastage

When IS projects fail there can be significant wastage of an enterprise’s resources. Where projects are late and this has not been communicated to the business owners in a timely manner, the cost of training for the anticipated new products is wasted, typically having to be redone within weeks of final IS deployment. Expensive blocks of booked advertising, marketing the new product, will have to be sold or used for other things and rebooked (if that is possible) for when the systems are in place (Watkins, 1998). For leading edge products, competitors may get the lion’s share of product sales before a company’s product can relaunch. These are enormous indirect costs of IS failure and can completely devastate the business case and financial logic for investing in IS enhancements or new systems (Hirschheim et al., 1995).

With all IS failures, large and small, the credibility and sense of reliability of IS in an enterprise, and the industry in general, is damaged. The trust and confidence in the relationship between IS and the business is damaged. These build on the history of IS failure and business despair with IS that has gone on across the
years, with negative experience being built on. The result is limited trust and short tolerance towards IS problems.

IS failure is everyone’s concern because the wasted resources could be better used. Less wastage could mean lower prices to consumers, greater dividends to owners, more resources for the enterprise’s core purpose and increased international competitiveness. The costs of an enterprise’s IS wastage is carried by customers and owners, but none more so than its personnel, who despite the wastage and lost opportunity, have to still make the enterprise function.

2.5 Rationalist Solutions

The modern world has a strong inclination towards order and the eradication of uncertainty. Modernity set itself the impossible task of ensuring order and eradicating ambivalence. Modernity involves reflecting upon the order of the world, the human habitat and the human self. Consciousness is the quality of perceiving order in things (Bauman, 1991). The management of emotions became an important element in the need to ensure order in society. Modernity has an expectation to be able to know and classify everything. Whilst the modernist project discovers and defines the world, it can also be seen as a defence against ambiguity and uncertainty, and the uncomfortable feelings that are associated with not knowing. Rationalist IS development approaches are squarely in the modernist vein, prescribing to all situations what had become known or learned from a few. From a rationalist perspective, opinions and action are based on reason and knowledge rather than experience or emotion (Phillips, 2000).

Information systems development is richly catered for with an array of rational processes, procedures and tools that at face value seem to define very clear pathways for work and the reliable delivery of systems to clients. These rational technologies and engineering based methodologies have endeavoured to improve the quality of the delivery of information systems and their alignment to business needs. However, the benefits achieved by them to date are patchy, and
the overheads and constraints they impose are often significant (Kitchenham and Pfleeger, 1996, Simmons, 1996, Cybulski and Lukaitis, 2005).

2.5.1 Rationalist Tools and Processes

2.5.1.1 Tools

Computer Aided Software Engineering tools endeavour to automate many aspects of the IS development process and provide stable digital repositories of documentation and models for information systems and the architectures of suites of systems (Minium, 1989). They support recognised software development techniques, information repository functions, project management and quality assurance processes across the full SDLC\(^{11}\) (Yardley, 2002). Some generate from models the executable code of the information system. They are quite prescriptive and enforce software engineering rules with limited latitude.

2.5.1.2 Methodologies

There are many methodologies for software development as discussed earlier, but also methodologies for project management of the software development process and for system complexity assessment and change size estimation, such as function point counting, estimating by comparison, COCOMO\(^{12}\) and SPQR\(^{13}\) (Yardley, 2002, Hirschheim et al., 1995).

2.5.1.3 Frameworks

The Capability Maturity Model (CMM) is a framework that assesses the maturity of software processes within an enterprise. It assesses enterprises against five increasing levels of maturity: Initial, Repeatable, Defined, Managed and Optimising. It has become a de-facto standard for assessing software

\(^{11}\) SDLC – system development life cycle

\(^{12}\) COCOMO – COstructive COst MOdel

\(^{13}\) SPQR – Software Productivity, Quality and Reliability
improvement. It is very comprehensive, prescriptive and expensive to put in place (Paulk et al., 1994, Yardley, 2002).

Total Quality Management (TQM) and the ISO9001 standard are frameworks for ensuring software quality.

2.5.2 Mechanistic Frameworks

The classical rational-technical view of IS development offered across the IS literature distorts and misleads with an incomplete understanding of IS development complexity and failure. It is not that it is wrong, but that it is incomplete; it does not explain the whole picture and experience of IS development and its outcomes. IS development is a complicated social phenomenon with almost chronic uncertainty and, unsurprisingly, conflict (Wastell and Newman, 1993). What is missing is the discourse about the causes and impacts of psycho-social disruption within the IS department and its consequences for IS performance, failure and wastage.

It cannot be rendered adequately by the simple standardised prescriptions proffered by rationalist thought for how IS work should uniformly be done, despite extreme differences across enterprises, timeframes, social capital and tension, budget, purpose, technology, people and organisation, geography, language, and management. Rationalist, mechanistic frameworks for IS development lack a reflective and adaptive capacity to be responsive to the inevitable emergent peculiarities of each unique software development situation. Reminder calls for IS projects to get top management or comprehensive user involvement are of value. But what is more important is to understand what is occurring in the IS work-system, what dynamics and behaviours disrupt its ability to function. There is a need for the IS work-system to be reflexive, cooperative in sense-making with its users and to respond to the unique dilemmas that emerge during each iteration of IS development.
Within this rational process of control, there is only one prescription to address situations where work-groups are stuck and unable to progress their work-tasks. The direction from the methodologies is to do more of the same, to simply get back to the task and push on with it (Smith, 2001)—to redouble the efforts; return to the technical task they are stuck on. This happens to work-groups that are very experienced in the task they are doing and have become stuck on (Yardley, 2002). This command and control style of direction shows little understanding about why such work-groups have become stuck. Suggestions to improve trust, improve communications, involve management, find leadership (Yardley, 2002) as ways to address the process blockage involve lengthy lead-times and show little understanding of the basal cause for why a work-group of capable, skilled and experienced staff becomes stuck on familiar tasks and ceases to function for a period of time. This research explores the psycho-social basis for such dysfunction in IS work-groups.

The rationalist paradigm has provided excellent tools and frameworks for IS work. They have enabled IS development to become the rich, complex beast it is today. They are central to current IS development success; without them the development process would be chaos and delivery of complex information systems would be unachievable. But they are not the whole story and there are flaws. It is possible to over-engineer IS work-practices, even to fetishise them (Wastell, 1996), and use them unproductively as a defence against uncertainty. There are clearly limits to what the rationalist perspective alone can provide. If this was not so, 70% of projects would not end in some form of failure. In some situations, more imposed controls made the performance issues worse. This research explores an interpretivist view into the disruptive dynamics produced by work-groups and what this understanding may offer to enhance the IS engineering structures currently available.

### 2.6 Systems Psychodynamics

Systems psychodynamics has been used in other domains to explore ongoing performance and failure problems when existing technical solutions reached
their limits (Menzies, 1970). It was not the only source of insight, but it did make positive contributions. Systems psychodynamics may provide some explanations and answers to address aspects of the dilemmas and flaws inherent in software development—answers unavailable through the rationalist perspective. It offers a conceptual space that remains comparatively underexplored (Wastell, 1999). This study follows in this tradition.

2.6.1 Description

Systems psychodynamics is a field of applied knowledge. The framework evolved in the 1950s and 1960s at the Tavistock Institute of Human Relations in the UK and at the A.K. Rice Institute in the US. It developed from professional social scientists taking up applied researcher roles in enterprises (Miller, 1997). In these roles, social scientists were undertaking the task of understanding the pressures and tensions that emerge from people interdependently working on tasks (Newton and Goodman, 2009). It seeks to understand and address dilemmas, challenges and discontents presented by role-holders, groups and enterprises through making sense of the unconscious dynamics that emerge as people in groups cope with workplace and task-related anxiety.

The systems psychodynamics framework brings together three theoretical domains: Psychoanalysis, Group Relations, and Systems Theory. It assumes that people create enterprises that satisfy both personal and task needs. Hirschhorn (1988) posits that conflict often exists between these motives and can promote emotional structures that unconsciously bind participants in underproductive ways that manifest in how the work is envisaged, organised, and administered, creating dynamics that permeate working relationships and shape interactions at an individual, group and inter-group level (Newton and Goodman, 2009). The discipline considers the existence of primitive anxieties and the associated system forms of defence against such anxieties that may obstruct task performance and the ability of groups and enterprises to learn and change (Gould et al., 2001). It has a major basis in the psychoanalytic theories of Freud, Klein, Bion, Jaques and Menzies.
Systems psychodynamics also provides a model for enterprise and work-system engagement; the method’s intent is in facilitating a process aimed at revealing the unconscious system processes and dynamics, and where possible ameliorating these (Lawrence, 1994). It supports a work-system to ‘come to know’ that which is presently ‘out of awareness’, so that it may engage and work with this untapped resource and affect change and growth (Lawrence, 1994, Gilmore and Krantz, 1985). As Gould et al. suggest, this type of work in enterprises seeks to “enlarg[e] the organization’s capacity to develop task appropriate adaptations that include a more rational distribution of authority, and clearer role and boundary definitions, together with their management and regulation” (Gould et al., 2001, p.4).

2.6.2 Very Large Case Studies

There are several very large case studies of enterprises using system psychodynamic theory to analyse the setting and identify possible actions to address the problems affecting the work-system’s task performance.

These are the Menzies (1970) study into the nursing practices in a large teaching hospital and the problem of poor nurse retention rates, Miller and Rice’s studies into textile manufacturing and the management of such enterprises and Trist and Bamforth’s (1951) study into underground coal mining and the negative impacts of new technology on mine performance. All these studies considered the higher-order levels of the system (the next outward layer of the onion) and the effects this had on the work-system being studied (de Board, 1978).

2.6.3 Small Case Studies

There are countless smaller published case studies (research and action research consultancies) of enterprises, or divisions of an enterprise, using system psychodynamic theory for the analysis and for identifying possible actions to mitigate the impacts on work. These studies have occurred in areas such as
public legal service, tertiary health provision, primary health care, prisons, professional sports teams, schools, university programs, the advertising industry, and many others (Long, 2013, Western, 2013, de Board, 1978, Obholzer and Roberts, 1994).

All had system psychodynamics as a common thread informing i. the approach to the study and its methods, and ii. the use of psychoanalytic and systems theory to the sense-making, analysis, interpretation and the shaping of interventions.

It is notable that from the respective enquirers’ perspectives, the studies found some new information about their work-systems. Some action research-based studies had the task of acting on these new insights and affecting change in the enterprise. Not all the interventions had success (Nossal, 2007), for a broad range of reasons. But many were by the accounts of their authors, altering often long endured dysfunctions and fractures in the fabric of an enterprise’s work life that had not been solved through other structurally oriented processes of intervention.

### 2.7 Research Goals

This section draws out gaps in the research literature on IS failure and poses the research questions that sought to explore a new thread in reducing the failure rate of IS development.

#### 2.7.1 Gaps in the Research Literature

In reviewing the research literature on IS development failure, there appear two gaps. Firstly, there is limited research looking at the IS department as a whole regarding development failure. Departmental factors are cited in studies of IS project failures, but they are rarely elaborated on. This may be due to the required scope being beyond the researchers’ resources. The research underpinning IS performance frameworks such as CMM or ISO90001 consider the IS department as well as project work-groups. They are prescriptive about
the structures and practices necessary to improve IS performance. Their rational engineering orientation and expectations make no concession to resistance or the varied and often contradictory motivations within an IS department. Secondly, nearly all the research is rationalist in nature, as Orlikowski and Baroudi (1991) have described. Solutions are imposed from the outside with little valuing of the experience from within the existing IS department. There is very limited non-functionalist IS research; a drop compared to the ocean of functionalist research. Interpretivist IS research has had almost no impact on IS practice in industry.

Wastell (1996, Wastell and Newman, 1993) has mapped applied psychoanalytic concepts to the IS development space, showing that these concepts can inform understanding and the practice of IS development. Walsham (1993) has explored Morgan’s (2006) metaphor of the psychic prison (a psychoanalytic theme) to the IS setting. More broadly, Lytyinen (1992), in his analysis of IS processes and projects, has recognised the contribution psychoanalysis makes as a critical theory to the analysis of this domain. The benefits of and need for reflexivity and openness (characteristics of psychoanalytically informed discourse and practice) by IS staff, groups and departments interacting with the multiple business user realities, is taken up in IS learning literature (Lytyinen and Robey, 1999), but it is mainly critical of the absence or dysfunction of such capacity (Wastell, 1999).

Very little research acknowledges the presence of emotions in IS development work-systems (Markus, 1983, Dickson and Simmons, 1975) at the level of the individual, even less that considers its presence and impacts on work-groups (Wastell and Newman, 1993). The exact nature of the emotions are less important than the part they play in psychological defences against systemic-anxiety in work-groups (Gabriel, 1999), and the impacts this has on IS development performance and failure.
2.7.2 Research Questions

Enterprise outcomes are created by work-groups, not individuals. Work-groups carry out the enterprise’s work-tasks, providing resilience and breadth. The dynamics of the work-groups underpin how fully they will engage with their tasks, affecting the work-products of those tasks (Hirschhorn, 1988). The dynamics of IS work-groups and their interactions with business work-groups influence the delivery of information systems and the systems’ alignment to business operations. Improvements in the intra- and inter-group dynamics of these work-groups are likely to improve IS performance and the timely provision of systems aligned to business needs.

The primary research question is:

*Do the unconscious dynamics of work-groups affect the process of information system development?*

This pertains to all work-groups involved in the ISD process—IS work-groups, IS management, business sponsor groups, business user groups and business planning groups.

A working hypothesis of the research is:

*Interactions between the groups involved in developing information systems, create within the work-system dynamics that adversely affect the development and delivery of information systems.*

Some of the dynamics are conscious to the work-system or its management and thus known and available to be thought about and worked with. Some are below the level of awareness (unconscious) and are not readily available to be managed. They remain unattended to and able to negatively impact work-group performance and behaviour until they cause sufficiently harmful symptoms to overtly come to management's attention.

A further question arises:

*Are there unconscious dynamics that affect work-groups involved in IS development and are these work-groups affected by anxiety, leading them to exhibit defensive behaviours in their work setting?*
These questions form the main focus of the research and seek to:

1. identify some of the psychodynamic causes of systemic-anxiety in IS work-systems
2. show the effects of systemic-anxiety on IS development
3. diagnose interventions to mitigate or ameliorate the systemic-anxieties

This leads to further questions:

*Are rationalist engineering processes by themselves sufficient to control and manage large complex IS developments to successful conclusions?*

*With an understanding of the unconscious dynamics affecting the work-groups of an IS work-system, can this understanding be applied to mitigate these dynamics and improve the information system development process?*

This research takes the view that the issues and problems of IS department performance are in part a consequence of the psychological pressures and tensions associated with IS development, but that these in turn are often influenced by broader systemic dilemmas from across the enterprise due to its dynamic, turbulent and unstable environment. The experiences these conditions evoke in work-groups and individuals rarely have any chance to be adequately processed, leaving a residue of negative influences on behaviour and performance. Unsurprisingly, the behaviour of groups and individuals is often organisationally problematic; being parochial, self-interested, anti-task, conflicted or aggressive.

Systems psychodynamics was selected as the lens for this research; it has offered significant insights into performance dilemmas in other technical areas of work (Gabriel, 1999, de Board, 1978). Systems psychodynamics inquiry into the dynamics of IS work-groups and the management of disruptive dynamics and behaviour, may offer new understanding about the current failures and limitations of IS development and how it can be improved.
2.8 Summation

The rationalist, engineering paradigm of software development has made enormous contributions to order and control in the activities of and management of IS development, without which there would be chaos. Despite this, the industry remains plagued by extraordinary IS failures and a backdrop of 50-70% of all IS initiatives failing in some significant way. The problems remain, but perhaps their causes are not yet clear. Given the saturated efforts of research and development of IS processes from the rationalist perspective, some causes of chronic system failure may only be observable from outside this rationalist paradigm. This research has opted to use the interpretivist paradigm to explore and understand aspects of the problem of IS failure as stated here. In particular, to look at the effects the conscious and unconscious dynamics of work-groups may have on the process of IS development and if it is possible to intervene in these psycho-social dynamics of the IS work-system to disrupt failure and improve IS development success. The research considers an overall view—incorporating rationalist development methods with psycho-social approaches may reduce IS project failure rates. The following chapter works through the theoretical underpinnings of systems psychodynamics, the theoretical domain that explains the psycho-social dynamics of groups, communities and enterprises.
Chapter 3  Conceptual Framework

This chapter reviews the literature for the domain of systems psychodynamics and the aspects of systems and psychoanalytic theories that are at its foundation. The systems psychodynamic approach has been adopted for this research to explore the persistent failures in implementing IT systems in large enterprises, why such enterprises are dysfunctional and what can be done to improve the situation. This approach is markedly different from the rationalist engineering approach to addressing these complex questions of dysfunction in large, technical work systems such as an IS department in a large enterprise.

Systems psychodynamics integrates systems theory with psychoanalytic theory. It looks at the unconscious dynamics within a human social system as this system interacts with its world. The human social system considered by systems psychodynamics can be a pair, a group, a group of groups, an enterprise, a community, or society. In many respects it is very similar to the enquiry work of psychoanalysis, but with the object of the enquiry being a larger human system rather than an individual. Systems psychodynamics uses the group as the principal object of study; and where the individual is the object of study it is not as an atom, but from the perspective of a role or member of a group within the work-system.

Miller (1997) provides a schema that highlights the conceptual terrain and the founding proponents of the elements of this field; a derivative follows in Figure 3.1 below.
This chapter will describe and discuss the concepts developed by psychoanalysis that are used in systems psychodynamics because they are critical to understanding unconscious group dynamics and the disruption they cause to work. This begins with Freud’s (1911a) conception of psychic structures and the unconscious, drives and neurosis, anxiety and defences, and transference and counter-transference. Klein’s (1946) work on integrative and fragmentary states of mind, projective identification and splitting extended Freud’s theory. Through his work on individual psychoanalysis and the study of groups, Bion (1961, 1965) developed his concepts of containment, thinking processes, and basic assumption group behaviour, further developing psychoanalytic theory. These ideas underpin Jaques’ (1955) and Menzies’ (1970) social defence theory. Finally, socio-technical systems theory (Miller and Rice, 1967) is discussed; a systemic view of an enterprise as a system with a technical dimension of activities done by work-groups and roles that are organised and interact with

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14 It does not try to explain the whole of psychoanalytic theory
each other, and the sentient system where the emotional life of the enterprise gets processed in some form.

The first two sections of this chapter endeavour to provide the foundational concepts that underpin the above mentioned central theories of group psychodynamics. These foundational concepts have been developed over 120 years and have stood the rigours of intense application and scrutiny over that time in individual clinical practice and for the past 60 years in group settings, both clinical and organisational. Looking back along the lineage of thinking and thinkers that have emerged and evolved the domain of system psychodynamics theory, it begins with Freud.

### 3.1 Psychoanalytic Concepts

#### 3.1.1 Freud’s contribution

Freud, from the late 19th century to the 1930s, contributed the first comprehensive psychology of the individual. He always saw the individual located within an environment that influenced their psychological make up. He made links to social and group psychology (Freud, 1921), enhancing the earlier explorations of groups made by Le Bon (1895) and McDougall (1920). He called the practice or treatment of individuals using this comprehensive psychology, ‘psycho-analysis’. His work is foundational for all forms of psychoanalytic thinking and endeavour since—including the systems psychodynamic approach used in this research. Psycho-analysis has been extended beyond the individual human system and applied to diverse realms, including art (Kris, 1952, Rose, 1996), cinema (Sabbadini, 2007), music (Nagel, 2008), religion (Reed, 1978), and even terrorism (Varvin and Volkan, 2005).

Freud described psychoanalysis as a new science built on empirical data (Freud, 2005, Gabriel, 1999). Others have built on his concepts and expanded the theoretical framework— theorists and practitioners such as Klein, Bion, Anna Freud, Bowlby, Winnicott, Lacan, Ogden, Bollas, Menzies, Kristeva, and Benjamin to offer an inexhaustive list. There have also been many serious critics of
psychoanalysis, of both its concepts and its practice (Kramer, 2006). The credibility of data Freud used to develop his ideas has been heavily questioned. Many of his concepts and ideas were and still are met with criticism or outrage (Dufresne, 2007).

Many of Freud’s original concepts are central to systems psychodynamics theory and are drawn upon in this study, including drives, the unconscious, reality testing, anxiety, neurosis and psychosis, psychology of groups, psychoanalytic method, defence mechanisms, and transference and counter-transference.

3.1.1.1 Drives

Freud was firstly a neurobiologist; his views were directed to physiology. He came to his study of psychic processes through treating nervous conditions in medical patients as a practicing neurologist. He began with the physiology of nerves, the senses and the instinctual drives of the physical body and believed psychic processes were the sources of instinctual drives (Freud, 2005). Freud’s psycho-analysis is a drive-psychology (Gabriel, 1999). He suggested that the psyche had to contend with a fundamental dualism between two opposing forces: self-preservation versus species preservation, ego instinct versus sexual instinct, life instinct versus death instinct.

Freud tells us that “the forces which drive the mental apparatus into activity are produced in the bodily organs as an expression of the major somatic needs”(Freud, 1926, 200). He calls these bodily needs ’Triebé'; instincts or drives. Satisfaction is the extinguishment of these bodily needs. “A lowering of the tension of need is felt by our organ of consciousness as pleasurable; an increase ... as unpleasure” (Freud, 1926, 200). He saw the core activity of the mental apparatus was to regulate the oscillations of feelings of pleasure and unpleasure.

Conflicts erupt within individuals as drives, instincts and wishes seek expression and satisfaction in the world which are not able to be reconciled with the external world’s expectations and limitations. Those aspects of the individual’s experience that cannot be realised in the outer world and that cannot be reconciled within their conscious mind are repressed (Freud, 1915). Repression
is "a form of mental defence against threatening psychic phenomena" (Schwartz, 1999, 6). Repressed ideas take refuge in the unconscious yet still seek expression. It is a psychic process able to exclude other psychic processes or ideas from consciousness (Freud, 2005).

3.1.1.2 **The Unconscious**

The unconscious is the most central discovery and contribution of Freud’s work (Laplanche and Pontalis, 1973). It refers to the fact that most mental content is not accessible to reflective self-awareness; it is never fully accessible. It is where the fulfilment of drives and wishes begins, and it is where actively repressed psychic material gets located (Akhtar, 2009). Unconscious ideas and desires cannot be directly accessed or modified through evidence or logic (Gabriel, 1999). They cannot be discussed freely because they are kept repressed by psychic processes. Whilst it is not possible for the unconscious to become conscious, one’s experience of the unconscious can become conscious (Bion, 1965).

The unconscious refers to a quality of experience and to a mental ‘system’ or entity. The former is experiences that are outside our direct awareness, while the latter is a conceptual ‘entity’ that is dynamic and interacts with the conscious or the aware aspect of mind. We have thoughts, feelings and motivations of which we are unaware but which nonetheless have a powerful impact in determining the nature of our observable thoughts, feelings and behaviour (Ogden, 1986). In the unconscious, dynamic processes produce mental contents which remain largely below the level of awareness (Sandler et al., 1997). Many of these seek some form of expression through our actions. The notion of the unconscious assumes that much of the human behaviour is determined not by the conscious thoughts but by the unconscious phantasies, motives and anxieties. All human activities are imbued with unconscious meaning (Skogstad, 2004). Eisold (2011, 2009) declares the unconscious of today’s world to be a broad concept, informing all dimensions of individual and collective life.
Freud’s first construction of the individual’s mental apparatus consisted of a simple division of psychic life into three clearly demarcated systems of the conscious, preconscious and unconscious—the topographical model of psychic life (Sandler et al., 1997, Gabriel, 1999, Freud, 2005). Anna Freud (2005, 435) describes how in the 1920s Sigmund Freud’s conception of “the system unconscious ... seemed to contain more than the repressed (wishes and desires) that Freud had assigned to it”. This led to a reworking of the model to accommodate the contradictory observations he had been accumulating through his analytic treatment of patients.

This new model, the structural model of psychic life (Sandler et al., 1997) consisted of three agencies: the ego, the id and the super-ego. The ego’s task is to register the outer world’s conditions, requirements and dangers and to take them into consideration. The id’s task is the blind search for satisfaction of the drives, a task that is largely incompatible with the ego’s task. “In the id there are no conflicts; contradictions and antitheses persist side by side in it unconcernedly” (Freud, 1926, 196). The super-ego is a composition of demands for drive restriction and socialisation that have been accumulated from childhood authorities (e.g. parents, teachers) (Freud, 2005). These concepts allow contradictions within a person’s life. Inner disharmonies are unavoidable for all people (Freud, 2005).

The inner collisions and conflicts of psychic life were no longer just between conscious and unconscious elements. They were between the agencies that constitute the structural model. Freud did not abandon his old classification of conscious/unconscious with the introduction of the structural model (Freud, 2005).

It is the interactions between these structural agencies of the psyche that leads to the dynamic aspect of mental life (Freud, 2005). Thus, one can never know with any certainty how one (or another) will act in advance; action being the composite balance of the interplay between these (partly unconscious) agencies in the moment of the action. To Freud, the self was not an abstract entity where thinking and experience coexist, but rather a dynamic struggle between
unrelenting individual drives and socio-cultural expectations; an unsettled, ongoing compromise (Gabriel, 1999, Rieff, 1959). The ego is the place of struggle with the resultant compromises to the individual’s conscious expression and experience. These compromises provoke emotions and anxiety in the individual and in the group. The unconscious can never actually become conscious, only our experiences of it can be conscious (Bion, 1965). Raw unconscious experience must be transformed so that it becomes useful knowledge.

3.1.1.3 Reality Testing

Freud (1911a) introduced the notion of ‘reality testing’ to the psychoanalytic discourse. It refers to a function of the ego that distinguishes thought from perception; the inner world from external reality. This capacity develops over time. It allows the distinguishing of phantasy from reality regardless of the influences of drives, feelings or anxiety. It allows individuals to recognise the impact their inner biases have on their perception of the external world and relationships (Akhtar, 2009). It enables discrimination between how the external world actually is and how it is felt to be. This capacity is as important for groups and enterprises as it is for individuals, enabling them the possibility of engaging with their world as it is rather than how it is felt to be.

3.1.1.4 Anxiety

Anxiety influences individual behaviour, it is also central to the behaviour of groups and their capacity to function (Hoggett, 2015, Krantz, 1998, Bion, 1961). In order to appreciate the notion of anxiety in social systems, it is helpful to work forward from Freud’s view of the part anxiety plays in the psychology of the individual human system.

Anxiety refers to a tension, an unpleasant sense that something dangerous is about to happen. It mobilises the individual’s defences, which endeavour to bind the tension and thus shield the individual from the anxiety or threat (Gabriel, 1999). The tension that remains “unbound by the defence is consciously
experienced as anxiety” (Akhtar, 2009, p. 24) often with physiological symptoms ( clammy hands, excitation, sweating). The defence is always unconscious and is used by the individual’s mental apparatus to absorb and redirect this tension. It also has a secondary effect of distorting the behaviour of the individual, as they now interact with external reality through the mediation of the defence but shielded by it from the full onslaught of the anxiety. This so-called ‘distorted’ behaviour is the patient’s symptom (Ogden, 1986). To an observer it is what can be seen of the defence and the associated causal anxiety. Behaviour is the tip of this iceberg.

Anxiety is often experienced as an intense worry of the indefinite; of something we may struggle to explain or locate in space and time. It is the anticipation of a vague or unknown threat. Whilst there is no integrated theory of anxiety in psychoanalysis, it is a central feature of many core psychological processes. Anxiety can be a signal for defensive processes to be engaged by the unconscious or that defensive processes have failed to address the perceived tension or threat (Gabriel, 1999).

In his 1844 text The Concept of Anxiety, Kierkegaard described anxiety as a field of possibility, the terrible as well as the joyful [in (Chamberlain and Ree, 2001)]. It was a state of infinite possibilities, not something to be fearful of; similar to Bion’s conception of truth or O (ultimate reality) (Lipgar and Pines, 2003a). For Kierkegaard, when anxiety was seen as limited or finite possibilities, it was experienced as withdrawal into concern and despair; akin to the psychoanalytic conception of anxiety.

Freud made a clear distinction between fear (which is associated with an identifiable object and is finite) and anxiety (which is far less focused and can extend for long periods of time). He believed that “anxiety relates to the state [of the subject] and disregards the object whilst fear draws attention precisely to the object” (Freud, 1917, 443). Anxiety is the subjective state we are put into by perceiving the effect of unmanageable tensions that generate anxiety.
Freud notes two main categories of anxiety. The first, realistic anxiety (or signal anxiety) “is a reaction to the perception of an external danger” (Freud, 1917, 441). It is an expression of self-preservation with anxiety, the signal to the threat, being transformed into action such as fight or flight. The second is neurotic anxiety, it involves feelings that are disproportionate to the magnitude of threat and that result in inhibitions or symptom formation (Gabriel, 1999). Realistic anxiety is an inevitable reaction to perceived impending danger. Neurotic anxiety is about anticipating possible threats, actual “danger plays little or no part” (Freud, 1917, 449). We are usually aware of the feeling of anxiety, but not aware of the specific sources or re-actions.

There are three forms of neurotic anxiety: expectant anxiety, anxiety bound to phobias, and anxiety in hysteria—a form “where the anxiety has completely lost from view the threatening danger” (Freud, 1933, 108). Expectant anxiety or general apprehensiveness is closely dependent on the satisfaction, often unconscious, of a wish with the adequate discharge of the associated libidinal energy. That is, the satisfaction of the wish as distinct from its frustration. Where frustration occurs, “the libidinal excitation vanishes and anxiety appears in its place” (Freud, 1917, 450).

Thus, anxiety creates an unsettled, or even disturbed, state of mind. It can be based on realistic situations or constructions of the inner world quite independent of external reality. LeDoux (2007) in his study of fear found that anxiety triggers further anxiety, creating an amplification of anxiety and emotion. Anxiety has its genesis in the unmanageable feelings that are evoked as individuals interact in their world as it is or as they imagine it to be.

3.1.1.5 Neurosis and Psychosis

Frustration of a drive or wish provokes the psychic conflict that may give rise to neurosis or psychosis. Freud described neurosis as intra-psychic conflict. It is conflict between the ego and its id, resulting in the repression of the drive. The ego attempts to suppress certain wishes of the id that it has been unable to
satisfy through interaction with the external world. Because the repressed wish continues to force itself on the mind, the outcome of the conflict is only a compromise, an incomplete resolution. The ego is isolated from that part of the id it repressed (Freud, 1926) and unable to exert any control over it. With its wish unsatisfied, the id will seek alternative expression of its wish. The repressed material struggles against the ego’s defence and through unconscious paths creates an alternative representation, the symptom (Freud, 1924). Reality is ignored or avoided, and the unconscious wish has some expression.

Psychosis is “a disturbance in the relations between the ego and the external world” (Freud, 1924, 150). The external world is not accurately perceived and reality is replaced or disavowed. The ego creates “a new external and internal world ... this new world is constructed in accordance with the id’s wishful impulses ... the motive of this dissociation from the external world is some very serious frustration by reality of a wish”(Freud, 1924, 151). The outcome of the conflict is only a compromise, being unable to provide a complete resolution. Neither individuals nor groups want to be driven mad by the pressures of their experience, they want the contagion to such possible madness contained so as to avoid the intense persecutory feelings and doubt (Phillips, 2012).

The frameworks of neurosis and psychosis are important because they are enacted in group and enterprise level behaviours. They are states of mind or patterns that groups use in responding to their environment. The framework of neurosis has relevance to Jaques’ (1955) conception of social defence and to Bion’s (1961) concept of valency (discussed later). In Jaques’ conception of social defence people unconsciously join enterprises that broadly match their individual patterns of neuroses; they join collective patterns that meet their psychological needs.

Psychosis is significant because it may have an analogue in the work-system of an enterprise. Powerful groups in work-systems often try to replace reality within the confines of their own thinking and then act from this phantasy of the external world rather than deal with the external world as it is (Dalglish and Long, 2006). This is a similar mechanism to individual psychosis.
3.1.1.6  

**Psychology of Groups**

Freud (1921) wrote about group psychology, highlighting the importance of leaders to the group’s psychological functioning. He described group members’ shared identification with the leader. Their idealisation of the leader was central to group formation and maintenance. This built on his earlier related work on the primal father and the primal horde (Freud, 1913). In this approach, he endeavoured to resolve some of the weaknesses in the earlier explorations of group behaviour by Le Bon (1895) and McDougall (1920).

Le Bon held the view that a group has a ‘collective mind’ and that this dominates the thinking and identity of its individual members; that as a result of this, members caught in the anonymity of the collective mind will participate in acts they would never countenance as individuals. McDougall identified organisation and common purpose as required for a gathering of people to become a group. He believed that ‘emotional contagions’ influenced the group towards or away from its purpose (de Board, 1978) and that unconscious and emotional forces dominate reason in groups (Gabriel, 1999). Freud recognised that groups have intense emotions that can be contagious, with both moral and critical constraints likely to be lowered. “There is no doubt that something exists in us which, when we become aware of signs of an emotion in someone else, tends to make us fall into the same emotion” (Freud, 1921, 117).

Whilst Freud’s contributions of identification with, and idealisation of, the leader are important mechanisms that create and maintain a group, they do not account for all group behaviour nor do they address the ways groups respond to the dynamics of interacting with the environment in pursuit of a task. Later sections discuss how Bion extends this into a comprehensive theory of the psychology of groups.
3.1.1.7 Psychoanalytic Method

Freud interpreted the psychic terrain of his analysands\textsuperscript{15} using the data of the analysands’ descriptions of their dreams, the free associations spoken during the analytic session, and the analyst’s own counter-transference. It is the interpretation of this data that is critical to the treatment. In his treatise on psychoanalysis, Paul Ricoeur recognised that “to interpret is to understand a double meaning” (1970, 8). Actions, behaviour, symptoms—the conscious phenomena of the mind—are often a compromise between unconscious wishes too troublesome for conscious expression and the processes of repression aimed to censor them. Interpretation is a process of looking behind literal meanings for broader or symbolic meaning: the signs of the wider picture. The analyst’s expertise involves selecting which aspects of the mental terrain (the analysand’s meanings) to attend to in order to form this new sense-making (Schwartz, 1999), and secondly, when to make the interpretation to the analysand so it can be useful to them (Symington and Symington, 1996). The analyst may ‘know’ an important new meaning (formed from the analysand’s self-narrative) and yet may also judge that at this point in time the analysand is not ready to hear, tolerate and work with it. That is, the interpretation is likely to be defended against by the analysand.

3.1.1.8 Defence Mechanisms

Freud’s references to defences were drawn together and categorised in 1936 by his daughter Anna, also a practicing analyst and psychoanalytic theorist. She proposed the term ‘defensive mechanisms’ to describe the category of mental processes used to protect the ego from anxiety (Freud, 1936). It had become clear that repression was not the only protective process. These others were regression, reaction-formation, projection, introjection, denial, isolation and sublimation (Gabriel, 1999, de Board, 1978, Freud, 1936). This list has been further extended from the clinical observations of subsequent theorists (Akhtar,

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\textsuperscript{15} patient or client of the psychoanalyst or ‘analyst’
2009), splitting, projective identification. The type of defence mobilised depends on the type of psychic danger provoking the need for ego defence and the stage of ego development.

The general characteristics of defences are that: all operate unconsciously, they aim to reduce anxiety, all have their origins in childhood, some are associated with development, and some play a role in normal psychic formation such as the process of introjection. Defences are a normal human process; they work to protect the individual and support survival. They are not intrinsically bad. The defence mechanisms of projection, introjection, regression and denial require explanation:

**Projection** is an unconscious defence mechanism (Freud, 1911b) which involves the disownment of an unacceptable impulse or idea (and the feelings associated with it) and the attribution of this on to an external object, person, group or thing. This can involve the depositing into others of a currently experienced affect, such that the unconscious affect or aim, ‘I feel angry with you’ or ‘I want to hurt you’, become experienced as ‘you are angry with me’ or ‘you want to hurt me’ (Akhtar, 2009). Ogden describes it as “an effort in phantasy to remove an internal danger by locating the danger outside of oneself” (1986, 45). It is evident when work-groups blame another group for a failure whilst ignoring their own contributions to it.

**Introjection** enables the separation of a valued external object from a threatening one by locating the valued object within one’s own psychic structures, thus protecting it (Ogden, 1986). Members of a group identify with their group (or family) through introjection. The positive aspect of the group’s identity or leader are taken into the group member’s psychic structures by introjection (de Board, 1978).

**Repression** involves keeping some aspects of one’s mental content out of conscious awareness. It was Freud’s (1893, 1915) first mentioned defence mechanism, but with the growing awareness of other distinct defences it became labelled repression. **Regression** involves more primitive methods of
expression taking over from the more advanced ones representative of the current state of development (Freud, 1900). It involves diminished impulse control and lower tolerance for anxiety; essentially setting the person back to an earlier state of development, with its more limited psychic resources and awareness of reality (Akhtar, 2009). An example would be when a group holds back its aggressive thoughts towards another group that has blamed it for a problem, for fear of reprisal.

**Denial** involves the unconscious reduction of psychic distress through separating oneself from the threatening objects by emotionally treating the object as if it were annihilated (Ogden, 1986), by removing one’s awareness of the painful external reality causing the anxiety (Akhtar, 2009, de Board, 1978). It can be seen in a group persisting in the notion that nothing is wrong with its work-product, despite legitimate criticisms received in a review meeting.

In their simplest forms, defence mechanisms can be things people are distracted by. At their most complex they are elaborate patterns of behaviour and re-imaging of the world. Human systems, individual and group, often do not know why they experience, feel, or think the things they do. They disguise meanings and motivations to protect themselves from pain and vulnerability.

Identifying possible defensive behaviour by individuals and by groups is important because they are indicators of anxiety sufficiently high and disturbing to the human-system to cause it to protect itself through the defence. In a defended state, the human-system will not be engaging squarely with its world or task, but rather evasively, oriented towards survival. For groups, it is a strong indicator of non-task, disrupted behaviour.

### 3.1.1.9 Transference and Counter-transference

These terms have their origin in the clinical method and practice of psychoanalysis. They too are defences against anxiety, but they also represent a primitive communication of how one feels, by attempting to provoke similar feelings in the other person.
In transference, the analysand transfers onto the analyst their fears, hates and loves that until then have been repressed in the analysand’s unconscious (de Board, 1978). It is a specialised form of projection. In work-systems, transference is the phenomenon of feelings and attitudes being unconsiously transferred from the client onto the consultant. It is a way of evacuating the intolerable feelings and anxiety from the inner world of the client.

Freud described counter-transference as the feelings generated in the analyst “as a result of the patient’s influence on his unconscious” (1910, 144). It is the unconscious reaction to what the analysand has transferred from their past onto the analyst in the present moment (Akhtar, 2009, Gabriel, 1999). Similar processes occur in work-system role relations: consultant–client, manager–staff member and researcher–informant (Alderfer, 1987).

“Transference misplaces the past in the present” (Richo, 2008, 10). It is a displacement where past experiences and transactions are re-experienced with other people or groups and the present interaction is not framed by the current moment but rather by the past. In transference situations, we are unwitting actors in another’s transference drama or they are actors in ours. It is a displacement onto others of the feelings and expectations that rightly belong to significant others (individual or group) from one’s past. Other people, as objects of the transference, are treated as though they are playing the complementary role needed for the subject’s projected relationship (Skogstad, 2004). It is an interpersonal process whereby selected old scenarios are perpetuated, where the past is resurrected.

De Mare (1974), extends the concept of transference to the notion of transposition. He describes transposition as the way a person perceives a therapist “in the clinical setting as like his /sic/ father in the domestic setting” (Hopper, 2006, 553), or that a team in a work setting is like his family or is like his first grade class. Entire situations from the past are unconsiously transposed into the present onto similar broad situations. The setting or context is transferred from another past space to the present setting or situation. De Mare noted that certain feelings and dynamics flow from this transposition of ‘the
context of the relationship’ onto the current roles in the present setting, and thus is available for interpretation (de Mare, 1974).

Transference in work-systems is evident in acting-out and other defensive behaviours in groups and the role relations between subordinates and their superiors, group members to leaders or advisors, and participants to researchers.

3.1.2 Klein’s Contribution

Melanie Klein was a psychoanalyst and follower of Freud. She was a clinician, researcher and theorist. The bulk of her writing was done between the 1940s and 60s (Segal, 1989). Through her innovative processes of early infant observation, Klein was able to collect data about the intra-psychic and intersubjective life of very young infants, and to do this much earlier in the infant’s life than previous theorists had considered possible. These processes inform the stance taken by an observer in psychoanalytically informed workplace observations (Skogstad, 2004, Willshire, 1999).

From this data, she extended psychoanalytic understanding beyond Freud’s theoretical framework. These included the impact of drives in early life and the subsequent structures laid down in an individual’s mind, and the processes used by the mind to cope with the pressures and demands experienced from the external world. Klein showed that the world emerges slowly and confusingly to the infant as she becomes aware of her separateness from others; that the world is not as it was in the womb (Segal, 1989, Ogden, 1986).

This journey to separateness is fraught and individuals learn early on these unconscious patterns of coping with these tensions in relation to others. These patterns remain with them for the duration of their life. Despite continued development, differentiation of separateness from others, and the integration of their psychic resources throughout life, these most primitive patterns of processing experience remain available to the individual, to be returned to and
unconsciously used to cope with the similarly troubling experiences in the individual’s contemporary life (Hirschhorn, 1988, Shapiro and Carr, 1991, Jaques, 1955).

This has important implications for groups. All members of groups unconsciously learn their own set of patterns of response to perceived threats. These patterns are both the intra psychic patterns and the behavioural patterns these in turn evoke. Individuals are in part drawn to participate in groups because in some way groups offer patterns that are reassuring or familiar; an alignment between the individual’s patterns of coping and the group’s patterns with the pressures and tensions of the world. In enterprises this equates to the accommodation of the psychic needs of members being to some degree met by, or shaping, the enterprise’s structures, even where this is to the detriment of performance (Gabriel, 1999).

3.1.2.1 Instinct and Phantasy

Klein, whilst sympathetic to Freud’s views on instincts, had her primary focus on the interplay between the death instinct and the life instinct. The death instinct is characterised by destructive, disintegrative, envious and hostile motivations. The life instinct is characterised by loving, sexual, nurturing, generative and attachment-seeking motivations. Over time, it is the strength of the ego that determines the fusion between the two instincts and thus which one will dominate in the infant’s sense-making of its life experiences. “Experiences interpreted in accord with the death instinct will be attributed aggressive and dangerous meanings, whereas experience organized in terms of the life instinct will be understood in terms of nurturing and loving meanings” (Ogden, 1986, 16).

The early experiences of the infant, in the absence of a developed ego, are that of a sense of diffuse, internal danger deriving from the death instinct (Ogden, 1986). This ‘nameless dread’ or persecutory anxiety is defended against by splitting and projective identification (discussed later) and results in an internal
world of split-off ‘good’ and ‘bad’ part-objects. The nameless dread occurs for the
infant when the mother is unwilling or unable to process their unbearable
feelings; feelings the infant evacuates and launches at the mother. For example,
when an infant experiences unsatisfiable hunger, it is likely to provoke in the
infant an unbearable rage at a prolonged absence of the breast and its ‘would be’
satisfying milk. This early stage of mental organisation was characterised by
Klein (1946) using the term paranoid-schizoid position. The individual’s fear of
annihilation and the defences against annihilation were central in Klein’s
thinking about the unconscious motivations for behaviour, even in adults. Most
defensive behaviours of work-groups have elements of this fear of the
annihilation of the actual group or the group’s identity; anxiety about ceasing to
exist (Gabriel, 1999).

Klein saw unconscious phantasies as underlying every mental process and as an
element of all mental activity (Hinshelwood, 1991). She believed phantasy to be
the psychic representation of the drives and instincts, both the consequence of
the biology of the human organism (Klein, 1997, Ogden, 1986) and that this
transformation from the biological to the mental occurs in the id. The aim of the
instinct is the discharge of tension. Ogden tells us that “phantasy represents the
infant’s attempts to transform somatic events into a mental form” (1986, 11). For
the infant phantasy is initially their means of interpreting experience. Klein
observed aggression and sadistic violence in the play of children and infants
whose instinctual impulses had been frustrated (Hinshelwood, 1991). At the
time (1920s and 30s) this was controversial in psychoanalytic circles but came
to be accepted (Isaacs, 1948, Segal, 1989). Phantasy can alleviate these
frustrated internal states of mind, offering a defence mechanism against
instinctual impulses. Groups are often violent to other groups they interact with,
acting out frustrations and hostilities in meetings and informal settings and
through gossip and ‘weaponised’ emails.
3.1.2.2  *Object Relations*

Klein’s early work focused on the way objects were used by the developing human mind and the characteristics of these objects (Hinshelwood, 1991). She explained the ways people relate psychologically to the important objects of their world. It places the child’s need to relate to others at the centre of human motivation and in this way is a shift away from the Freudian view of the centrality of drives, instinct tension and their release as fundamental to human motivation (Akhtar, 2009). Objects are no longer targets of an individual’s instincts but rather the means through which individuals relate to others and to other parts of themselves (Gabriel, 1999).

The object in its actual three-dimensional nature is likely to be markedly different from its internalised presence in a person’s subjective inner world. It is a representation (not reproduction) constructed under variable ego capacities and drive pressures (Akhtar, 2009). Work-groups, departments, clients, superiors, subordinates, and enterprises are all likely objects for people at work. They become incorporated into the individual’s psychic reality in such a way as to develop relations akin to their early relations with significant objects from their environment (Gabriel, 1999). A relation to a ‘boss’ in the individual’s inner world may pick up patterns associated with earlier relations with a teacher, clergy, or parent. The tone of that earlier relation with its more primitive feelings, can be ascribed to the current relation, with the inner world object ‘boss’ and such feelings finding expression in the individual’s behaviour and interactions with the ‘boss’.

3.1.2.3  *Internal Objects*

Internal objects denote the conscious and unconscious experience of a concrete object. Internal objects are mirrors of the external objects, of external reality (Hinshelwood, 1991). But as mirrors, they are imperfect and introduce some distortions to the inner world model of the external world.

In this, Klein believes we have the foundation for ascribing experience of the world. Through part and whole objects, the relations between them, and the
feelings linked to them (a virtual history of significant past experiences), there is the mechanism for representing the external world of experience and meanings associated with the objects from our past and their analogues in the present (Hinshelwood, 1991). Her theory of object relations provides a mechanism for understanding how people manage the feelings life’s experiences provoke in them and their internal reactions to their own feelings. It explains how the objects of the inner world get broken down into fragments or parts and used to carry these intense feelings and how the ego’s relation to these fragments or part objects flow over into their analogues in the external world—onto the actual people and things the part objects internally represent. All of this occurs unconsciously.

The quintessential Kleinian object is the breast and its part-objects, the ‘good’ breast and the ‘bad’ breast. It is fundamental because the mother’s breast is perhaps the first object experienced by the baby. It is one of the first experiences of an other entity and agency outside oneself; even though in these early exchanges with the breast this separateness cannot, at this stage of the baby’s development, be appreciated as such by the baby. These developmental experiences with the external world establish individual patterns of psychic life, patterns of coping and patterns of seeking reassurance and comfort.

When hungry, the baby’s instinctual impulse is to suck, to feed. At birth the baby has almost no sense of self (very weak ego), nor any sense of other. When hungry, the baby experiences the presence of the breast as being a part of itself. It doesn’t experience the breast as part of an ‘other’ — the mother. When its hunger impulse is satisfied in a timely manner, it sees the breast as a ‘good’ object. When its hunger impulse is not satisfied and is perhaps severely frustrated by the absence of the breast, the baby sees that frustrating breast as a ‘bad’ object. As the baby develops it comes to realise that the ‘good’ breast is linked to the ‘bad’ breast and ultimately that they are the same object and that the breast is not a part of itself but rather it is a part of an ‘other’. Both good and bad breasts are part-objects, with reverie associated with the good breast and persecution associated with the bad breast. The good breast is the prototype of all gratifying objects (Klein, 1952).
Violent and hateful phantasies are unconsciously created to cope with the absence of the breast by the hungry babe. These characteristics are what Klein came to describe as the paranoid-schizoid position. As the baby develops to the point where it starts to become aware of both part-objects being perspectives of the same object (the breast), it begins to become aware of a new dilemma, the 'bad' object it phantasises violence towards is actually also the 'good' breast it loves and the disjuncture of these opposing feelings now creates guilt and anxiety; guilt about the harm it imagines it has done to its beloved object. This developmental process sets the foundation patterns of what disturb or satisfy an individual and what they will avoid or seek in groups. In this way, individuals learn how to cope (well or poorly) with their most primitive feelings.

This process is important in adult and group life because it is these earliest formative experiences of frustration that lay down the psychic (conscious and unconscious) patterning of the primitive responses to such frustration. These primitive, formative patterns reassert themselves over and over again in each individual’s behaviour and relationships in their contemporary world. Whilst learning and experience tempers these, they are often drawn on and reverted to at times of high stress and anxiety. In highly stressful settings (such as in work-groups of complex projects), educated, intelligent people are vulnerable to acting out those earliest primitive, defensive, reactive patterns.

3.1.2.4   Associative Processes

Processes that provoke or enable reflection about group members’ associations to their experience of work are important. They are significant because they facilitate access to experience and re-experience aspects of the unconscious; access to aspects of the network of internal objects and their relations, by accessing the symbolic rather than the literal meaning of what is said or done. Through associative processes, aspects of unconscious feelings, thoughts, symbols and meanings (that are present in group-members’ unconscious) can be examined. Aspects of the unconscious shape unconsciously motivated, reactive and defensive behaviours of groups. Associative processes are not bound by
rules of logic; they are what comes to mind unfiltered by logic. Examples are free association, dreams, slips of the tongue, free-drawings, and dialogue. For groups, the associations of its members are interpreted together to indicate something of the psychic state of the group.

3.1.2.5  States of Mind

In studying the psychic development of babies and infants, Klein described a model that represented two distinct states of mind, the paranoid-schizoid position and the depressive position, each corresponding to a developmental stage. Each state represented a distinct capacity to function, to think, to act, and respond to feelings. Once developed, the two states of mind were both available to be utilised and that there would be ongoing movement between the two states (Klein, 1991). The tendency to see the landmarks of one’s world, including one’s organisations, groups, leaders and co-workers, as all bad or all good is a consequence of the position or state of mind one occupied at a point in time (Gabriel, 1999).

3.2.2.6  Paranoid-Schizoid Position

The capability of the paranoid-schizoid position begins to form in the first weeks of an infant’s life. The infant experiences unfulfilled needs as threatening, to the extent of fear of annihilation. This provokes intense (persecutory) anxiety, which is in turn associated with the only object known to the infant—the mother’s breast. The breast is experienced as a persecuting, uncontrollable object external to the infant. Klein describes this as being introjected into the infant’s fragile ego where it becomes an internal persecutor “reinforcing the fear of the destructive impulse within” (Klein, 1946, 100). Klein also describes the breast as providing two very different sets of feelings and that it is related to as two different objects—the ‘good breast’ and the ‘bad breast’ (Klein, 1946). The ego splits the object, getting rid of the ‘bad’ by projecting it outwards and introjecting the ‘good’ breast. This form of internalisation gives the good part-object a reified
omnipotence (Hinshelwood, 1991). It is through these two processes of introjection and splitting that the breast is perceived as being both "an external threatening object and as an internalized threat within the ego" (de Board, 1978, 29).

This psychic process is used throughout life, at highly stressful times, to make sense of the world and cope with extreme situations. Unfortunately, in this it produces the perception of monsters and demons, within as well as outside. These objects and associated primitive patterns of behaviour reappear when similar patterns of stressful situations arise. People and groups in the environment are unwittingly sought to enact these parts (Gabriel, 1999).

The paranoid-schizoid position is characterised by certainty and rightness of one's thoughts and views, a likelihood to see others as bad, an intolerance of alternative views, and a near inability to hold in mind and think about contrary views on a topic (Akhtar, 2009, de Board, 1978). In this state of mind, fear, greed, envy, hate and arrogance dominate. The world and others are readily experienced as critical, aggressive or persecuting and the overriding concern is for the survival of the self. Defences from this position are in response to the persecutory anxiety experienced when overwhelmed and threatened by such feelings as fear, envy, hate and aggression typical of this position.

Persecutory anxiety involves fear for oneself, for what is being done to ‘me’ or ‘us’, and for survival. Faced with a multitude of anxiety situations, the ego denies any positive aspects to the object. Splitting or the phantasy of annihilation of the other provide gratification and relief from the persecutory anxiety arising from frustration (Klein, 1952). It is distinct from depressive anxiety, which involves fear for what was done to a ‘loved’ object.

These constructions are critical to understanding the basis for the often primitive and aggressive dynamics within and between work-groups in enterprises, particularly in highly charged and anxiety laden settings like IS development.
3.1.2.7  *Depressive Position*

The Depressive position begins to be available to the infant as a possible state of mind from around 4-6 months (Klein, 1975). It is a state of mind from which the infant can make sense of their experiences. It is enabled as a consequence of the infant integrating their fragmented perceptions of the mother or other primary care giver and consolidating 'good' and 'bad' representations of the mother into a whole object. It is not arrived at in one step but gradually developed. The child also begins to see that it has been destructive and it is not always 'other' that has been 'bad'. In this state of mind the infant (later as adult) can see that they have caused harm to others and may have received goodness from them too; it is not only them providing goodness to themselves and only others providing hurt to them.

A capacity for concern arises along with the possibility of *reparation* for harms done and *gratitude* for goodness received. It is a state of mind that can tolerate ambivalence, confusion and conflicted feelings about the experience of a situation (Ogden, 1986), a state from which reflexive thinking is possible, incorporating the evaluation and tolerance of differing points of view.

Depressive anxiety is distinct from persecutory anxiety. It is anxiety born of a deep concern for the possible harm or injury that may have been done, deliberately or inadvertently, to an object. It is often described as the guilt felt at such a consequence. Reparation is the process Klein described whereby repair is undertaken for the damage done to another and the guilt and gratitude of depressive anxiety are assuaged (Ogden, 1986). When depressive anxiety is dominant, control of objects and impulses is used by the ego to prevent frustration and forestall aggression, keeping the depressive anxiety at bay (Klein, 1952).

Work-groups often become unsettled and distressed when they realise they have unreasonably criticised or attacked another group over a work issue. This distress deepens as they become aware of the harm their actions have caused the other group. This requires the group to think and reflect on its actions and reactions to situations in the work-system.
3.1.2.8 Further Defences

Klein identified and described the defences of splitting and projective identification.

With splitting, the ego or an object, mental structure or image is split into two (or more) part-objects, usually opposing (Klein, 1952), such as the nice self and the nasty self, the caring manager and the heartless manager. The subject experiences other people they relate to in various ways; in some situations as ‘good’ and in others as ‘bad’, or another polarisation. One part of the split is identified with and internalised through introjection. The other part gets projected onto another, in the mind of the subject to be carried by this ‘other’ (Hinshelwood, 1991). The splitting process creates part-objects in the inner world, objects that are deprived of their full complexity because they have been split producing two or more incomplete views. Where part-objects represent people, they are invariably without the full set of human characteristics, and this makes it easier to do cruel and harsh things to them (Gabriel, 1999, Volkan, 2004).

Splitting is observed in enterprises: members may split the leadership into idealised good parts and vilified bad parts (Gabriel, 1999) or the splitting of management and leadership seen in enterprises (Krantz and Gilmore, 1990, Fotaki and Hyde, 2015), where one or the other is reified. Usually the good parts are invested with love and introjected by members and the bad parts become targets of hate and are scapegoated or ridiculed, although the opposite can occur (Akhtar, 2009).

Projective identification is a defence mechanism whereby parts of the self are split off and projected into an external object and this external object (the other) becomes identified with the split off part and they are internally controlled by it (Klein, 1952). In this way, it is a hybrid defence, involving intrapsychic and interpersonal aspects. The ‘other’ emotionally experiences the projection and is unconsciously manipulated by it (Akhtar, 2009). Projective identification has a
greater and more active interpersonal component than projection. It is usually associated with the paranoid-schizoid position but not exclusively so. With movement towards the depressive position, it becomes less absolute and more able to be drawn back (Joseph, 1987). In enterprise settings it can be seen in work-groups blaming another group for a failure, with the ‘other’ group uncritically accepting the blame.

3.1.3 Feeling and Emotion

There is often ambiguity between the idea of what a feeling is and what an emotion is. They are often used interchangeably. In psychoanalytic theory, feelings underpin and provoke the experiences of anxiety, and anxiety is central to the instigation of various defensive processes in individuals and groups. In order to understand the dynamics of work-groups in IS development, it is necessary to have a clear appreciation of the centrality of sense feelings to anxiety and defences in work-groups.

There is an important distinction to be made between emotions and feelings. Biological sensors capture the direct experience of events (Freud, 2005): senses. This experience is moderated by existing concepts, memories and neural pathways to produce our feelings, thoughts and behaviours around that experience (Damasio, 1999, 1994, Frazzetto, 2013). The contrast here is between the outer or visible aspects of emotion and its inner intimate feeling.

Feelings are the private, internal experiences. They provide an essential personal read on how one is relating to the world. Emotions are the outward bodily expression or presentation of one’s feelings moderated by learned codes of social behaviour specific to culture (Gabriel et al., 2000, Frazzetto, 2013). It is also possible to have feelings about feelings (Gabriel et al., 2000). Thus one can feel angry about feeling vulnerable or anxious about feeling anger. Also, emotions can be fake such as an individual appearing calm and relaxed during an important job interview when they are not.
It is not possible to know the feelings or state of mind of another person; those feelings have to be communicated by that other person—consciously or unconsciously, authentically or inauthentically (Damasio, 1999). One can see the emotions of another through the expressions made in their body (facial expression, sweaty palms, agitated behaviour), perhaps even accurately perceived. These expressions are communications, even if unknown consciously to the actor.

Anglo-Saxon models of education and training encourage people to keep strong feelings under control, to ensure they are restrained or expressed in acceptable ways in societal settings such as workplaces. Such ways of disguising feelings are essential features of human socialisation and mark out distinct contrasts between cultures and the meanings ascribed by the culture to physical behaviour and expression (Gabriel et al., 2000).

Feelings cannot simply be ignored with no consequences (Frost, 2003). They impact individual and group behaviour and decision-making (Bechara et al., 1997). The traditional view of judgement and decision making where emotion has been divorced from reason held sway (Frazzetto, 2013), despite truisms like ‘gut decisions’. Neuroscience has shown this traditional view of rational reason absent of feelings as incorrect. “Emotion makes its own judgement ... and has equal authority to rationality” (Frazzetto, 2013, 23). It is increasingly prudent to work constructively with the feelings that emerge in the field of work. The psychoanalytic view is an interworking of these two dimensions of experience: in shaping action, feelings interact with reason to produce behaviour. It is important that actors in the work-system are aware of their feelings and able to moderate the interplay of feelings with reason in the production of their actions for optimal work-group and task performance.

The contemporary lens of political–correctness sees feelings, emotion and their expression in enterprises as unacceptable or undesirable (Gabriel et al., 2000, Schwartz, 1997), or as extraneous noise. Armstrong (2005) suggests that they may offer possibilities for learning about the enterprise. He makes the distinction between en-actment and in-actment. In the former, the uncontained emotional
material is acted out as an unthought reaction (enacted), which in turn will likely be reacted to by other members, groups and the enterprise. In the latter, the emotion is seen as something elicited by the enterprise, communicated through an uncontained emotional event and made available for further thought, learning and ultimately understanding.

Neuroscience shows a link between emotions and memory. Events devoid of emotional significance are easily forgotten, while those laden with strong emotions (positive or negative) establish strong roots. Frustration, anger and guilt punctuate life’s biography, dotting it with memories that reach deeply into our past. When frustration, anger or guilt are felt in the present moment, these memories are also activated (Frazzetto, 2013) in the present.

Unresolved, undigested feelings, exiled to the unconscious, are the key contributors to anxiety. In recent world surveys of countries, the World Health Organisation found that the populations of Anglo-Saxon countries had twice the occurrence of DSM-IV defined anxiety disorders than other countries (Kessler and Ustun, 2008). A conservative estimate of this equates to over 5% of workdays\(^{16}\) lost to anxiety disorders (Armitage, 2016). Anxiety is rife in western developed countries (Luhrmann, 2015), and in part this flows into work-systems as people come to work.

3.1.4 Counter Views on Psychoanalysis

There are many contrary views of psychoanalysis and its value outside the psychoanalytic discourse, but also within it. The strongest critiques see it is a form of approximation of what might be occurring in the psychic process of individuals (Kramer, 2006) and groups. Yet psychoanalytic theories have been formulated and verified by countless hours of observation, hypothesis formation and interpretation in psychoanalytic clinical practice (Symington, 1986) and in group relations study groups (Symington and Symington, 1996, Miller, 1990).

\(^{16}\) paid and unpaid work
Jaques (1995), who conceived of social defence theory, rejected the psychoanalytic study of enterprises; believing that to understand organisations in psychological terms was fruitless, even harmful. More relevant was naturally emerging spans of control inferring hierarchy and structure for the enterprise.

In recent times, core elements of psychoanalytic theory have been demonstrated by neuroscience (Frazzetto, 2013, Eisold, 2009). With the new knowledge of the neuroplasticity (Doidge, 2007) of the brain, our understanding of psychoanalysis has been reframed and reaffirmed (Eisold, 2009). A range of research studies into brain changes from before to after ‘talking cures’ showed significant reshaping of areas of the brain concerned with the experience and management of feelings and their expression as emotions and behaviour (Amorapanth et al., 2000, Beutel et al., 2010, LeDoux, 2007). Frazzetto describes the ‘talking cures’ as “not mere intellectual exchange, but a biological treatment that directly affects the brain” (2013, 100). These developments give further credence to the reliability of psychoanalytically informed practices, like systems psychodynamics, to provide credible and useful insights into human behaviour and motivations.

Psychoanalysis is a practice that issues challenges to established thought: societal ideas and individual patterns of thought. It is not a unitary thought system, but its emphases and concepts vary across cultures and geography (Eisold, 1996); each having their own internal routines and assumptions, which in turn constrain it and shape its contributions. Like most other frameworks, it is perhaps inadequate and incomplete, but does not claim to be a unifying theory, just a means to take a view of the world and make better sense of the world.

3.1.5 Bion’s Contribution

It is with Bion that significant application of psychoanalytic theory was applied to understand groups and their behaviours. Whilst Bion also further extends individual psychoanalytic theory and practice, he provides the foundations for
Bion's response to the situation was to
He worked for a time during WWII at Northfield Hospital, a military psychiatric
the collection of individual problems as a collective neurosis of the hospital
community, a neurosis that disabled the community from effective action (Sofer,
Main, 1977). In this way he elevated the atomic unit of analysis from the
individual to that of community or group (de Board, 1978). With this insight he
set about what has become known as the Northfield experiment where each
patients improved their contact
ultimately improving their rate of return to duty in active field units (Bion,
1965).

This experiment was the beginning of Bion's inquiry into the nature and
behaviour of groups which he continued at the Tavistock Clinic in 1948 in the
form of therapeutic groups with the task “to make the study of their tensions a
group task” (Bion, 1961, 29). This led to his theory on the work group and basic
assumption group as discussed in his book Experiences in Groups (1961). These
experiments and the theory they derived has led to group relations conferences
(Miller, 1990) and the broader study of group (Gosling, 1981) and intergroup
dynamics (Kreeger, 1975) based on Bion's insights and principals of enquiry
(Gabriel, 1999, Turquet, 1974).

Bion's theories pertaining to group behaviour are:

- The unconscious in groups
• Work-groups and basic assumption groups
• Containment
• Capacity to think
• Coming to knowing

3.1.5.1 *The Unconscious in Groups*

According to Bion “The group is essential to the fulfilment of a man’s mental life” (1961, 53). Bion saw individuals as inseparable from groups; embedded in groups. We come to know who we are through our relatedness to the groups we are a part of. We emerge through our interactions, shaped by the conscious and unconscious interplay between individuals and between the individual and a group’s mentality. It is through these mechanisms that we learn what is acceptable and what is not acceptable. We experience frustration at the intersection of our behaviours with group values and expectation. Bion viewed group and individual psychologies as fundamentally the same (Gabriel, 1999).

Whilst Bion is not suggesting a group has a mind as an extra abstract entity with its own concrete existence, he describes a shared mentality of the members of a group. He writes “the group can be regarded as an interplay between individual needs, group mentality, and culture” (Bion, 1961, 55). Bion’s notion of group mentality is “the pool to which anonymous contributions are made, and through which impulses and desires implicit in these contributions are gratified” (Bion, 1961, 50). These contributions are “neither conscious nor explicit ... (and) exist in the collective pool that is the group, rather than any individual” (Hinshelwood, 2003, 185). That is, they are largely unconscious expressions of the individual member’s needs. Such contributions of a group member have to be joined with by other group members or to enlist a resonance with them. That group behaviour can be unconscious, behaviour that is a reaction to pressures and tensions the group has insufficient resources at that time to address any other way: behaviour that is defensive against these pressures and oriented towards survival rather than task fulfilment.

Bion saw group culture as something that was in all people but was only visible when people came together (Symington and Symington, 1996). It signifies the group atmosphere and the ways members relate to each other—“the structure
which the group achieves ... the organisation it adopts” (Bion, 1961, 55). It is through the mechanism of the group mentality that group thought (or its absence) and action, are formed. Bion originally considered group mentality as having its origins in human instincts, but through his work on the thought processes of psychotic patients, he shifted this view to postnatal formations linked to the early development of defences to cope with disturbing phantasies (Miller, 1998). He described group mentality as “a machinery of intercommunication that is designed to ensure that group life is in accordance with the basic assumptions” (Bion, 1961, 65).

A group can be thought of as a whole or as a group made up of individuals. The group analogue to ‘thinking’ in individual psychoanalysis is ‘group process’. Hinshelwood (2003) clarifies that the work group constitutes a group mind that thinks in order to achieve meaning and shape action that is oriented towards the work-task. The individual can be at once the responsible actor for initiating their own will, and in the next, an unconscious medium through which the will of other members of the group passes unconsciously, affecting his behaviour to accord with that of the basic assumption group. Grotstein (2003b) draws attention to Bion’s view that individuals get unconsciously caught up in various threads of group processes as if they are controlled and manipulated by an invisible entity—the mysterious third. This third, the agency in the group, is “the combined agency of the individuals in the group” (Grotstein, 2003b, 14) as they unconsciously find a way for the group to survive those times when they experience overwhelming anxiety and threat.

3.1.5.2 Groups

“A group is more than the sum of its parts” (Bion, 1961, 132). In his work with small study groups, Bion offered interpretations of the behaviour and psychic life to the group, not of the individuals in the group (Symington and Symington, 1996). The atomic unit of study and analysis was the group not the individual. The groups his original study were based upon were between 8 to 12 members (Bion, 1961). His theory of group behaviour has been applied to larger groups and found to hold true in larger configurations (Turquet, 1974, Miller, 1990).
Bion describes two group states of being that are potentially present in the physical group: the work group mode and basic assumption mode. The group will be in one of these states. There is a dynamic interplay between both states as the group contends with the psychic challenges it faces in its work setting (Bion, 1961, Riech, 1976).

With respect to groups, each member is subject to projective identifications from almost all other group members. Group leaders are the focus of projections from members, in particularly the projections of members’ ego ideal (Freud, 1921), their hopes, expectations and anxieties (Bion, 1961). Members experience pressures to conform to the unconscious needs and expectations of the group.

3.1.5.3 The Work Group

A collection of people can be described as a group (rather than an incoherent gathering) when there is an overt designated task. The task is the reason the members of the group have joined together. An example of a collection of disparate would be ‘people in a street’. They are individually engaged in their own experience and have no shared idea or purpose linking them. But when it is noticed that an elderly person has fallen, an organising purpose rapidly emerges to help that person. In that moment, a group is formed with people joining the emerged task of ’helping the elderly person’. Once the task is achieved, their purpose is fulfilled, there remains nothing to be joined to and the group dissipates back to individuals walking along the street.

Bion named the co-operative mental activity amongst people engaged together in a task, the ‘work group’ (Bion, 1961). The work group does not exclusively refer to the people who make up the group but to “the mental activity in which they are engaged” (Symington and Symington, 1996, 126). With respect to the group of people who constitute the group’s membership, he observed two distinct states of mental activity in the group, each with a distinct behavioural orientation: the work group mode and the basic assumption mode.

In the work group mode, the group engages with its task in contact with the constraints and possibilities offered by external reality. The group is able to
think about its experiences, its goals and their fulfilment. It can be characterised as being in the depressive position (Gabriel, 1999, Symington and Symington, 1996). This capacity for the group members to think openly together is the group analogue of the ego in the individual.

When members understand and act from their role, task and purpose of the group, they are functioning in work-group mode. The member’s interests are aligned with the group’s interests and the task’s interests. They combine effectively their skills to solve problems, make decisions, and focus on the achievement of work goals (Rioch, 1976, Hayden and Molenkamp, 2004).

3.1.5.4 Basic Assumption Group

In the basic assumption mode, it is as if the group “comes together for the purposes of preserving the group” (Bion, 1961, 63). When groups function in basic assumption mode, members unconsciously avoid working on the primary task of the group and are more concerned with “wishes, fears, defences, fantasies, impulses and projections” (Hayden and Molenkamp, 2004, 142) of the group members. The group moves into basic assumption behaviour when it seeks to reduce the anxiety of its members or deal with internal conflict (Stokes, 1994). When there is a tension between the long term purpose and the here-and-now experience, groups attention is misdirected to reduce pain (French and Simpson, 2015).

The group’s actions are not shaped by task oriented thinking but rather by unconscious collective reactions to the perceived threats to the group—survival thinking. At this point, group mentality corresponds to the paranoid schizoid position (Lipgar and Pines, 2003b, Symington and Symington, 1996). Bion identified three basic assumption modes and each mode has its unique emotional combination that influences the group’s mental life. Each basic assumption precludes the other two—there are no hybrids.

The dependency group (baD) seeks security through a leader who will take responsibility for the group and who will protect members and make the decisions. The group works to mobilise a member to take up this role. The
members behave as if they have little experience and are unable to think about their situation. They see the leader as the only one who can move them through their difficulties (Bion, 1961, Hirschhorn, 1991).

The fight/flight group (baF) is characterised by paranoia, where members act as if there is grave danger, which must be attacked or run from. A leader is mobilised who will take up the baton of the group’s unconscious choice to flee or fight the external agent. Any attempts at thoughtful discussion about the proposed action is quickly shut down (Bion, 1961, Rioch, 1976).

The pairing group (baP) is concerned with the future and hope. The group believes it has met to bring forth a messiah, and in so doing alleviate the anxieties it experiences regarding its work-task. The group is optimistic and unengaged, relieved that a pairing of members or of a sub-group with an external alliance will achieve their task. It has a phantasy of generativity—which may be religious or sexual. The group mobilises members to form a viable pairing to support their phantasy (Bion, 1961, Rioch, 1976).

Two other basic assumptions have been identified; generally viewed as supplementary to Bion’s foundation (Hatcher Cano, 1998). Turquet (1975) proposed the basic assumption oneness (baO), a flood of oceanic feeling of togetherness and union, where members struggle to distinguish themselves from the whole. Members find anonymity through the complete surrender to the group identity and passive compliance (Gabriel, 1999). In 1996 (Lawrence et al.), basic assumption me-ness (baM) was identified. Members act as if no group is present and individuals divest themselves of connection with the group or enterprise in order to maintain their respective inner realities. Narcissism and self-interest dominate. Members struggle and experience isolation amidst this mock-equality.

When one basic assumption is evident in a group, the other two are not. In all basic assumption modes, the ba group wants its ‘mobilised’ members (leaders, pairs) to fail at solving the group’s problems with its work task. The group wants them to support the phantasy, the basic assumption they are using to defend
against the anxieties associated with the task, rather than support the work-task. Should a leader look likely to move the group towards the work-task, they will be removed and a new leader or pair sought from amongst the available members (Rioch, 1976). In basic assumption modes, the group is oriented inward towards phantasy and its own survival, not oriented outward towards reality and its task and outputs.

### 3.1.5.5 The Interplay between Work and Basic Assumption Modes

Groups move between these different states of mental activity. A group’s state of mental activity shifts in response to changes in the collective anxiety experienced by the group members. As collective anxiety decreases below the group anxiety threshold, there is a shift in mental activity towards work group mode. As anxiety increases above the threshold of what the group can tolerate, there is a shift in mental activity towards a basic assumption mode. With this change in the state of mental activity of the group the focus of their actions also changes. It is like a concertina, a movement in response to the rhythm of experienced anxiety. In work group mode, the focus of action is on reality and the group's task. In basic assumption mode, the focus of the group is on phantasy and actions to support its survival—not on the task. In an enterprise setting, when a group is in basic assumption mode, no work is done towards the enterprise’s goals delegated to the group.

Bion’s theory of group dynamics has been extensively applied in research and management practice. It has been used to understand and improve enterprise and work-group behaviour in a broad range of circumstances by Kets de Vries & Miller (1990), Hirschhorn (1988), Krantz (1998), Diamond (2008) and Newton & Goodman (2009).

### 3.1.5.6 Valency

Valency is the affinity an individual has for a certain state of mind or role within a group’s pattern of behaviour. There are two aspects to valency. Firstly, there is the unconscious basic assumption of the group as it seeks actors for specific roles in the group’s drama—its unconsciously selected defensive pattern of behaviour.
Secondly, there is the individual member’s unconscious affinity to take up certain types of roles because they fit their own psychic disposition. Bion describes it as “… the capacity of the individual for instantaneous combination with other individuals in an established pattern of behaviour – basic assumption” (1961, 175). Through the dynamics of groups, valued work identities are often taken away and unwanted or comfortable identities are imposed on group members—this is the unconscious process of individual valency being enacted by the dynamics of the individual’s group.

All individuals have stronger valency for certain roles and weaker for other roles. Some members can easily be mobilised by the group to take up vulnerable victim or scapegoat roles, others more easily to take up aggressive blaming leader roles. This is not necessarily how they would conduct themselves in settings without intense anxiety. They are unconsciously invited by other group members to take up such roles.

3.1.5.7 Capacity to Think

Bion’s (1970) extensive work with psychotic patients led to his understanding of what goes wrong in their thinking, in thinking processes in general, and eventually to a theory of thinking. For Bion, thought was not just cognitive elements or facts, it included all elements felt and derived about an experience. A thought has its fundamental origin in the senses that are evoked in an experience. These elements go through many stages of linking with other elements of that experience and similar past experiences to eventually create a communicable thought. Where elements fail to link with aspects of experience, no thought is formed and what remains are unconscious unprocessed elements that provoke anxiety.

In Bion’s theory of thinking, thoughts have to be built up, constructed or linked. In his model, beta elements are filtered and processed by his conceptual construct, the alpha function, producing alpha elements. These are elements of experience that can be tolerated (by the psyche or the group’s mental apparatus)

17 proto-mental states in Bion’s earlier nomenclature
and are used to form symbols. These alpha elements are used and woven into more complex conceptions, thoughts and ideas (Symington and Symington, 1996, Bion, 1967). Failure of the alpha function results in beta elements remaining unprocessed, raw experience. It is experienced as persecutory and felt as anxiety. A hierarchy of thought states are moved through from a sensation or inner psychic dynamic to a communicable idea (Bion, 1970, 1965, Grotstein, 2003a).

For thinking to be possible, the person or group must be able to tolerate frustration. This depends on a decision to either modify frustration or to evade it (Bion, 1967). Bion believed that thinking was the only way to productively work with the experience of frustration.

The individual or the group must be able to grasp whole objects, abandon the paranoid-schizoid position with its associated splitting, and bring together the splits, reclaim projections and thus re-enter the depressive position as a state of mind (Bion, 1967, Grotstein, 2003b) for thinking to be possible; thinking that attends to the work-task and the work-group’s awareness of itself, rather than thoughts formed as unconscious reactions to overwhelming anxiety. Task oriented thinking for action occurs in the depressive position or work group mode. Re-action is based on primitive feelings and constrained capacity to think that characterises the paranoid-schizoid position or ba-mode for groups.

Bion (1967) saw thinking as a process or apparatus required to exist to cope with thoughts.

“The conception is initiated by the conjunction of a pre-conception with a realization ... Conceptions therefore will be expected to be constantly conjoined with an emotional experience of satisfaction” (Bion, 1967, 111).

When faced with unresolvable frustration, this joining of pre-conception and realisation (experience) does not come to completion and the thought element resolves to the unconscious (rather than to conscious thoughts) where the feelings and anxieties associated with it seek some form of unconscious expression, resolution or discharge. The ability to think thoughts depends on the
ability to tolerate frustrating constellations of thought elements and feelings. To Bion, all thoughts fundamentally involve emotions.

Central to a group’s capacity to work effectively is its ability to think realistically about its work-tasks, to have its members able to think and to do this in the face of the anxiety experienced in the workplace.

### 3.1.5.8 Containment

Containment occurs in the analyst-analysand dyad, whereby the psychoanalyst recognises projections from their analysand, contains the anxiety and feelings associated with the projection, and is not overwhelmed by the projection. The psychoanalyst retains their capacity to think about the situation and, through communication, to return the analysand’s projection in a transformed, detoxified form (Ogden, 2004). In this way the analysand experiences some new things about their projection: that it is not unbearable (even though that was how they felt and may continue to feel) because the analyst has survived it, and that they may be able to think about it and feel it differently, and make a different meaning of it. They see that feelings can be processed and digested, and need not just be terrifying. The analytic dyad is the container and the analysand’s state of mind is the contained. Whilst complex, containment that transforms confronting experiences is an intensely human process.

Using the notion of container and contained, Bion (1963, 1970) attempted to raise the concept of projective identification to a general theory of human functioning. He discussed how the analysand’s feelings and anxiety of a situation or an episode of transference are projected and directed unconsciously to the analyst: that projective identification is a direct communication of the currently unbearable feelings and state of mind of the analysand. If this is an angry, aggressive verbal attack on the analyst, blaming them for the painful situation, it is understandable that the analyst may feel wounded and wish to retaliate. However the true meaning of the communication is to give the analyst some direct experience of the unbearable state of mind the analysand is grappling with.
Bion came to this understanding from considering the mother-infant dyad. In a well functioning dyad, the mother takes in the infant’s suffering, for example the rage and distress at not being able to reach an object. The mother contains and digests the psychic onslaught of this distress, transforming it. She then communicates back to the infant the experience that the distress can be survived (Symington and Symington, 1996) and does what she can to address the infant’s unmet desire. From this experience and others like it, the infant learns over time that apparently unbearable feelings, such as frustration and rage, are perhaps bearable. The infant learns to soothe themself and move their state of mind towards the depressive position, where thinking processes are free to function. The container, whilst symbolising the maternal, is not just maternal: it is the most primitive and preverbal experience of the maternal (Bion, 1962).

In organisational terms, a function of a manager, a consultant, or enterprise structures is to absorb a group’s communications of projections or transferences rather than to react against such unsettling communications: to take in these communications, think about them and try to make sense of what has driven the group to express such distress. Finally they need to communicate this sense-making back to the group, engaging with them to address the situation with the resources available (Armstrong, 2005). This is not always satisfactory, as situations in enterprises often demand immediate action or do not have sufficient resources on which to draw. Nonetheless, there is value in containing distressing work-group experiences: even minimally through acknowledging the situation, and the anxieties and feelings the group is experiencing. The recognition of a difficult situation may be sufficient to contain the work-group’s experience of anxiety (Hirschhorn, 1988).

3.1.5.9 Not-Knowing and Knowing

Linked to his theory of thinking, Bion was interested in how people and groups come to know something; life is a process of ‘coming to know’ for individuals and groups. That ‘coming to know’ may only be possible if one can tolerate the feelings associated with not knowing and occupy a depressive state of mind
where competing understandings of a ‘thing’ can be tolerated. He reminded us of the institutional nature of knowledge in the form of the sphinx in the myth of Oedipus (Bion, 1992). Whilst the oedipal stage, and its resolution in an individual’s development, is primarily concerned with overcoming hubris and finding an appropriate, differentiated place in the world, the sphinx represents curiosity and the quest for knowledge as well as its withholding and sometimes threatening nature; the capacity of knowledge to blow the lid off fantasy, collusions and perceived reality (Lawrence, 1999).

3.1.5.10 Bion and Groups

Regarding group dynamics, Bion was most concerned with understanding dysfunctional behaviour and expertly identifying and describing the factors that undermine effective group functioning. Most of the time work-groups function adequately and achieve their goals. Sometimes they work exceptionally well, where their work is experienced as pleasure or effortless by members, something akin to being in a ‘flow’ state of concentration, euphoria and complete involvement (Csikszentmihalyi, 1991). It is important to recognise the balance between functioning and work to lessen the circumstances of disruption (French and Simpson, 2015).

3.2 Systems Psychodynamic Applications to Work

Bion’s theories have been applied in the areas of family therapy, unstructured groups, enterprises and society. It has led to complex theories being developed by Elliot Jaques, Isabel Menzies, Eric Trist, Harold Bridger, Eric Miller, Fred Emery, Gordon Lawrence, and David Armstrong to address the negative effects of bureaucratic forms of organisation, hierarchy and turbulent environments on the emotional lives and task performance of group-members, work-groups and enterprises.
3.2.1 Social Defence

Jaques (1951) introduced the concept of social defence to the domain. From his field observations in a large manufacturing business he formed the view that “… individuals may be thought of as externalizing those impulses and internal objects that would otherwise give rise to psychotic anxiety, and pooling them into the life of the social institutions in which they associate” (Jaques, 1955, 479). Whilst not making the institution disturbed, relationships between the institution’s groups were likely to exhibit “… unreality, splitting, hostility, suspicion and other forms of maladaptive behaviour” (Jaques, 1955, 479).

Through unconscious processes and phantasy, a social system creates structures and practices that protect and defend members of the system from persecutory anxiety. The social defences offer a binding function in enterprises. Enterprise dynamics affect and are affected by task. Enterprise changes disturb established defences and are likely to be resisted for conscious and unconscious reasons (Jaques, 1955, Long, 2006).

Jaques (1995) later rejected his earlier position, describing psychoanalytic theory as unhelpful. Instead, he argued for the primacy of structure in his framework of ‘requisite organization’ (Jaques, 1989), noting that people are only anxious when they do not know what to do or what they are accountable for. When the structure of positions with their authority and accountability is made sufficiently clear there will not be psychic disturbance to the individual, group or enterprise. There is no anxiety in perfect structures. Improving work-group dynamics cannot mitigate poor structure. This idealised view of structure and the unlikelihood of such clarity and stability in turbulent business environments is problematic for his revised position (Hearn-MacKinnon, 2007). Intrapsychic forces within and between work-groups and roles continue to affect behaviour and impact performance (Amado, 1995, Armstrong, 2005).

Menzies’ 1959 foundational case study into nursing in a teaching hospital led to a different definition of social defence (Menzies, 1970). She described social defences as constructed to defend against the anxieties evoked in groups and
individuals by their participation in the work-system; the psychic state provoked in them through participation in the enterprise (Armstrong, 2005). Menzies’ definition has become the theory in use, but Jaques’ view still has relevance in understanding why people join certain work-systems and not others, such as IS departments which may protect their members from broader life anxieties in a unique way.

Social defences are unconscious collusions that deny elements of experience that give rise to unmanageable emotion in the phantasy life of group members. The nursing tasks, with their intimate contact with sick or dying patients, resurfaced infantile tensions about death, annihilation and sexuality in the nurses. Patients were depersonalised and objectified into part objects, such as “the pneumonia in bed 15” (Menzies, 1970, 12). This splitting helped the nurses detach from the emotional pain of their work. Members unconsciously cooperate and collude to reinforce internal defences against anxiety and guilt.

In the face of their work-tasks, these primitive tensions threatened to become conscious and overwhelm nurses. These situations evoked high levels of anxiety that the nursing work-system defended against. These experiences, whilst unique for each nurse, were broadly encompassing of all nurses across the work-system. These social defences became enacted in work processes and practices, and the tensions and anxieties associated with the work-tasks were moderated by the defences, allowing some work to be done in this fragmented work structure.

Splitting and projective identification were the principal defences enacted in these work routines. Both nurse and patient were respectively split into good or bad part-objects (Menzies, 1970). Superiors were often idealised, with nurses projecting their own good, capable, thinking parts into them. Nurses introject the characteristics of their superiors or those valued by their superiors, learning through these identifications into being a ‘good’ nurse. In thinking for themselves or failing to do what was expected of them, they risked being identified as ‘bad’ nurses.
The work-system functioned, medicine got dispensed, wounds got bandaged, beds made etc. but at a high cost. Many nurses left the service because the social defences that made it possible to work also made it intolerable to work. It limited their capacity to learn and grow, keeping them imprisoned in an infantalised role (Menzies, 1970).

Busyness is a social defence that allows workers to avoid thinking about what they are doing and the anxieties they face, with frenetic activity often defending against the emotional effects of change and loss (Krantz, 1998). To affect change in enterprises, it is necessary to attend to the social defences; identify them, the common anxieties and the unconscious collusions that underlie them (Obholzer, 1999). Organisational change often fractures social defences leaving staff exposed to potentially overwhelming anxieties and emotions.

The work design, its structures, roles, groups and relationships, not only supports the technical work-task but also creates the channels for psychic projections. Social defence theory helps understand why change is so hard to bring about in enterprises despite compelling logical reasons for the change to succeed. Some businesses and societal endeavours fail because they are unable to adjust to the changing environmental circumstances and the impacts these have on social defences (Long, 2006). Awareness of unconscious processes is important if the researcher is to identify the dynamics of defence against anxiety in work-groups and to identify possible actions that can be undertaken to ameliorate or mitigate the impacts such defences and anxieties have on task performance.

The case study of this dissertation was of a highly complex enterprise, technically, socially and by scale. Its work carried high levels of uncertainty and ambiguity, at both macro and micro levels. From such a setting, enormous pressures and tensions on the work-system are inevitable, producing high levels of anxiety and defensive behaviour to cope with the situations. In this type of setting, social defence theory provides a powerful lens to frame meaning and understanding of many of the entrenched defensive behaviours that assist work-groups to cope during psycho-emotional extremes in their collective experience.
3.2.2 Socio-Technical Systems

Bion’s theory of groups and Menzies’ social defences offer a psychological perspective into work-groups, their dynamics and coping mechanisms. Neither theory comprehensively considers the organising structures for resources, work-tasks, work-groups and roles. Socio-technical systems (STS) theory provides a framework for these structural and organisational dimensions whilst remaining alive to the psychological dimensions of work. The insights offered by group psychodynamics and socio-technical systems frameworks together provide a comprehensive means of explaining dynamics and behaviours within and between groups. Whist imperfect, they offer a good enough representation of work-system reality, sufficiently realistic to understand complex group behaviour and to plan effective action and interventions.

STS gives the researcher an architecture on which to overlay the structures of the host enterprise and from which to think about the dynamics across spatial, physical and psychological boundaries and the potential sources for these dynamics. It supports the diagnosis of enterprise problems and indicates potential solutions.


3.2.2.1 Stepping Stones to Socio-Technical Systems

Early classical theories of organisation from Weber on ‘bureaucracy’ and Taylor on ‘scientific management’ emphasised the application of impersonal routines to establish total control of individual agency within an enterprise (de Board, 1978). These theorists believed this rationalist approach would rid the enterprise of passion and emotion, which would in turn force the full attention of staff onto the enterprise’s work activities and their efficient realisation (Gabriel,
1999, Trahair, 2005). It encouraged people to think about enterprises as simplistic and able to be dehumanised (de Board, 1978).

Human relations theory was a reaction against these earlier mechanistic approaches to the organisation of work. Mayo’s experiments at the Hawthorne plant of the Western Electric Company considered the experience of workers to a variety of environmental factors such as lighting levels, fatigue and rest (Trahair, 2005, de Board, 1978). Whilst many of these experiments were inconclusive, they signalled a new interest in a broader set of factors to be considered in the organisation of work—particularly the human relationship to work and the experience of work. Haire, in reflecting on Mayo’s contribution, noted “The incentive to work was no longer seen as simple and unitary but rather infinitely varied, complex and changing” (1954, 376). Change and human agency were recognised as complex and not fully controllable. As distinct from the classical theorists, the human agency of individuals and groups was outside the scope of complete control by management.

For something to be a system it must be two or more interacting elements that together create independent properties. It is often a complex set of interdependent relationships that are evolving and emerging. It has its own feedback loops and cannot be decomposed into a linear process. A system’s survival is inextricably linked to its environment (Krantz, 2011). A system is differentiated from its environment by its boundary; for a boundary to be maintained, this differentiation must be regulated.

In 1969, von Bertalanffy put forward the notion of an open system in his general systems theory. He described an open system as being continually in contact with its environment, taking in energy, using it and expressing the transformed energy back into its environment. This is important to living systems because “in biology, the nature of the open system is at the basis of fundamental life phenomena” (von Bertalanffy, 1969, 83). It is evident from examples of human cells, coral reefs, gut bacteria, and desert camel populations that steady states are achieved by these living systems which incorporate responses open to continual environmental change and adaptation (Morgan, 2006, de Board, 1978).
An open system differs from a closed system such as a battery, which is independent of its environment; upon reaching its final steady state, no more work can be done by the battery (Morgan, 2006). It is interactions at the boundary that allow an open system to maintain its dynamic equilibrium. Life exists whilst this dynamic equilibrium can be maintained. For enterprises to remain vital, like all organisms, they must interact with and adapt to their environment and continue to make relevant exchanges with it.

3.2.2.2  **Socio Technical Systems Theory**

Socio-technical systems (STS) theory concerns itself with enterprises as complex, open systems. It offers a framework to observing large-scale groupings of people at work; it is a tool, like a telescope. It endeavours to explain what occurs in enterprises and institutions from both task and psycho-social perspectives. It focuses on the management of the various boundaries of the enterprise as it takes in inputs from the environment, transforms the inputs into its various products (including wastes) and exports these back to the environment. STS theory can be used to optimise the design of technical activities.

STS theory was conceived of by Trist and Bamforth (1951) and further developed by Miller and Rice (1967). STS theory proposes three interdependent systems that constitute the enterprise. The task system that considers the technical aspects of the work and the tasks that must be done to meet the organisation’s reason for being. The sentient system considers the interpersonal and relational needs of those working in the system. These two systems are interrelated and changes in either one will affect the other. The regulatory system regulates the influences the task and sentient systems have on each other.

Primary task (Miller and Rice, 1967) involves the concept of a group or enterprise having a fundamental thing it must do if it is to survive. In system terms, the primary task is the task each system or sub-system has been established to perform. The primary task sets in place the reference point for the enterprise and the decisions and actions it chooses. It is the “... rallying point for effective co-operation from people in the system” (de Board, 1978, 98).
Lawrence (1986) describes three perspectives from which the primary task can be described. They are the normative primary task, which details what the enterprise says it does, what it expects to be done. But as members also use the enterprise for their own purposes, this is not always what is done. The existential primary task is what the members in work-groups say they do and believe they do. The phenomenological primary task is what is actually done; what observers of the enterprise see members actually doing, aspects of which the members may be unconscious of.

3.2.2.3 Task System

The task system can be thought of as the technical system. It is made up of the logical and rational breakdown of the primary task of the enterprise into subtasks, and those into further sub-tasks, cascading down to a level that defines tasks that can be accomplished by work-groups and roles. The organisation of these work-tasks, the work structure, is maintained so the relations between the various sub-systems, groups and roles and the enterprise’s primary task are known (Miller and Rice, 1967, de Board, 1978). Resources, including people, are assigned to these sub-systems and their tasks, and in this process people are assigned to roles within the work structure and to work-groups. The organisation of the enterprise is visible in the way tasks and sub-tasks are organised, the way groups are organised and related to other groups and tasks, and in the way relations and authority between people in-role are managed.

The task system attends to the technology of the work-tasks of the various subsystems of the task system. In a nursing enterprise it will entail all the procedures for patient care, medical services and the technical equipment; for an IS department, it is the project and development methodologies and software tools. The task system describes the technical activities and their organisation, undertaken by the enterprise.

3.2.2.4 Sentient System

The sentient system can be thought of as the social system of an enterprise. It is a system of social relations that emerges as people, in roles in the task system,
working on their individual and collective work-tasks, endeavour to cope with 
the tensions, anxieties and uncertainties of their work world. The sentient 
systems can evoke adaptive behaviours or defensive coping activities. The 
networks of social relationships that are created depend very much on the range 
of anxieties experienced by the people in the enterprise, the intensity and locality 
of the anxieties experienced, the members capacity to tolerate anxiety and the 
capacity of the task system’s structures to contain and ameliorate anxiety (de 

The sentient system holds group identity, particularly for informal groups. It 
embraces the informal relations people establish in order to contain and cope 
with strong or difficult feelings experienced in their work. The groupings may 
behave with their work-groups or they may be very different. It is through the 
emergent relationships that alternative narratives about work and the enterprise 
are formed. Examples of the manifestation of parts of the sentient system are: a 
meeting coffee group, a lunch room gathering, a huddle around a water cooler, 
Friday lunch with past close colleagues to name a few.

The sentient system is constrained by the structures of the task system, which, 
for example, may constrain the possible connections people can make between 
those working day shift and night shift. But the sentient system can extend 
beyond the enterprise to include staff as members of identity groups with past 
colleagues now in other parts of the enterprise or those who have left it, and to 
external identity groups such as professional bodies.

Management cannot predict or control what will occur in the sentient system, 
nor what identities will form. They can, however, seek to understand the 
dynamic phenomena that occur, and try to influence the ways the sentient 
structures collide with the task system.

3.2.2.5 Joint Sub-optimisation

The interplay between the task and sentient system is important because it 
regulates the performance of this community of people and these tasks at this 
time. With an appreciation of both systems and the dynamics between them,
management can adapt the task system so it will suffer fewer interruptions and disturbances from the sentient system. To organise and manage the task system in such a way that, for this community of people, it does not evoke high levels of anxiety that could disrupt work-task performance. In certain circumstances, the machine or human processes of the task system may work below optimal capability in order to establish optimal performance of the enterprise (de Board, 1978). It requires the de-optimising of technology and technical procedures to fit the capabilities (skills, expectations and anxiety) of staff and stakeholders, rather than having the technology demand more than the community are capable of providing.

3.2.2.6 Design of Enterprises

STS theory seeks to explain why experiences of work in a given technical configuration or organisation promotes emotional and psychological states of mind in individuals and groups that adversely affects their capacity to work. Well-designed STSs are characterised by high productivity, adaptability, engagement and mutual influence (Pava, 1983). Poorly designed STSs are characterised by low productivity, confusion, alienation and conflict.

It also seeks to design enterprises, particularly task and management systems, that optimise performance for each unique enterprise setting (people, skills); to design enterprises with task systems that recognise the limits and weaknesses of the staff engaged in that enterprise at that time. STS theory provides a guiding framework for designing sub-systems of the enterprise and establishing the requisite regulatory elements to manage the boundaries of the sub-systems with the whole system and with the environment.

3.2.2.7 Types of Enterprise Environments

Emery and Trist (1965) describe organisational environments as having different textures. They described four types of environments—type I, II, III, IV respectively. Type IV is described as a turbulent field with dynamic processes that are derived from both the interactions between enterprises (competition and collaborations) in the environment and from the environment itself.
(regulation, legislation, market forces). Type III is dynamic but only through the interactions of the enterprises, where enterprises are aware of each other and they compete for positions in the landscape. Type I and II are deemed static, with enterprises locating themselves in the environment either randomly or in some clustering, based on synergy with other enterprises in the environment.

They also hypothesised a hyper-turbulent environment, Type V (Emery and Trist, 1965). This was identified 20 years later in business and government ecologies (McCann and Selsky, 1984, Baburoglu, 1988). In such a setting, the demands of the environment for interaction are vastly greater than the adaptive capacity and resources of some enterprises. In such situations, enterprises contract to simpler ecologies, fail or fragment and remove the functions that are unable to ’keep up’ with the environment (McCann and Selsky, 1984). These levels of turbulence bring about negative adaptation or social triage, where enterprises try to segment the environment and lessen the turbulence for a large part of the enterprise. The other action is to create enclaves whereby some functions are partitioned off, and where these partitioned subsystems interact with a segment of the enterprise’ s environment that is either more or less turbulent (Baburoglu, 1988). Outsourcing creates calm in the enterprise by creating enclaves of its hyper-turbulent subsystems such as IS.

3.2.2.8 Weaknesses of Systems Theory

Flood (1999) describes two weaknesses of systems theory: one being that symptoms are often addressed rather than the actual causes; the second is that higher levels think they know the work and experiences of lower levels but they do not and that to counter this requires the involvement of many staff which dissipates focus and generates disagreement and conflict.

A central weakness of systems thinking is that there is always a super-ordinate element (person, group or set of rules) outside whatever boundary is set around the system. This super-ordinate element defines the system (Stacey et al., 2000). An enterprise has a board representing the owners and the laws of the jurisdiction representing society. There is always something that sits outside of the system that controls, defines and judges it. It is a limitation on the aesthetic
or orthogonal logic of the systems model, but it does not unduly constrain its usefulness as a tool for developing understanding and for intervening. For an IS department, it is the CEO or CFO who defines the broad goals and constraints of the IS work-system. Non-systemic approaches do not fully recognise the powerful effects unconscious psycho-social dynamics have on group behaviour.

3.3 Summation

All people, affected by change, experience some degree of emotional turmoil; even when changes are positive or make good sense, they involve loss and uncertainty. Different groups react differently to change: embracing it, aggressively undermining it, or resisting it passively (Kotter and Schlesinger, 2008).

Systems psychodynamics theory is made up of group psychodynamics\(^{18}\) theory and socio-technical systems theory. It considers the conscious dynamics of work-systems, but importantly, through the use of associative enquiry methods and inference, identifies unconsciously motivated and driven dynamics and behaviours within and between work-groups. Without systems psychodynamics, such unconscious elements have not been able to be identified or purposefully worked with and mitigated. This has left them unchecked and free to run their course of disruption to performance and output. Using systems psychodynamics, it is possible to understand the likely causes of these disruptive unconscious dynamics and to craft interventions to actively mitigate them. The causes draw on the inner worlds of group-members and group culture, the determinants of collective behaviour that have been progressively laid down over the time of a group’s existence. Moving beyond the limitations of a group’s history involves identifying these archaic patterns and bringing them into group awareness so they can be worked with consciously, limiting their disruptions to group behaviour.

\(^{18}\) Bion's theory of groups and Menzies’ social defence theory
As can be seen in Chapter 5, IT systems in large organisations are incredibly complex and subject to constant change, as well as extreme pressures to deliver mission critical systems on time and on budget. In these circumstances the psychodynamic processes discussed in this chapter are likely to play a major role by inducing intense and primitive feelings and anxieties, leading to ensuing defensive behaviours that bleed work-groups of their vitality and capacity to do work consistently, especially during local peaks in unbearable work-based anxiety. This may help account for the late delivery of work-products and system elements, underperformance, and wastage of expensive IS resources. Systems psychodynamics may also offer the possibility to identity the underlying causes for these performance symptoms of IS development failures, and rather than just brushing over them, to rectify many of them in substantive ways, improving IS performance.

The data chapters, 5 through 8, discuss the use of systems psychodynamics to identify and understand the unconscious dynamics and their impacts on performance. The final data chapter looks at systems psychodynamics interventions.
Chapter 4    Research Methodology

This chapter discusses the selection of the research approach, the decisions about data collection, the subsequent data analysis and the philosophy underpinning these choices. The chapter begins with an explanation of the philosophical perspective that informs the research and the rationale for using a qualitative approach, rather than quantitative, in exploring the research topic. The research design, using an individual ‘case study’ as the framework is discussed. The case here is a massive case study in one very large enterprise, with data gathered over several years. Within this qualitatively based case study, ‘participant action research’ is used to operationalise the research. Clinical research methods are adopted in this research. This stance conceptually underpins the data collection methods of in-depth interviewing, participant observation, reference-groups and action learning projects; what Alderfer (2011) calls social technologies. The data gathering methods are explained. The analytic methods used to explore and interpret the research data are discussed, including how interim research analysis and findings informed and modified the research activity over the course of the study, consistent with the construct of action research.

This discussion of the philosophical frameworks and technical methods is followed by the presentation of the research plan and how this changed in response to emergent events in the host system and the research project. An outline is presented of the demographics of and rationale for participant selection. The chapter closes addressing the issues of ethics and data validity. In the earlier chapters we met the research question, its aims and origins as well as background information about the enterprise hosting the research. The next chapter provides a detailed account of what happened in the research enacting the plan and practices described in this chapter.
4.1 Linking Purpose with Practice

There are numerous scientific choices available to the social science researcher. The nature of the research question and aims guides the researcher’s determination of the most suitable paradigm, structure and methods for the research project. In this research, the central research question is ‘do the unconscious dynamics of work-groups affect the process of information system development?’

To explore this question, the research is required to study group and intergroup behaviour in the information systems department and intergroup behaviour between IS and business departments. There were two strategic questions at this stage for the research. One pertained to the structure of the research, the other to the philosophy of the enquiry—single or multiple case and qualitative or quantitative methods.

Studying possible unconscious and conscious dynamics of groups requires deep and detailed understandings of the experience of working in their setting as best as this can be achieved. The researcher endeavours to surface meanings held by groups and staff that are below the level of conscious awareness. It is the actions of the work-system’s actors that bring into continuous being the work-system of which they are a part (Long et al., 2000). As discussed in Chapter 2, Wastell (1999) identified examples of unconscious defensive processes enacted by IS groups to reduce their work related anxiety. This required discussion with and observation of research participants in their work setting.

These requirements for detailed understanding rather than general front of mind responses, indicates a qualitative rather than quantitative approach to data collection and analysis. The detail of this is discussed later in this chapter.

4.2 Case Study Approach as Research Structure

The contribution of a case study approach is found in its capacity to engage readers in the theoretical and practical implications of research. For this project,
the research strategy of a single-organisation case study was adopted (Stake, 2000, Yin, 2003). For an in-depth exploration of a particular bounded entity, a case study is regarded as most appropriate form of research structure (Yin, 2003, Hamel, 1993, Berg, 1990). It is designed to explore in-depth organisational experience in a real-life context. Yin (2003) suggests five distinct rationales for using the single case. They are when a case (i) represents a critical test of existing theory, (ii) represents a unique circumstance, (iii) represents a typical situation and is thus generally indicative, (iv) is revelatory, or (v) is longitudinal.

This research project endeavoured to apply existing theory, variant (i), to a new setting—applying psychodynamic and socio-technical system theories to a corporate information technology ‘factory’. It was unique, variant (ii), in that it studied an enterprise that was the largest IS user in the southern hemisphere. Despite the scale of the enterprise’s information systems development, it was hoped it would identify typical dilemmas, variant (iii), that may exist in many other IS departments in other enterprises and industries.

The nature of single case studies is that there is no comparison to other cases. This limits demonstration of the generalisability of findings and for this reason it has many critics (such as Glaser and Strauss, 1967, Yin, 2003). Yet the single case offers an opportunity to explore the research interest in great depth. Stake (2000) suggests the single case study itself whilst important may become secondary to the understanding of something else, such as a representational model of disruptive psycho-social dynamics in an IS department. He categorises this as an instrumental case study. Whilst the scale of the research host in this project was unique, its IS planning and development methods are commonly used by many enterprises.

It is through such a deep appreciation/understanding of the experiences of those in the work-system under study that the research seeks a new way, distinct from the rationalist IS frameworks, to represent the dynamics of IS department and project failure and a new possible set of remedies.
Yin (2003) provides three parameters that in his view determine the suitability of a research strategy to a case study approach. He links the form of the research question, the degree of need for the control of behavioural events, and contemporary or historical research focus as determinants of research strategy. Figure 4.1 shows his relationships between research situation and strategy.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Form of Research Question</th>
<th>Requires Control of Behavioural Events?</th>
<th>Focuses on Contemporary Events?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>how, why</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Survey</td>
<td>who, what, where, how much, how many</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Archival Analysis</td>
<td>who, what, where, how much, how many</td>
<td>no</td>
<td>yes/no</td>
</tr>
<tr>
<td>History</td>
<td>how, why</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Case Study</td>
<td>how, why</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

Figure 4.1 Research situations mapped to strategy (source: Yin, 2003, 5)

Considering these parameters with respect to this research, the appropriateness of a case study strategy is clear. With respect to the first parameter, question type, the research explores the experiences of individuals in their work-groups in the enterprise and the impact their experience has on work-group function. How do people experience the IS department? Why do they experience it that way? How are IS work-groups affected by business expectations? Why?

Regarding the second parameter, the level of control required over behaviour, the enterprise and in particular the IS department studied in this research existed in natural settings in a competitive business context. There was no desire for or possibility of control over the behaviour of groups or their members in this
setting. With respect to the last parameter, the historical or contemporary nature of the research, the research focused on current events\(^{19}\) rather than explicit past events.

Berg (1990) considers a case study to be a concentrated enquiry of a particular setting with a written report that is richly described and shows strong links to relevant theory. Examples of case studies from within the systems psychodynamic domain are Jacques’ case study addressing psycho-social factors impeding industrial manufacturing (1951), Menzies’ ‘A Case Study in the Functioning of Social Systems as a Defence Against Anxiety’ in nurse training settings (Menzies, 1960), Bain’s ‘The Baric Experiment’ into early information automation (1982) and the ‘Paper Houses’ case study about school education processes (Bain et al., 1992). They present detailed descriptions of the settings and experience of members of those systems with exploration of the dynamics enacted and hypotheses about their impacts. They capture the whole as well as the complexity. Menzies’ case study was a single, massive case. It has become a benchmark for scale and detail in systems psychodynamic research. It is a highly detailed case with rich, deep data descriptions and provides an expansive insight into the tensions and problems in a nurse teaching hospital.

One type of case study in Berg’s taxonomy is the hypothesis-generating case study. It is “an open ended investigation of a social system based on the presumption that this system has something interesting about it that has thus far remained unexplored or insufficiently explored” (Berg, 1990, 67) and doing a case study will uncover hypotheses about the ‘interesting situation’. The single case study was chosen to examine in depth the insufficiently explored aspect of the impacts of the psychosocial dimension in information system development.

\(^{19}\) this includes the contemporary psycho-social carryover of past events reflected in the conscious and unconscious narratives and patterns of the present
4.3 **Philosophy of Enquiry**

A case study approach does not of itself prescribe methods for data collection or data analysis. The choices of the detailed research methods and stance from which research interactions originate were all informed by a philosophical position that underpins this research project. This position is based on qualitative, interpretive and clinical frames. In deciding the philosophical stance of the research, I have excluded other alternative frames, such as quantitative or functionalist. I believe the choices made supported the nature of this research enquiry. These three frames and their appropriateness to the research are discussed in the following sections.

The philosophical stance should be consistent with the researcher's belief system about the nature of the social world—sourcing information about it and making meaning of it. In this, social scientists have arrived at broad categories or ‘paradigms’. These paradigms describe, differentiate and communicate the different philosophical persuasions of social scientists as they explore and explain the social worlds they study (Burrell and Morgan, 1979, Guba, 1990).

4.3.1 **Qualitative**

The research is interested in the socially constructed experience of the participants as they experience setbacks, success and change in their work-system. A qualitative methodology was considered best suited for this research (Kuzel, 1999).

Qualitative data is usually “… in the form of words not numbers” (Miles and Huberman, 1994, 1). The face-to-face interaction that qualitative research affords, enables the gathering of rich data about the participants’ situation and experience (Glesne and Peskin, 1992). It also offers the possibility of pursuing emergent themes as they appear through follow-up questions responding to the unexpected or to new tentative links, interpretations or working-hypotheses that are responses to the data as it is collected in real time. These are the reasons behind the choice of qualitative research approach. They have the means to
explore what is not known or thought by the researcher and begin the possibility to ‘know’ more.

Qualitative research emphasises narrative over numerical reductionism (Guba, 1990; Johnson and Duberley, 2000), considers subjectivity inevitable and objectivity unattainable, sees knowledge as constructed rather than atomically discovered (Stake, 2000), and has understanding as the purpose of the enquiry rather than generalised explanations (Guba and Lincoln, 1998). It notes the researcher’s subjectivity and that inevitably the research will impact the research-host (Berg and Smith, 1988; Long, 1999; Alderfer, 1988). It recognises and addresses the importance of the participants’ frame of reference and the broader context and setting that is influencing the enterprise and its members (Marshal and Rossman, 1995).

The distinctions between qualitative and quantitative are often represented as oversimplified dichotomies, but these differences are also thought to be far less significant (Creswell, 2003; Fontana and Frey, 2000) than earlier believed (Morgan and Smircich, 1980). A qualitative research methodology was considered the appropriate methodology for the research questions that had been developed (Alvesson and Skoldberg, 2009), it was consistent with the researcher’s values and sense making processes (Bentz and Shapiro, 1998; Guba and Lincoln, 1998), and was consistent with psychoanalytic foundation of the research (Gabriel, 1999).

4.3.2 Interpretivism

The interpretive paradigm is defined by anti-positivist beliefs about the nature of being (ontology) and the nature of knowledge (epistemology) (Burrell and Morgan, 1979). On the scales of low to high social control and subjective-objective view of society, interpretivism occupies the quadrant of low social control and subjective. Functionalism, its main counterpoint, occupies low social control and objective. With the interpretive paradigm, the social world is understood to be created through emergent and interacting social processes:
social reality viewed as a network of shared assumptions and shared meanings contextualised by the social setting's culture and history. The social world only exists through the interpretation, interaction and negotiation of its individuals. It is not independent of or prior to the individual. Therefore, developing knowledge of social phenomena must directly include the perspectives of those who are participants in the activity-system under study. Blaikie describes:

"the major task of the Interpretive social science is to discover why people do what they do by uncovering the largely tacit, mutual knowledge, the symbolic meanings, intentions and rules, which provide the orientation for their actions" (1995, 176)

As was understood from Chapter 2, to address the intense pressures to improve software delivery timeframes and costs, IS management repeatedly engaged consultants and advisors in endeavours to improve the information system development process. These consultants would bring their models and frameworks from other software development settings—with their own distinct and diverse contexts, histories and communities of interest. They would endeavour to change the local ISD structures and work practices to accord with their externally derived models and frameworks. This type of approach is consistent with the functionalist paradigm and was the pre-eminent mode of exploring and explaining the social and technical world of work in this IS department.

The interpretive paradigm of the research offered a strong contrast to the functionalist paradigm usually taken up by the research-host's managers and their advisors, shaping their assumptions about the world and the formation of knowledge. The functionalist paradigm is deterministic, it assumes that knowledge from outside the system can be overlaid across it with the expectation that it will work correctly so long as staff do what this new external knowledge expects of them (Burrell and Morgan, 1979). And whilst this contrast in approach to engaging the social world was fraught with numerous challenges in the researcher's interactions with the reference-group members, it enabled new insights for both the researcher and many of the research participants.
Interpretivism enables the researcher to understand the complexity of IS and business participants’ experience of working with each other on their common aspiration of deploying new or modified suites of information systems. This relies on the researcher’s interpretation of how the members of this work-system construct meaning. The individual’s inner experience of their work requires explorations to elicit its inner essence and collaboratively to make meaning and bring into awareness further understanding of aspects of this lived experience. This process is contingent on dialogue; between the participants and between the participants and researcher within the containing structures of the research design. These structures and methods enhance comprehension of the psycho-social context of IS development work (Burrell and Morgan, 1979, Shapiro and Carr, 1991). There are pitfalls, which Blaikie identifies as “Idols” (1995, 134), that distort the mind and inhibit the acquisition of knowledge—where objects, people, roles or philosophies dominate the cognitive-emotional landscape of a work-system or part thereof.

Nonetheless, interpretivism is empirical—it is based upon data from interactions such as interviews or observations. It is crucial for the validity and reliability of the data to be evident to participants and readers. The picture representing the actual work world must be consistent with that lived by the participants “rather than as the researcher imagines it to be” (Filstead, 1970, 5). The researcher’s role is in part to become absorbed in the subject’s realm, to identify with their practice and experience so as to realistically depict its conscious and unconscious characteristics and dynamics.

The interpretive stance, informed with system psychodynamic concepts, allows the researcher access to the participants’ experiences in software development. It provides a way of engaging with and making sense of this world, using data of conscious and unconscious processes and dynamics to generate new or refocused understandings and meaning for the work-system, work-groups and role holders, whilst exploring the implications of these across the work-system.
4.3.3 Clinical Research Methods

All social research occurs in the context of relationships: the observer and the observed are not separate, they are in relation to each other. The researcher has direct involvement with the work-system of the host (Berg and Smith, 1985). It requires a commitment to self-scrutiny by researchers, acknowledging their own biases and values and the influence this may have in conducting the research. It entails a commitment to rich, thick and dense descriptions of the work-system under enquiry: a focus on depth before breadth. With their involvement in the work-system as researcher, the researcher has unique access to information and experience of and of being in the enterprise (Long, 1999). This must be ethically respected. When necessary, clinical research methods may require the research frame to change in response to the research experience and what is being learned, to ensure the principles of clinical research can be met (Berg and Smith, 1985).

The researcher inevitably carried conscious and unconscious biases into the research, having a professional background in IS development for 15 years. The researcher had worked across most development roles and managed large complex projects. He had experienced many of the pressures, tensions and dilemmas associated with developing software and had represented business departments in their dealings with IS providers. The biases and assumptions that formed through these experiences would have to be assessed and considered throughout the data gathering and analysis aspects of the research. The research supervisor would be able to provide some reflective space to assist the researcher to identify and work with these factors.

4.4 Action Research

Action research is a reflexive research process that is oriented to solving problems. It has both an action aim and a research aim (Cherry, 1999). To some degree, any such research is a form of social action (David, 2002). The emphasis is on discovery rather than testing hypotheses. It is usually field research rather
than laboratory based (Long, 1999). The method of action research has been attributed to social psychologist Kurt Lewin (Cherry, 1999). His method endeavoured to realise social or organisational change, and in doing this it creates new knowledge and the possibility of new theory (Lewin, 1946).

Action research goes through a number of cycles where the findings from one cycle are used to inform the research actions of the next cycle. This can be as extreme as to question if the current research goal is still the best goal to pursue to address the research question. If it is not, then the method allows the research goal to change and set new actions designed to explore the new goal. The cycles of an action research project iterate and move through time and the following four stages in each cycle (see Figure 4.2):

1. Reflection on Purpose
2. Action Planning
3. Actions and Experience
4. Observation and Evaluation

![Figure 4.2 Action Research Cycle derived from Cherry (1999)](image)

Enterprises are continuously emergent in nature—dynamic and changing (Stacey, 2009, Stacey et al., 2000). They require research methods that capture this flux and change. Williams (1982) describes such research methods as people
within these work-systems creating their own futures through planning, observation, action, reflection and evaluation. This flexibility in the method and the fact that the detailed research activities are determined for short time horizons (10 – 30 % of the total research time for each cycle) allows this research framework to be applied to these highly dynamic settings or to settings where the problem is insufficiently clear. It is particularly well suited to studying social systems and the effects of their actions. It is about discovery and hypothesis-development requiring inductive thinking rather than hypothesis-testing using deductive reasoning.

David (2002) provides a particularly French detailing of action research, describing four possible distinctions or gradations in the researcher’s active engagement with the work-system of the research host. The first two gradations are: observation, which is passive; and action research, which involves the contextualisation of change. For both of these the starting point is the existing situation, with the purpose to form an understanding of reality. The latter two are: decision aiding (Roy, 1992), involving the formalisation of change models; and intervention research, which involves both contextualisation and formalisation of change. The starting point is from acquired knowledge about the host system, an idealised situation, and the creation of a transformation project.

Traditional, scientific research emphasises the objectivity and independence of the researcher, which is maintained through the researcher being outside the system studied. In action research, the researcher is in the system also experiencing the system. They affect it and it affects them, their subjectivity is involved and this experience can be used as a valid source of research data (Berg and Smith, 1985). No social research can be objective; it cannot be value free. Inevitably, researchers work within a particular framework of values with the data of the research coming from the researchers’ interactions with the system (Berg and Smith, 1985).

There is a spectrum of involvement of the researcher in the work-system of the research host. Action researchers are in the work-system, undertaking research tasks and in subtle ways, simply through their presence, affect and change the
work-system. At the other extreme, researchers may participate in the work-system actively in tasks that have an explicit purpose (informed by earlier cycles of the action research) of creating change in the work-system.

Similarly, there is a spectrum of participation of the researched—members of the work-system. Usually participants from the work-system are involved in the action research, even in low-key ways such as: being observed in their work and having some awareness of it, being interviewed, or receiving the data findings and providing comments on them. Participants can also be involved directly in the activities of the action research—either as collaborative researcher or actor in a change activity—as well as being a member of the researched work-system (Elden and Chisholm, 1994, Greenwood et al., 1994). In this, the distinction between roles of researcher and researched becomes less clear. They experience the research as both researcher and researched, which may create anxiety and ambiguous, ambivalent and conflicted thoughts and feelings about it. Success in this complicated research situation requires individual participants to find multiple positions in themselves with respect to the research project—it is not simple or polarised, black or white but rather complex, uncertain and ambiguous. Long (1999, 262) suggests that “when successfully done, a state of mind is engendered where collaboration … [is] possible – as is an increased capacity to tolerate anxiety, ambiguity and other forms of psychological and social pain”. This capacity to participate in the research is an action, an intervention in the work-system, increasing the psychological bandwidth of that community. Such a psychoanalytic approach to action research is oriented towards the experience of those within the work-system under study; it enquires into the effects of subjectivity.

Long (1999) identifies three conditions required for such participatory action research:

- active collaboration between the researcher and the organisation in the development of the research, its implementation and evaluation;
- an iterative cyclical process, where data is gathered, fed back to the organisation (in summary form), interpreted and employed to form the basis for further data gathering and for organisational action;
• a consultative process where participants act also as researchers in their own system and hence develop their own capacities in the process.

It is possible to see action research as having to make substantial transformations in the research host, otherwise how could it be called action? But actions and their impacts can be much subtler, almost unnoticeable. For example, in interviews, some participants became aware of the previously unappreciated value of reflection on their experience of work. Through experiences of holding confronting and ambiguous facts about their work-system in a well contained work-group, some participants found they could tolerate seemingly unbearable and unactionable information, and that with forbearance and resilience their work-group could identify realistic solutions and action them. These smaller transformations may not instantly impact the whole of the researched system, they may only impact a few and it is up to them to extend those learnings over time across the work-system. They may even only affect the construction of meaning of individual role-holders in the system, as they make new connections in their inner-world between actual objects (roles, tasks, work-products, customers, information systems) which changes and increases the ways they have available to them to relate to these objects in the external world (Long et al., 2000, Newton and Goodman, 2009). These bounded disturbances promote a collaborative state of mind and the relations with others to carry it out.

Reflexivity is an important element in participative action research. It requires more of participants than reflection; with this being a cognitive process whereby they examine themselves as if from outside, where they are the object of their thought process. Reflexivity involves more self-awareness, it is a “process of experiencing oneself as a subject as well as reflecting on oneself as an object” (Aron, 2000, 668). It involves reflecting on one’s internal state, the experiential and feeling functions as well as thinking or cognitive function; and draws on subjective and objective self-awareness.
4.5 Working with Data

4.5.1 Psychoanalytic Perspectives

Bion’s process of theory development about groups and associated psychic processes for human systems followed a similar path to that of Freud’s development of psychoanalysis. Freud established a tradition in psychoanalysis whereby empirical observations and data from clinical practice and research was used to formulate theory (Freud, 2005, Gabriel, 1999, Ogden, 1986). This theory was in turn refined and refigured as more empirical data became available. Freud’s psychoanalytic interview was the treatment method but also the research method for psychoanalytic theory (Kvale, 2003). This approach represents the basis of the development and application of psychoanalytic thinking in the realms of both individual and group/enterprise levels of human systems.

Bion (1961) in his foundation study into the dynamics of groups offered some insights into the process of making meaning out of the social acts of agency of a group and its members. He describes the process of his early studies of group dynamics as observing what is occurring between people and what is being said and trying to understand what these individual statements and actions represent to the group in that moment, and what they may indicate about the pressures that the group as a whole is experiencing. He does this from a role differentiated from that of a ‘member’ of the group, a role of being in the group but not of the group. His role was as an observer of and interpreter to the group, where the group was the object of the analysis and interpretation not the individual (Symington and Symington, 1996, Riosch, 1976). This is different from the American model of T-groups and Foulksian group analysis where the object of the analysis was the individual as observed and experienced in a group context (de Board, 1978, Gabriel, 1999, Franck and von Sommaruga Howard, 2010).

What is critical here was Bion’s conception that the behaviours and statements of individual group members represented more than just that individual’s psychic process. It represented something of the psychic process of the group,
the collection of members, something common to the experience of the group and of its whole membership (Bion, 1961, Symington and Symington, 1996).

Bion (1961) describes and analyses, using theoretical concepts from Kleinien psychoanalytic theory, the behaviours exhibited by members of the group and of the group’s attitude to topics of concern to it. He used the concepts of defensive processes against anxiety (projective identification, projection, introjection, depressive position and paranoid-schizoid position), as initially conceived of in individual psychoanalysis, in his analysis of a group’s behaviour. It formed his theoretical guide for the interpretations he gave to the group about its process and dynamic. But always the analytic object was the group, not the individual.

From these early studies of groups and their data, he formulated a theory of group behaviour, with central concepts of proto-mental matrix, basic assumption behaviour, work group behaviour, and valency discussed in Chapter 3. These concepts have been extensively applied in numerous empirical studies of organisations (Hirschhorn, 1988, Miller, 1997, Gould et al., 1999, Lohmer and Lazar, 2006).

As discussed earlier, Bion’s attention returned to the treatment of the individual, with particular attention to psychotics and their thinking processes. From this he developed his theory of container and contained (Bion, 1970) and his theory of thinking (Bion, 1967). Later empiricists in the field have further applied these concepts in a similar way to the interpretation of observations of groups and enterprises.

There are three elements to Bion’s process of inquiry:

1. The group is the object of analysis
2. Attention to data is informed by theory in use
3. Interpretations draw on theory to explain the empirical data of the group’s behaviour.

Transference, discussed in the previous chapter, is the process whereby another person, role or work-group are unconsciously construed by the subject\(^{20}\) to be

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\(^{20}\) work-group or role holder
the same as a person or group from their past. The feelings and thoughts, expectations and distresses associated with that past object become ascribed to the present situation and protagonists. Whilst this phenomenon can be very disruptive when taken at face value, transference is a way of communicating primitive, possibly preverbal, experience about current experiences. It is a communication of the feeling states being experienced by the subject and communicated to the other by provoking such feeling states in them. When the other\textsuperscript{21} can ‘listen’ to the transference’s symbolic meaning, rather than responding literally, the transference may provide powerful data about the experience of work for the role-holder or work-group.

Related to this is the phenomena of parallel process, or mirroring (Gilmore and Krantz, 1985). It occurs when the dynamics observed within the research-host system are unconsciously recreated within the research-system (Willshire, 1999). In some way it reflects the dynamics operating in the work-system. At the time mirroring occurs, it is unknown and unconscious to the research-system\textsuperscript{22}. An explanation is that the transference experienced by the research-system is unwittingly absorbed by it and unconsciously enacted by it. It develops affects, cognitions and behaviours similar to the host (Smith et al., 1989). This occurs whether the research-system is a group of researchers or a single researcher (Alderfer and Smith, 1982). This phenomenon is harder to identify in a singleton research-system. It can be highly informative, providing research data, when it is identified and explored. Up to that point it can be neutral to disruptive to the conduct of the research. The involvement of supervision of the research-system can be helpful in avoiding the problematic aspects of the phenomenon. Parallel process is the enacting of experiences that are unresolved, and up to that time have been out of awareness and unavailable for thought by the researcher or host system (Davies, 1997).

\textsuperscript{21} in the case of the research, this is the researcher. In the case of the work-system this is often the manager.

\textsuperscript{22} in this case, to the researcher.
4.5.2 Data Collection

In gathering data from interviews, informal discussions, or observations, the researcher used the theoretical framework of systems psychodynamics to prompt the enquiry in mind, which in turn shaped questions and orientation of observations. Levinson (1972) states that to understand an enterprise or work-system, a process of immersion is necessary, the researcher must experience the pressures and tensions that are within the enterprise and upon its members. The researcher was not looking for data and the participants’ stories of working in this setting in complete isolation. Whilst genuinely curious about their experience of work, the researcher was particularly interested in their experience of work around the pressures and tensions they experienced in the work, where in their perception these pressures and tensions might originate from and the broader consequences of those onto the group and other parts of the work-system. The research was interested in the feelings and anxieties they experience in their work, and of these, what might also be prevalent in the groups they work in and with. Also of interest are the symptoms of emotion evident in or implied by the behaviour of a group, as this can often indicate anxiety or defences against the emotions felt by a group’s members in undertaking their work tasks. The researcher is trying to understand both the conscious and unconscious dynamics that occur between groups engaged in software development and the consequences these dynamics have on the delivery of useful software to business. This requires understanding the critical points in the structure of the IS organisation and its relationships with business groups where these dynamics, driven by defensive motivations, have the strongest impact and consequences on IS work done. Hence, the nature of this enquiry is primarily oriented around the things that ‘go wrong’, that cause under-performance, that cause the wastage and lost opportunities discussed in earlier chapters. The researcher was also open to hearing the constructive and positive stories about work that exist within the organisation. Unfortunately these have not appeared to be that prevalent in the data. Where they occurred they certainly indicated successful adaptation to the plethora of pressures and tensions these work-groups faced.
Ethics approval is discussed in Appendix 3. Anonymity, an aspect of ethical conduct, was established for each of the research participants. They were given pseudonyms to ensure their data could not be attributed to them. All data recordings were kept in a locked cabinet off-site by the researcher. All participants were given the option\(^{23}\) to inform the researcher or supervisor of their desire to withdraw from the research and to have all data pertaining to them removed from the record. No participant took up this option. No complaints about the conduct of the research were received during or after the research.

4.5.2.1 Interviews

The psychoanalytic interview of Freud and his followers is a major contributor to contemporary qualitative research and interview method in the social sciences. The interview methods employed in Mayo’s interviews with industrial workers in the Hawthorne experiments and Dichter’s consumer interviews were informed and inspired by the psychoanalytic interview (Kvale, 2003).

A semi-structured method was adopted for the interviews (Brenner, 1996, Fontana and Frey, 1994). A set of thematic questions was asked of each interviewee (see Appendix 4). The order of the questions was determined to best fit the manner in which each interview was progressing. The thematic questions offered the possibility to explore an interesting theme further through impromptu follow-up questions stemming from the earlier answers given by the interviewee. The interviews were recorded and transcripts made of the recording. The transcripts were a tool to aid the data analysis process (Kvale and Brinkmann, 2009). Field notes were made after each interview. They included the researcher’s impressions of the interview and setting, the emotional tone of the interview, any feelings evoked in the researcher, and residual thoughts and questions.

\(^{23}\) and the information to execute it
A level of analysis of the data occurred between interviews as represented in Denzin’s (1994) notion of ongoing analysis. This allowed for refinement of questions, particularly to enquire about possible tensions between workgroups—tensions that had been suggested by an earlier interviewee. As Miles and Huberman (1984, 49) suggest: “analysis during data collection lets the field worker cycle back and forth between thinking about the existing data and generating strategies for collecting new – often better quality – data”. Being able to respond to emerging information allowed certain data items to be verified or refuted rather than remaining an open question, which of course it sometimes remained anyway. Action research encourages responsiveness to the emerging realities of the research-host, rather than continuing as if uninformed to follow the preconceived path. Of course these variations constituted only minor changes to the interview and are consistent with the adaptive nature of a semi-structured interview (Brenner, 1996).

The research sought the interviewees’ thoughts about what was going on in the IS department. What they said in the interviews was taken at face value and validated against other interview data and other data sources from the research-host. It was an expression of their unique subjectivity, and their experience of the work-system in the context of the research interview and the meanings they imposed on that.

4.5.2.2 Workplace Observation

With workplace observation, the researcher quietly observes a work setting for 1-2 hours at regular times in the week over several weeks. Typically this involves watching and listening to a work-group or parts of the work-group. The challenge in the role is “to be open to learning of group member’s experiences without becoming an active participant in group events, whilst simultaneously retaining the capacity to step back and reflect” (Willshire, 1999, 196), seeking to understand dynamics and interactions that are beyond conscious awareness of the work-group and its members.

The psychoanalytic observer needs to “hold in mind a loose cluster of expectations and conceptions, while remaining open to the experiences of the
observation as it develops” (Rustin, 1989, 57) and to be open to respond to and think about new experiences and unexpected observations. From this state of mind, the observer focuses on the objective events that are happening, the emotional atmosphere of the setting and their own experience of observing the setting: their thoughts and feelings experienced during the observation (Hinshelwood and Skogstad, 2000). It is necessary for the observer be able to tolerate not knowing, so that a state of ‘coming to know’ may ensue (Willshire, 1999).

4.5.2.3 Artefact Collection

Throughout the course of the research, documents and emails were collected; these informed the data analysis process. Most were stored for reference. Ultimately they played little part in this dissertation. With the volume of data to draw on, most emphasis has been given to using interview, observation, transference and action learning project data.

4.5.2.4 Reference-Group

The purpose of the reference-group in this research was to be a thinking space in the work-system of CBAA, where generalised non-identifying data and interpretations of the data could be discussed and tested for validity. It was a serious space for thinking to occur between the researcher and CBAA representatives. In this space, the members were researchers. The work done by the reference-group would shape subsequent actions undertaken in the research and recommend these research activities to CBAA management for authorisation. The reference-group was itself an intervention, with participants collaborating in aspects of the research process and learning through experience ways to grapple with the work-system’s complexity and the requisite capacity to tolerate anxiety, ambiguity, not knowing, and psychological or social pain. Perhaps such involvement could create learning and increase resilience and the psychological bandwidth of parts of the work-system.

It was designed to have members who represented different parts of CBAA, both functionally and hierarchically. This allowed a diversity of perspectives and
experiences to be drawn on. Whilst functional representation was achieved, only three levels of the work-system’s five level hierarchy were able to be included. The membership was to be five to seven people including the researcher. The actual size of the group became eight from the outset. This in part represented the seriousness with which senior managers took the research project and their curiosity about new methods. Members were drawn from CBAA senior management and other roles and functional areas involved in the study.

4.5.2.5 Action Learning

Action learning involves working on a live project in real time, working with others in solving questions related to the project, carrying out the work and assessing the outcome (Lawrence, 1991)—in turn producing further learning. Action learning is learning by doing and was coined in the 1940s by Revans (1998). It involves learning about the local social system being explored and the work it does, whilst collaboratively working together with participants to improve its functioning. It is an approach that explores, critiques and improves the way current activities are done.

Long (1999) links this method to Bion’s theory of container and contained, where learning (from experience) with all its inherent anxieties is more possible because it occurs within the container of a prescribed method or facilitating environment of structure, authority and process. This container holds the learning and learner, allowing creativity and development, and alleviating fear responses and loss of focus.

Revans (1998) view was that managers and staff best learned about their work-system and how to improve it by posing questions about their real everyday work problems and through thought informed action, taking responsibility for and carrying out solutions to them. This would be done by groups of people from the work-system. Action learning projects offered participants possible new ways to manage the work-system’s complexity and how to better work with anxiety, ambiguity, and the psychological and social pain often associated with work-tasks not fled from.
4.5.3 Data Analysis Procedures

In the analysis of the research data the researcher would endeavour to identify the pressures and tensions, the worries, anxieties and defensive behaviours around work that participants have discussed about work-group life. These are important because they indicate a likelihood of group task or behaviour being disrupted by workplace anxiety.

The analysis of data proceeded using an abductive process. This involves both inductive reasoning and deductive reasoning: with inductive moving from specific observations to broader generalisations (bottom-up), and deductive moving from the more general (theory) to more specific instances (top-down) (Patton, 2002, Habermas, 1978). Abduction is the logical generation and discovery of hypotheses and findings, distinguishing it from purely theory-derived deductive analysis or from data-oriented inductive analysis (Levin-Rozalis, 2000). Denzin (1978) describes research that tries to understand social organisation as not fully deductive in developing propositions, nor fully inductive because the facts must be interpreted, they do not speak for themselves. This method of abduction is working from consequence back to the antecedent or cause (Denzin, 1978). It supports bringing different types of data together.

The research was looking for patterns in the data that may represent defensive behaviour by work-groups. Data was analysed from specific elements and their affinity to each other around common meaning to build data themes, generalisations of the data that carried meaning and represented the data elements drawn from the interview narratives and observations (inductive approach). Other generalisations were made from the data elements and themes: patterns of behaviour and social constructions that the research was looking for and that were described in the underlying theory (deductive approach). The research was not trying to prove the existence of these theoretical constructs. It

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24 such as interview, observation, field note and artefact
was trying to observe if they were present in the work-system, and if so, what forms did they take.

Data elements were drawn from interviews, observations, field notes, artefacts, and transference and counter-transference where they were identified. It is through correlating the many data elements from many events that reasonable explanations about group behaviour and dynamics can be formed. The first stage of data analysis used an inductive method. This involves the researcher developing working-hypotheses from the emerging patterns, themes and categories in the data rather than collecting data and assessing it against preset hypotheses and theory as is the case in deductive analysis (Bogdan and Taylor, 1975, Judd et al., 1991). The identification of patterns in the data, from which working-hypotheses are formed, requires an intimate knowledge of the research data by the researcher (Bogdan and Taylor, 1975, Berg, 1990). The process of transcribing the tape recordings and re-reading them supported their intimate familiarity to the researcher.

Interpreting data about subjective experiences is rarely clear-cut. There are no standard methods for arriving at the meaning of what is said in interviews, in part, “understanding is based on the experience and craftsmanship of the researcher” (Kvale and Brinkmann, 2009, 192). Whilst pattern identification and working-hypothesis formation drew directly on the data, it occurred within the research’s orientation of system psychodynamic concepts. This second part of the analysis has a deductive orientation in that it contrasts the constructs found in the data with constructs from system psychodynamic theory. These interpretations are grounded in the data and are subjected to validation by members of the work-system through the reference-group. Concepts including anxiety, defences against anxiety, the dynamics of containment, thinking processes, primary task, authority and role, and system interactions, were used after the data analysis as a type of referent parameter, offering a reasonableness test to the interpreted data findings. Blumer calls this application of concepts to naturally patterned data “sensitizing” and the concepts “sensitizing concepts”

\[25\] discussed in Chapter 3
(1969, 147). He distinguishes sensitising concepts from “definitive concepts”, where the latter would be used to define the data as in a deductive method, enforcing meaning on the data and not letting it ‘speak’. For Blumer, sensitising concepts provide the researcher with a “general sense of reference and guidance” (1969, 148) that may encourage and support the unique characteristics of the work-system to emerge.

### 4.5.3.1 Thematic Analysis

The interview data was first analysed for noun phrases—for the objects of interest to the participants of the research. With the reading of the data, from interview transcripts and field notes, the themes are identified. Objects considered for possible themes were those that were of interest to the informants because of the individual’s innate curiosity, its importance to their work, its significance to the work-groups, or its importance to the management or the enterprise as a whole. The objects could be things that they use or produce, the names of processes, activities undertaken, the names of groups or roles they interacted with, or other objects that they had identifiable strong feelings or reactions towards (Spradley, 1979).

The thematic data analysis method looked at the types of objects, and the thoughts and feelings used to describe them, and the prevalence of those types of objects in the narratives of the participants. “One kind of typology relates to how people classify others and objects in their lives” (Taylor and Bogdan, 1998, 144). The analysis of the data considers whether their clustering is of an object in the narratives of certain functional teams, or certain roles, or specific layers in the organisational hierarchy of the research-host. From this analysis, patterns in the data were identified and from these, themes were formed around the type or class of objects deemed important through its representation across the combined narratives of the research informants.

It was an iterative process where tentative meaning was clarified and refined through repeated exposure to the whole data set as it grew throughout the data collection stage. It was an inductive process where empirical data items were gathered without guesses about their relative importance. They were classified
and generalisations about them are made. These generalisations were further tested (Blaikie, 1995) back against the data set of interviews, observation data and field notes.

The identified themes carried a range of possible meanings. They may indicate ruptures in the fabric of the work-groups in the host, pressure points and tears in the work processes between specific roles or specific groups in the organisation structure as these groups enact their work and experience their respective struggles in dealing with each other in the pursuit of the work tasks. It was through this method that key tensions or themes were identified as well as the key pressure points and ruptures in the working relationships between IS groups and between IS groups and business groups.

4.5.3.2 The Working-Hypothesis

A working-hypothesis is an attempt to ‘sketch’ the reality of a situation, capturing the core of the experience of a situation, set of situations or dynamics. Its goal is illumination rather than proof. As it is worked on, it may be elaborated or replaced. It is never possible to be certain that all is known about a situation involving human behaviour (Ogden, 1986). As such, it is always the best approximation, as reliable and valid as possible in the face of all the data available at that point in time. The sketch is the perspective of reality the researcher has in data (the communicated experiences) from many points across the work-system under study. Lawrence tells us that:

“reality is construed subjectively. Objectivity can be seen as what is inter-subjectively agreed to be the case. It is socially constructed. The working hypothesis is a way whereby the subjectivity of both researcher and respondent can be worked with to provide some test of objectivity” (Lawrence, 1999).

The working-hypothesis furthers the process of moving from not knowing to knowing something, yet accepts that we can never know everything about a situation.

After being organised into themes, the data was subjected to psychoanalytic interpretation using the working-hypothesis methodology of Lawrence (1985)
and Miller (1993). This methodology had three stages. Firstly, provisional working-hypotheses were formulated from the initial consideration of the data. Next, the data were re-examined to identify evidence that may support or refute these working-hypotheses. Finally, the data collected around each working-hypothesis were scrutinised to determine if they indicate refinements to the existing working-hypothesis or a more appropriate formulation of a new one. In this way, working-hypotheses were, throughout the duration of data analysis, reviewed and refined in the presence of new data and many were abandoned where there was insufficient data to show them to be valid or where they became less relevant to the enquiry.

Working-hypotheses are generated from the data, the narratives, of the actual experiences as felt and described by participants (Berg, 1990). Working-hypotheses are formed from the data first, and theoretical concepts are used after the fact to illuminate it, to offer perspectives that may through interaction with the data, enrich the theoretical concepts—a process of abduction.

4.5.3.3 The Working Note

A ‘working note’ is an interpretation of the enquiry’s data, as made by the enquirer, and presented back to the host system for detailed consideration and dialogue (Miller, 1995a). Its purpose is to generate dialogue with and within the host system and avoid the loss of meaning that occurs when researchers do this in isolation (Armstrong, 2010). It has its equivalence in the interpretation offered by a therapist to an individual (Symington, 1986) or a consultant to a group (Miller, 1990). It is offered to the broader social system (engaged in the research) in a written form. It endeavours to discuss the limits of the researcher’s current understanding of the situations under study; its purpose is to generate dialogue with the participants and to offer new perspectives on recognisable problems. It provides evidence from the data26 for the interpretations, working-hypotheses, propositions or claims. It invites members of the work-system to reflect and to think further with the researcher about the

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26 usually in a generalised form, ensuring not to betray the anonymity of the participant
interpretations and other evidence (data) that supports or refutes the data and interpretations (Alderfer, 1988, 2011).

In this way, generalised data findings and working-hypotheses were fed back to the reference-group for discussion and testing. During this process, more data come to light, with some themes and working-hypotheses being altered. The refined and surviving working-hypotheses informed the next round of research activities.

4.5.4 Expected Conduct of the Research

This section discusses realising the research plan and associated activities in accordance with the research design and goals.

4.5.4.1 Baseline Research Plan and Activities

The research was based on a systematic plan for interviews, observations and action learning projects, all interspersed with review cycles of the action research process and meetings with the reference-group to work through interim data findings and interpretations. The baseline plan had generous time allocations for most activities. It is detailed in Appendix 2.

Due to the disruptions of numerous major reorganisations of the IS department, some modifications to the plan were made. This usually amounted to compressing two stages of the research into one, which did not compromise data gathering as the original planned activities were over engineered. The department’s reorganisations also disrupted staff, impacting their ability and in some cases, their willingness, to participate in research activities. The only impact this had was of delaying the research activities. These emergent events were largely beyond the researcher or the host’s capacity to anticipate. However,
the action research design\textsuperscript{27} anticipated disruptions to the plan and had the resilience to accommodate them without seriously impacting the research goals.

4.5.4.2 First Round Interviews

After the setup of the research project and selection of interview participants by the reference-group, the first round of interviews occurred. Documents and emails were also collected throughout this period.

There were 50 interviews\textsuperscript{28} of approximately 90 minutes duration. Fifty-one people were interviewed, 41 within CBAA\textsuperscript{29} and 10 members of customer and other stakeholder groups (see Figure 4.3). Of the 41 CBAA staff, 8 were in senior management roles, 20 were in middle management roles and 13 were in roles directly working on the deliverables of the IS function. Nearly 70\% of interviewees were male, representative of the work-system.

<table>
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<tr>
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<th>Male</th>
<th>Female</th>
<th>Total</th>
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<td>2</td>
<td>7</td>
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<tr>
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<td>5</td>
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<td>Construction</td>
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<td>Testing</td>
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<td>Program Management</td>
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<tr>
<td>Business Executive Management</td>
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<td>3</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>37</strong></td>
<td><strong>14</strong></td>
<td><strong>51</strong></td>
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Figure 4.3 Interviewee breakdown

\textsuperscript{27} and the method itself

\textsuperscript{28} one interview was with two staff from the one area

\textsuperscript{29} excluding staff from the outsourced provider
In this research stage, tentative findings were fed back to the reference-group and planning for the next stage occurred. These activities explored specific pressure points in the work-process where critical failures were occurring.

4.5.4.3 *Workplace Observations and Second Round Interviews*

The purpose of this stage was to gather more data about specific critical failure points in the IS development process in CBAA, to understand in detail the dynamics that were occurring there in the intergroup interactions and to describe other pressures from the work-systems that were coming to bear to negative effect on these critical interactions. Workplace observation became the preferred method of inquiry as it allowed verification of earlier interview data and most importantly access to the behaviours within and between work-groups as they undertook their work; in good times and in stressful times. What they said to each other, what they did, what they did not do, and what they said about others who were not present. The dissonances between what people said their group did or should do, could be contrasted with observations about what they were observed actually doing. All this helped with identifying possible patterns of defensive behaviours used by work-groups, the impacts these had and the dynamics they created in the work-system.

Six primary work-groups were observed. In the course of this, numerous other work-groups were also observed through the actions of their representatives or delegations interacting with the observation’s primary work-group on shared work-tasks. Many of the primary work-groups were very large\(^\text{30}\), so it was rare to observe more than 8-14 at work at any one time. The researcher moved locations during sessions to observe most parts of the work-group. Observations went for 6 to 8 weeks, with 2 to 4 observations sessions per week. Observations sessions went from 2 to 3 hours. This produced significant amounts of data, which was recorded in field notes.

During this stage, the research sponsor was forced out of the enterprise and whilst all the information systems continued to be supported, the organisational

\(^\text{30}\) over 30 people
configuration changed markedly after two major re-organisations. The reference-group no longer formally existed. With the departure of the sponsor, members seemed deauthorised and unsure how to continue. It was unclear if their managers in the new structure would approve their continued formal participation. Four continued on as an informal reference-group. Decisions around further research actions were made through a series of bilateral dialogues between TPT IS managers who were part of the reference-group. New interim findings were still discussed, the research goals were reflected on and confirmed, and possible areas to conduct the action learning projects were identified. Most significantly, the commitment to continue the endeavour remained strong despite the challenges. In preparation for the action learning projects, six further interviews were arranged and conducted in the area of IS supporting the Wholesale BU of TPT. These interviews went between 60 to 90 minutes.

### 4.5.4.4 Action Learning Projects and Third Round Interviews

Two broad action learning projects were planned and commenced. The first was two sets of across-role-dialogues aimed to explore the problems encountered in critical role interactions. One of these dialogues went its full course, while the other only had one of its three sessions. The second action learning project (ALP) explored the nature of boundaries in IS work and the many different relations different work-groups had to a work-product. The ALP sought to find new ways to manage the boundary between work-groups, enabling them to get their different technical needs provided for in a timely, unconflicted, rather than obstructed manner. This learning project went on for over 12 months, providing positive and useful learnings. Both are discussed in Chapter 9. In both, the researcher moved to active participation roles. Field notes were created for each session of each action learning project.

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31 it was not possible to gather the members to meet, numerous attempts were made but never more than three. So multilateral dialogue was abandoned in favour of several bilateral conversations

32 across role dialogue sessions were two hours duration
A final two interviews were conducted to bring an integrating macro view of the changes that the IS department had gone through over the years of the research: one with the CIO of the latest IS organisation and one with a middle level project manager.

Throughout all these stages it was possible to go back and relook at the existing data with a more nuanced and fine grain analysis in the light of new data gathered in subsequent stages.

4.5.5 Entry - Finding an Industry Partner

The research sought participation from enterprises where middle level managers had experience of my work and capacity. They could offer a credible reference to an executive sponsor considering my request for an industry partner for the research. In Trans Pacific Telecommunications (TPT) I had discussions with a few middle managers; all were encouraging about the project. One was extremely enthusiastic and undertook to discuss the research project with an IS executive managing 2500 IS staff supporting TPT’s core customer care information systems. His discussion with the MD apparently went well and I was invited to a meeting with both to discuss the research proposal.

In the hour meeting we discussed the research, its goals, possible benefits it offered CBAA and TPT, the usefulness of the research to industry, TPT’s time participation and contribution to the research, project timeline, the nature of research as distinct from consultancy and my IS and social research experience. A short way into the meeting it was evident there was a positive response to the topic and towards the end of our time, both managers were genuinely excited about the possible commencement of the project and what the research might reveal about the nature of the interactions and dynamics between IS groups and their client business communities.
The MD, however, was mildly unsettled by two things. Firstly he and his staff were not used to processes that went longer than a year. Consultancies they engaged usually went for even shorter periods. Secondly, he was used to starting things immediately when he had made a decision. There was some frustration for him in that the project could not commence until January 1999 at the earliest—nine months from this first meeting. The research project sought ARC support, in the form of a SPIRT grant. The application was completed in the coming months but the awarding of a grant would not be known until the end of the calendar year and there was no certainty that a qualitative research project such as this would receive funding.

Alderfer (1988) suggests that the patterns revealed by the enterprise during entry are likely to figure highly in the qualitative research project. Research success was often set in this period of negotiating entry (Berg, 1977). At the end of this first meeting, CBAA’s MD asked me in a half joking manner “don’t you have the answer to these questions already, because we are sure in need of the answers now”. I was taken aback by this and responded by asking him “if I had come to you with this proposal three years earlier, what would your response have been?” He responded, “fair enough, I guess I wouldn’t have been too interested then”. He went on to say “we are under a lot of pressure here from the business and are struggling in many ways to fix things”. As noted by (Berg, 1977) quite revealing things are sometimes said after the formal part of an interaction has ended. To me, his closing comment was ominous and loaded with portent. It hinted at the anxiety he felt about CBAA’s future, the skills and insights they had and how they could survive in the field of their company’s expectation about IS delivery from CBAA. He knew it unreasonable for answers before beginning but hoped for insights that would assist their success and survival. There was the evident tension between fact (reality as we share it) and feeling (what we hope for or fear) (Ogden, 1986). He was in contact with both aspects of his experience, open to hope but not draw distractedly into his inner world. These closing

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33 Australian Research Council, which provides government grants for research
comments of the MD’s were to have an ominous resonance throughout the research.

From my earlier time working in other parts of TPT I had heard of, but not met, this MD. He had a reputation as a tough manager—not suffering fools and demanding excellence from his staff. In meeting him, I was positively surprised; he was thoughtful rather than fierce, confident in his own (and his role’s) authority rather than aggressive, straight forward and direct yet responsive. He seemed realistically engaged with what was possible in this opportunity for the research as well as engaged with its limits. He was open minded and seemed prepared to consider concepts new to him without prejudice, having an intuitive sense of where this might lead and how it may be helpful. I thought he would make an excellent industry sponsor for the research. I had some concerns about his association of research with consultancy but was confident that with further discussions he would understand the distinctions and we would be able to work within the research modality.

4.5.6 Establishing the Research Project in CBAA

4.5.6.1 Forming the Research Project’s Reference-Group

The researcher in conjunction with the research sponsor in the enterprise discussed potential members for the reference-group. This was agreed and candidates invited. All accepted. The reference-group would discuss and determine candidates for the initial phase of interviews.

4.5.6.2 Selecting Initial Interview Participants

The decision was made to only interview IS staff from the billing stream of CBAA, see Figure 4.4. This area had fewer insource contractors and most systems were fully managed by staff engaged directly by TPT. The billing stream made up over 80 of the 130 systems CBAA was responsible for. Interviewees were drawn from across 12 of the 80+ billing systems and CBAA, P&IS and BU management.
4.6 Biography of the Research Host

4.6.1 Biography of Trans-Pacific Telecommunications

When the research commenced, Trans-Pacific Telecommunications (TPT) was a corporation of approximately 50,000 staff with revenues of around $23 billion. It was a full service telecommunications company selling retail and wholesale telecommunications products. It owned fixed and mobile, voice and data networks across one country and had similar assets in other countries across the Pacific, although it was less pervasive and dominant. Figure 4.5 shows the context the enterprise operated in. During the research, staff numbers were reduced to 28,000.
TPT had transformed from a bureaucratic government department involved in nation building to a publically listed corporation. Its local telecommunications market had gone from monopoly to an open competitive market with a strong regulatory environment. It used financial markets extensively to raise capital and for borrowings. These circumstances led to massive downsizing and changes to its organisation. One year into data gathering, it was re-organised from a centrally organised structure to decentralised autonomous business units which had dramatic consequences for IS services in the enterprise. This is detailed in Appendix 6.

New products and processes went through an enterprise process called the Product Development and Operations Methodology (PDOM). Halfway through this process, IS teams were briefed on the proposed product. They were asked to scope the IS work required to support the product in its proposed form and to provide an estimate of cost and timeframe for the work; these were extremely crude and inaccurate because of the limited and unstable product definition.
4.6.2 Biography of CBAA

CBAA, with 2500 staff, was the largest of four IS development departments within the IS division, Process and Information Systems (P&IS), totalling 7200 staff. CBAA went through four major organisation changes during the data collection stage. Prior to the research commencement it had moved from a horizontal (system oriented) organisation to a vertical (IS function oriented) organisation, detailed in Appendix 6. Figure 1.2 (Chapter 1) shows the organisational chart for CBAA and its key functional subsystems. Figure 1.1 shows the service relationships the IS division had with other business units. Figure 4.6 shows P&IS and the place of CBAA to the other subsystems in the IS division.

![Organisational Chart](image)

**Figure 4.6** P&IS and business units at the commencement of the research.

During the final months of the research, over 80% of CBAA’s staff were transferred to IS outsource providers as part of the outsource process the enterprise undertook.
4.7 **Summation**

The field research, conducted over three years, produced a single case data set involving interview, observation and document artefact sources. It was interpretivist qualitative action research, seeking to understand group members’ experiences of IS development work, the pressures they perceived themselves to be under, the part systemic-anxiety played in the planned and re-active behaviours of IS work-groups and whether this had a bearing on the chronic underperformance of the IS development process. Should evidence be found that systemic-anxiety did disrupt IS performance, action learning interventions to ameliorate this would be undertaken as part of the research to test if systems psychodynamically informed interventions would be effective in this setting with this problem.

With the ARC approval, the research project became ready to proceed. The next chapter introduces the data themes and structural pressure points across CBAA, drawn from interview data. Following that, the next three chapters discuss the data, the defences used by work-groups to cope with the work-system’s pressures and tensions, and interventions aimed to moderate these anxiety driven collective behaviours that detrimentally affected IS performance.
Chapter 5  Structures and Data Themes

With this chapter, the introduction to the research data and its discussion begins. Data are firstly presented about the complex structures and processes of the CBAA work-system. This IS department was very large and had responsibility for supporting 130+ mainframe information systems, more than half of TPT’s information systems. It would be difficult to fully make sense of the nature of the group dynamics of CBAA without an appreciation of the scale and complexity of its endeavour. Many acronyms used by the research-host are used in this text, most have been introduced in earlier chapters and all figure in the Glossary.

In order to appreciate the dynamics and tensions in this work system of 2500 members, it is necessary to have a clear sense of the complexity of this human and technical work-system of roles, groups, groups within groups, and IS development processes; all interworking towards CBAA’s operational and strategic objectives. Its primary task (Miller and Rice, 1967) was:

To provide strategic vision, durable changes, and operational support to TPT’s information systems for customer billing, activation and assurance business processes. To do this in a timely, cost effective way ensuring systems and business stability and continuity. (I-21, MD, CBAA)

The software release, central to the planning and coordination of software changes across CBAA’s 130 information systems, with its structure, complexity, scale and constituents are discussed. There are different timelines for each of the 130 software systems, vastly complicating the system-integration testing and deployment of the software changes without impacting business operations. Other structural elements discussed are IS planning interactions with business units, the enterprise’s IS investment processes, various software quality certification programmes, and CBAA’s ongoing improvement processes.

The second half of the chapter discusses data drawn from the initial interviewing round of 51 ninety-minute interviews, the key themes identified from those interviews and the subsequent reference-group discussions about the working-note presented to them at the conclusion of the interview data analysis. These
data begins the exploration of the group dynamics in the work-system and their impacts on information system delivery. These dynamics are explored further in the three subsequent chapters, discussing the defensive, anti-task, and disruptive impacts these dynamics had on the IS work-system’s objectives, and the interventions found to reduce the negative impacts on IS development performance.

5.1 What Happened

This stage of the research involved i) the initial 51 interviewees, ii) working through reports and emails about CBAA performance improvement and operations activities, iii) team managers inviting observations of their teams, iv) the subsequent workshops with the reference-group to discuss and further refine and validate the data, and v) the planning for the next cycle of the action research with the reference-group. The timeframe for the interviews was drawn out by several months. There was a slow start to the initial reference-group meetings, with some members needing a fuller understand of the research project and reassurance about its goals and the potential benefits to CBAA. Secondly, there were difficulties in scheduling interview times with key staff, many of whom were critical path resources involved in several software releases concurrently.

The workplace observations made during this time were from informal invitations to observe work-groups. They had not been planned with the reference-group. The invitations came from two work-groups’ managers and were endorsed by those staff. These managers described the process of the research as “taking too long ... which is disappointing” (FN-99-09-2, PM, Construction). They described CBAA management as “dragging its feet” and “being too conservative” (FN-99-09-2, PM Construction). They expressed an enthusiasm to support the research and felt an urgency to identify new solutions to the IS department’s issues of responsiveness and negative business perceptions of their overall performance.
During this twelve months, the new organisation structure and its new management team, established four months prior to the commencement of the research (see Appendix 6), was bedded down. This structural change involved an enormous practical and psychological reorientation of all staff, from senior managers to technicians.

5.2 Perspectives on the complexity of IS development

CBAA interviewees often described business users and managers as not understanding how complex CBAA was.

“they have no real idea what we do” (I-38, manager, IS Testing)

“they often want us to change directions ... we’re like an aircraft carrier not a rally car” (I-10, manager, IS Construction)

“some people (in the business) get how intricate and interdependent software development is, most don’t” (I-17, SM, IS Architecture)

“small changes have big impacts, they don’t see it unfortunately” (I-5, team-lead, IS Architecture)

“They see one change, we see hundreds of system changes ... many thousands of day’s work” (I-13, architect, IS Architecture)

“it’s hard to see all that happens here, the big picture is often too much for our users, forget about the detail and consequences” (I-37, domain manager, Release Management)

“once work has started, late amendments to change requests have exponential impacts on costs and timeframes” (I-30, manager, BUIG)

Regardless of the validity of this view, with the exception of executive business managers, most business people were focused on their product or process goals and their expectations of CBAA to deliver their required system changes. They functioned within their own complex framework of enterprise-wide product development (PDOM34). To the product managers, IS was just one element they

34 described in Appendix 6
had to ensure was in place to successfully deliver their business initiative to market.

“I need the IT work done as spec’ed, on time and within costs, that’s all” (I-29, senior product manager, C&G)

“PDOM is killing us, now these clowns (IS) want to modify their estimates” (I-28, product manager, C&G)

“It’s just building something. We tell them what we want, they do it. If we change our minds, they change it. It can’t be that hard” (I-28, product manager, C&G)

“It’s all been done before, a product is just leveraging what should already be there for other products” (I-1, executive, C&G)

Representatives of the P&IS BUIG provided a conduit between the business units and their respective IS teams. They reduced the points of contact between IS and the business from historically many hundreds to tens. It provided control, focused efforts, and reduced confusion between IS and the BUs. Control points such as this were often a source of frustration for the business.

“we are here to smooth the interactions between product people and IS people” (I-23, analyst, BUIG)

“They’re equally hopeless, one (product managers) wants to change their mind without cost or consequences and the other (IS) just has a list of why something can’t be done” (I-22, analyst, BUIG)

“A lot of pressure ends up in our group and we don’t have the expertise to solve business or technical problems … at times it can feel like being an exchange operator, just connecting people” (I-31, manager, BUIG)

“The product people get frustrated with us … sometimes it seems like IS people use us to keep the business off their backs” (I-30, manager, BUIG)

They understood that IS development in TPT was extremely complex, but they appeared to have very limited understanding of the tradeoffs CBAA planners and developers juggled as they tried to accommodate the software development for many concurrent business initiatives (BI). The business people, despite having information about the other BI supported in a release, tended to see their BI as the most important and the only one CBAA was attending to.
Business executives described their business product and program managers as being:

“...its like a bull-pit, with them (product managers) struggling for the success of their project and to be noticed as highly capable” (I-1, executive, C&G)

“They don’t see the bigger picture, some of them may, but they don’t have to. They’re there to deliver new products” (I-51, executive, Networks)

“They’re not technologists, they excel at marketing and communications” (FN-42, executive, BUIG)

“The engineers (telecommunications) cause similar kinds of problems for them, but IT is later in the product cycle ... greater impacts, less room to manoeuvre ...” (I-51, executive, Networks)

These business roles drive the delivery of new and enhanced products and processes for the enterprise that will create revenue and profit. They need the information system changes to proceed according to the estimates provided for time, cost and scope. But these IS estimates are usually made from unfinalised business definitions of the product. As the product definition changes, its information systems needs are likely to change also. Thus, estimates change. IS work is expensive (Earl, 1988) and changes to IS work that has commenced is very expensive (Hirschheim et al., 1995). Instability in the business product definition is likely to result in instability in the IS estimates for work effort cost and duration, which in turn feeds back into the business product definition as further instability.

“They change what they want, the estimates change ... it’s not really surprising” (I-11, planner, Program Management)

“Yeah it makes them angry, it’s like they (product managers) just expect IS to fill the shortfall from the old estimate ... an estimate for a different product spec” (I-26, SM, Release Management)

“If it has to change it has to change ... but the work we’ve (IS) done has to be revisited and often redone, so does the planning ... it’s usually a bigger change than we planned for, so more cost to the product (business initiative) and sometimes even a completely different release” (I-13, architect, Architecture)
The business executives acknowledged the enormous complexity of the overall task CBAA did and that their respective business units made that nearly impossible at times, but regardless of this, delivering IS change was CBAA’s job. If CBAA could not do that, it would have to change so it could.

Most research participants from CBAA showed understanding of the complexity of software development. They seemed to understand the complexity of their work-group’s work tasks and its interactions with other work-groups and roles that were necessary to complete work and deliverables. Evidence for this was the continued quarterly delivery of software releases, albeit often with faults. But many had limited understanding of the work done in other areas of CBAA.

As expected, the senior managers who led CBAA understood the broad interactions between its functional areas.

“yes it’s complex, but that’s what our business is, one just has to accept it” (I-16, SM, Construction)

“There are complex hand-offs between the functional teams ... software delivery is dependent on these going smoothly” (I-21, MD, CBAA)

“business changes to work ‘in-flight’ is a nightmare. If it’s big or late in the process it can derail a whole release” (I-17, SM, Architecture)

“My teams work with the business units, we are the conduit from the business and we shield the other teams from the confusion and conflicts about what they want” (I-17, SM, Architecture)

“There’ll always be issues between analysis and design teams ... too many experts, mostly well meaning” (I-34, manager, Architecture)

“When one area’s late, the ripple goes downstream ... it’ll be compromise (IS quality, standards or business scope), re-scope (through formal planning) or heaps of overtime worked” (I-25, SM, Testing)

“There are so many interdependencies (in IS development) ... across systems ... between teams” (I-16, SM, Construction)

But as we will see later, they simplified their notions of the complexity of the IS work-tasks and the issues and problems their subordinates encountered in developing software. This was despite several of them having been promoted from such coalface roles as little as 3-5 years earlier.
As an observer of the work-system, listening to numerous narratives about ‘working in CBAA’, and observing the teams and their interactions, it seemed possible that no one inside or outside CBAA fully appreciated the complexity and scale of the work-system. Each quarterly software release represented the co-ordination of the accumulated effort of 125,000\textsuperscript{35} IS person days of effort and uncounted 1000s of days of business staff direct involvement. The 125,000 days per release were co-ordinated across 130 computer systems. This occurred quarter after quarter, year after year. The organisational machinery to keep this scale of activity going, in the face of its volatile and ambivalent environment, was immense. CBAA may have represented the edge of human capacity to organise resources and to manage internal complexity. A large number of roles were dedicated to maintaining the internal integrity of CBAA structures as distinct from delivering content to users.

5.3 New CEO

In the first three months of the research project TPT’s CEO changed. It did not at first seem that this would have any impact on the research but he undertook a radical reorganisation of the whole of enterprise, which in turn had enormous impacts on P&IS and CBAA. These changes began in the following months and continued to unfold for several years until all IS design, construction, testing and production support functions were outsourced.

Under the previous CEO, all business units shared IS as a central resource, sharing systems and IS staff. The new CEO wanted to “liberate the value and resourcefulness of each of the revenue generating business units. These are the four pillars\textsuperscript{36} of growth for the company” (FN-82, CEO). In this town hall meeting where several thousand staff attended, he outlined his plan to integrate the Mobile business back into the core divisions of the enterprise, to separate the

\textsuperscript{35} each year CBAA’s 2500 staff delivered approximately the following days of work: 4 releases each of 125K days; 4 ‘emergency fix’ releases each of 5K days; 30K days on BIs that did not make it through PDOM and into any software release

\textsuperscript{36} the four pillars were: Retail telecommunication products and services, Mobile telecommunication products and services, Internet products and services, and Wholesale business (domestic wholesale telecommunication products and International Wholesale and Retail businesses, offshore network and retail entities, solely owned or joint ventures)
tight cohesion of the BUs so they could independently pursue growth opportunities, and to disaggregate the IS function into many smaller, more responsive BU focused IS departments. IS services changed from a single centralised function to being distributed across 5 quasi-autonomous Business Units. This had significant implications for system ownership and control, for IS planning and priority conflicts, and for divesting IS asset and staff across various IS outsource providers.

In such a large enterprise, these plans did not happen quickly, but by the end of the first year of research, these plans were beginning to be realised in the structure of the business units and the first ripples of change were being planned for P&IS and its departments, including CBAA.

5.4 Structural Realities of CBAA

Chapter 2 discussed work processes and structures that are typical of IS development. That discussion was general in nature, being about practices across the IS industry as seen in academic literature. Chapter 4 discussed the main characteristics of CBAA; elaborated in Appendix 6. Much about these structures, practices and tensions only became known through time spent in the research-host. Data drawn from interviews and observations is described here.

5.4.1 Information System Lifecycles

All the CBAA systems followed a traditional waterfall lifecycle for development, shown in Figure 5.1, with the lower section of the diagram identifying the primary CBAA deliverable of its respective phase. There had been some experimentation with prototyping development methodologies on small pilot systems, but not on any of the large ‘workhorse’ systems that made up CBAA’s portfolio of 130 systems.

37 see Appendix 6
The following figure 5.2 provides a brief explanation of each deliverable.

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Deliverable Name</th>
<th>Lifecycle Phase</th>
<th>Responsible IS Functional Group</th>
<th>Business Initiative (BI) Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAS</td>
<td>Systems Architecture</td>
<td>Viability Assessment</td>
<td>Architecture &amp; Requirements</td>
<td>1 per BI</td>
</tr>
<tr>
<td></td>
<td>Specification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RD</td>
<td>Requirements Definition</td>
<td>Business Requirements</td>
<td>Architecture &amp; Requirements</td>
<td>1 per each System supporting BI</td>
</tr>
<tr>
<td>FAD</td>
<td>Functional Application Design</td>
<td>Logical Design</td>
<td>Architecture &amp; Requirements</td>
<td>1 per each System supporting BI</td>
</tr>
<tr>
<td>TAD</td>
<td>Technical Application Design</td>
<td>Physical Design</td>
<td>Construction</td>
<td>1 per each System supporting BI</td>
</tr>
<tr>
<td>Coded System</td>
<td>Source and Object Code</td>
<td>Programming and Testing</td>
<td>Construction</td>
<td>1 per System</td>
</tr>
<tr>
<td>Tested System</td>
<td>Fully tested Source and Object Code</td>
<td>Usability Testing</td>
<td>Testing</td>
<td>1 per System</td>
</tr>
</tbody>
</table>
All of the 130 systems had their own lifecycle duration. Some were small systems with small teams of developers that took 6 months to design, code and test the system changes once they were assigned to a release. Some systems took much longer; typically they were large systems, very complex and with up to 150 staff working on them. Figure 5.3 shows the disjuncture of the ready dates across systems at the two key inter-system alignment points; integration testing and release deployment.

![Various System Lifecycle Durations](image)

The duration of the lifecycle for the larger systems was a problem for CBAA and the BUs. If the duration of the lifecycles of the large, very complex systems could be shortened, new products could be supported more quickly, time to market for products would be less and the enterprise would be more responsive to the demands and opportunities of the markets. Many groups of external advisors were engaged by CBAA to try and find ways to reel in these long lifecycles. They had limited success reducing the longest system lifecycle from 22 months to 16
over four consultancies. But the business wanted even shorter development cycles from CBAA.

“the holy grail is development lifecycles” (I-2, SM, Production)

“shorter, shorter ... more work for less” (I-10, manager, Construction)

“there is so much work that has to happen in the biggest systems, they are so complex and have so many critical and complex interfaces to other systems ... it takes time for people to unravel the full implications of a change and we still get it wrong sometimes ... some work can't be shortened” (I-39, release manager, Release Management)

“they keep trying, sometimes they make small improvements ... not the game changer that’s wanted ... it'll never happen” (I-16, SM, Construction)

5.4.2 The Release Schedule

5.4.2.1 Establishing Releases

Business initiatives were registered and stored by CBAA program management. Planning forums were held with the Business Units and their BUIGs (P&IS BU Interface Groups) to prioritise the various business initiatives in terms of importance for the business unit and in importance across TPT. Various levels of CBAA input, particularly from IS Architecture group, were provided to establish a likely scope of the systems changes to support a specific business initiative. It provided a raw estimate of the IS cost to support the BI, and identified the likely systems requiring changes. These scopings and estimates were very crude and would be revisited as a release package began to firm up.

The program management group filled each release's capacity based on i. the highest value BIs to the business (business prioritisation from the PDOM process), ii. maximising utilisation of IS development staff across the 130 systems, and iii. the overlay of common areas of system change. There was always many times more work required than the available capacity in a release.

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38 if three business initiatives required work on the same large area of software code, they were more likely to be done together because the code would be worked for all three at the one time. (FN-11, manager, Program Management)
Had there been unlimited budget for software development, there were still limitations on code access, limiting the number of IS staff possible to work on system changes.

“Some managers in the business are always disappointed because their program didn’t get a guernsey ... they will have to wait for a later release and compete again for access” (I-1, executive, C&G)

As each release was provisionally formed, CBAA’s A&R group would work on each business initiative (BI), producing a detailed architecture solution for the systems involved and the scope of their respective changes to support the BI. This document, the SAS\(^\text{39}\) included estimates of effort and cost for the BI. SAS estimates for the provisional release were more accurate than earlier less formal estimates.

5.4.2.2 Managing Releases

At any one time, software changes across all 130 information systems were being developed for four concurrent releases. Each release would be delivering software for 20-35 Business Initiatives, each involving dozens of the information systems. Some Business Initiatives had system changes that were so large and complex that they were delivered in stages across two or three releases.

Each release was of a finite size, typically consisting of 125,000 person-days effort, approximately half of that involving physical design, construction and testing. Each release had a release manager assigned to it. All progress reporting from each of the IS teams was directed to the release manager and the Release Management function in CBAA. They were responsible for the delivery of the release and in effect provided co-ordination and project management for these ‘mega-projects’. Staff working on software changes did not report to the release manager, they reported to their respective functional managers for their information system (each one of the 130). These functional managers reported to the release manager on their team’s progress on the system changes their

\(^{39}\) SAS – Systems Architectural Specification
information system had been assigned to support for the business initiatives in the release. Given that there were 130 systems, up to 130 functional managers reported on progress, issues and risks, to the release manager, who was responsible for ensuring neither the release data slip nor cost blowout. These functional managers reported to each release manager for each release their system had work assigned to. Reporting was weekly or by exception in the case of crises. There were 130 system managers preparing four reports weekly, four release managers receiving and integrating 130+ reports weekly and from these preparing a release report and managing the numerous crises that erupted from this conflagration of structured human endeavour.

The release managers had to co-ordinate all the development activity across the 130 systems. This also required the co-ordination of all the integration testing across all the systems, and the implementation of all systems’ changes in a “go-live” window\(^{40}\) for the release.

### 5.4.2.3 Managing System Domains

Whilst releases were the mechanism of delivery for co-ordinated suites of systems changes to the business, CBAA also recognised an ongoing, medium and long-term need to ensure the integrity of the system domains of customer billing, activation and assurance, and their enterprise-wide business processes. There was a group of IS experts (domain managers) who had the task of overseeing all the active releases to ensure that the work of individual releases would not degrade systems support for their respective core business process.

> “we have to ensure changes don’t impact the integrity of the billing process ... or make it harder to do things in the future” (I-37, domain manager, Release Management)

> “they can’t be allowed to introduce inconsistencies across a core process ... we try to pick it up and stop it”(I-26, SM, Release Management)

\(^{40}\) typically this was a block of two weeks where all systems had to successfully deploy their systems changes for the release. All systems did not deploy their software at the same time, so many systems had to include the complexity to interface with many systems in the old way (until that system deployed its release changes) and in the new way
“the architects should make sure this kind of thing doesn’t happen, but we look at all the active releases, not just a set of requirements in one” (I-26, SM, Release Management)

“sometimes it’s tempting to take shortcuts, deliver what the customer needs. But if it’s done badly then the next customer will have to pay not just for their change, also for a fix to earlier crap work ... no one (in the business) likes that” (I-37, domain manager, Release Management)

Their task was to ensure that system changes would not unwittingly introduce compromised solutions that would degrade or corrupt their business capability, or constrain future extensibility.

5.5.2.4 Business Impacts

What became clear was that a product manager from a business unit could be working within the product development framework for 6-18 months before getting any formal IS input as to the costs and timeframe to delivery of IS support for the product. The product competed with other BIs within the BU and the enterprise. If it was approved for a specific CBAA software release, it could still be ‘bounced’ at the SAS or RD stage because it, or some other higher priority BI, required more of the release’s capacity than had been thought at the early stage of provisional release formation. Or it could still be included in the release but later identified as requiring more work effort and cost, affecting the product’s business case, and the business could withdraw the product.

The time taken for the SAS and the RD to be done was at least four months, often twelve. This uncertainty and precariousness had very negative impacts on product managers’ perceptions of CBAA. It made their chance of successfully deploying a new product or process less likely. This was further exacerbated in that a release would typically have a BI dropped from the release during development because the estimates at the RD stage proved to be incorrect, perhaps because of an IS oversight or error, product specifications provided

[41] moved to a future release

[42] as a result of the more detailed analysis that occurred in either the SAS or RD work
were wrong, the business needed to change the product specification for some reason, or due to some unforeseeable complexity in the information systems environment.

“with all the things that go wrong in the systems space, our product managers get quite combative ...” (I-1, executive, C&G)

“it is so irresponsible (reducing IS scope), people (IS) should be sacked over it ... it happens over and over again” (I-28, product manager, C&G)

“my team can work on something for a couple of years only to see it fall down months from market ... it breaks people and makes me so angry ... even our management don’t push hard enough” (I-29, senior product manager, C&G)

“it is so irrational, we are close to new revenue and yet it is so precarious” (I-29, senior product manager, C&G)

5.4.3 Legacy Systems

Most of the information systems in CBAA’s portfolio were 10 years old or more. None of them had been static, with near constant renovation from changes in most releases. But the underlying technologies rarely if ever changed. Most were written in third generation computer languages like Cobol, often with newer modules written in more advanced languages, such as C++. These were large to very large commercial information systems, each with many millions of lines of code, accessing many databases with many millions of records, and processing many tens of millions of event or transaction records each and every day.

Legacy systems are defined as old or older technology. Whilst there were newer systems available using new technologies, these would require massive new investment and customisation to fit the business and process needs of TPT. The legacy systems were what they had to support the business products and processes. They represented decades of IS investment by the enterprise, and across that time, had tens of billions of dollars spent on the capital needs of hardware and software development.
5.4.4 Outsourcing

A year prior to the research, 1000 of CBAA’s staff roles were outsourced to IBM Global Services (IGS). This amounted to IGS taking responsibility for physical design, construction and testing of many of the information systems. It had been a confronting process for CBAA management, with managers still untrusting of this fundamental change and preferring it had not happened.

“he (CBAA MD) put in place a lot of shadow roles to make sure the IGS managers and teams did not let us down. ... They’re still there ... it’s difficult to know if we can rely on them (IGS). I’m not certain we can ever trust them” (I-25, SM, Testing)

“They haven’t sped things up, perhaps they’ve even slowed things down” (I-47, manager, A&R)

“It works okay, but you have to check their quotes, dollars and time” (I-18, planner, Program Management)

“They’re working for IBM not for TPT ... their bottom line has got to be more important than what we need” (I-27, manager, Construction)

It was a source of tension within the work-system.

Executives from the business units saw it as a positive step forward in improving the performance of IS delivery with respect to their perception of the current performance of CBAA.

“It’s got to be tough for them (CBAA) but we need more responsive IS services, markets moves much faster than them” (I-1, executive, C&G)

“It is a start, but more needs to be done. There are expert providers (of IT) out there now, so we should use them more. We could push them more” (I-1, executive, C&G)

“Being 40% outsourced is like being half pregnant, it doesn’t make sense ... you can’t be half pregnant” (I-51, executive, Networks)

5.4.5 IS Work Methods

The software development of the systems managed by CBAA followed the waterfall approach. The methodology used defined the technical work tasks that
were done at each phase in the development process and the deliverables produced.

The software engineering approach tightly prescribed the documentation to be created in each phase, see Figure 5.2. The SAS document was a blueprint of which systems would do what functions for a business initiative. The RD document defined the business requirements for changes to a single system for a BI. The FAD document described the logical design of the changes to a system to support a BI. The TAD document described the physical design of system changes.

None of these documents required particularly sophisticated analysis or work; they simply represented the findings of that phase of the software development process and formed the basis and scope of the work to be done in the next phase of the lifecycle.

The project management method was used to plan, track, report and manage the work-tasks prescribed in the software development methodology. It was used to allocate skilled people to the work tasks and record their account of progress toward task completion, and the issues and risks that arose.

“we use a version of Method-1 here because the company that built the main billing system used it” (I-41, architect, A&R)

“each team has their own way of building systems; people know it. So long as they conform to the deliverables standards all works out fine. It’s work management and planning that requires so much attention” (I-11, planner, Program Management)

“different systems need somewhat different techniques. They might focus on data or process or events to model and design the system changes. So the detailed activities can be different, but it all has to be communicated in a common document” (I-12, TL, Architecture)

5.4.6 IS Work Tools

Automated development tools were not used by many teams to support their information system. There was no use of computer aided software engineering
(CASE) tools in any of the CBAA teams. Most workgroups used a project management workbench for planning and tracking release activities (projects) or managing the program of work for the department. The strategy team in P&IS operated meta-data repositories, about the structure of the data for key ‘databases of record’ used in the company. This was used to model large system changes.

The use of such tools was quite primitive in CBAA, but despite this the development work got done and was managed adequately.

“we don’t get to use CASE technology here much, in a few systems ... but most stuff’s in documents in a document management tool” (I-12, team leader, Architecture)

“project management tools are used ... not universally and not consistently across projects (systems)” (I-46, release manager, Release Management)

“it’s a pretty traditional 3G environment. Repositories and power tools don’t offer much value here ... cause a lot more confusion and overheads” (I-19, PM, Construction)

“we use some automated testing tools for the monster systems” (I-32, manager, Testing)

5.4.7 Quality Frameworks

CBAA was well advanced in the process of demonstrating ISO 9001 (ISO/TC-176, 2015, ISO/TC-176, 2005, ISO/TC-176/SC2, 2008) accreditation. ISO 9001 is a quality system: it aims to ensure that work tasks prescribed in the work methodology have been followed, and that this can be tracked and traced to demonstrate all deliverables and key tasks were satisfactorily completed.

During this first stage of the research, CBAA began exploring the benefits it could get from using the Capability Maturity Model (CMM) to guide the organisation of software development.

“we hope it will show us ways to improve and become more responsive to our business. ... that it will demonstrate to the business that we understand their concerns and are fixing those roadblocks for them” (I-21, MD, CBAA)
The CMM (Paulk et al., 1994) details organisational competencies that when reliably executed by the functional groups of CBAA would indicate a certain base level of maturity in their capacity to deliver software.

5.5 Rifts in the Fabric of the Enterprise and IS Department

This section describes tensions in the organisational fabric of the IS development process. They were the pressure points, tensions and rifts within and between groups that were talked about by the interviewees. The significant ones were those that interviewees repeatedly described as having critical detrimental impacts on the passage of IS work through the CBAA factory (see Figure 5.4). They offered a view into the break points in the CBAA organisation.

5.5.1 Tensions between Business Units

There was competition between the BUs for access to the IS work queues to get their revenue generating or cost saving BIs developed into systems. This created
significant tension between BUs. With the advent of a competitive telecommunications market, under its licence terms, TPT had to sell wholesale access to its infrastructure to retail competitors, creating significant tension between the retail BUs and the wholesale BU.

BUs often tried to co-operate in large IS investments. Whilst there was a history of success of this in billing stream systems, this was not the case in customer relationship management stream systems. This large systems investment failed completely, resulting in hundreds of millions of dollars being wasted over several years (FN87, manager, Construction).

5.5.2 Tensions between IS Architecture Group and Business Units

Whilst the P&IS BUIG was meant to operate in between CBAA and BUs, this was rarely practical. Many staff from the Architecture group were required to work with many business staff in developing and delivering the SAS document and the RD documents for each business initiative; and before that on the crude IS feasibility and costing of fledgling BIs. This involved many more staff than outlined in the protocol.

Product managers and their management were regularly disappointed, sometimes infuriated, by the high cost and lengthy work effort required in the CBAA systems to support their BI. With many such experiences, this led to significant tensions between business and IS management.

5.5.3 Tensions between IS Planning and Business Units

The processes of forming the scope of a release, as described in Section 5.5.2, often resulted in heated exchanges between IS release planners and their BU counterparts.

5.5.4 Tensions between IS Architecture Group and IS Construction Group

The work of the IS construction group was dependent on the completion of the RD and FAD documents by the IS architecture group. These documents were
often 6-8 weeks late, eating into the allocated time of downstream groups like Construction. This was a problematic source of significant tension between the two groups.

When this occurred for some systems, it meant the system changes could not be delivered in the scheduled release, which was likely to have profound impacts on the business initiative and the product's rollout to market, impacting expected revenue.

One of the criteria for packaging change requests into a release was that they impacted a common area of the code of a system. For a given system, an area of code only had to be opened and worked on once for many changes (BIs), which was more efficient. But when FAD documents were very late, it meant the area of code had to be opened and worked twice: once for the change requests (CR) that were on-time and once for those that were very late. The ready-on-time CRs had to be worked on a schedule because there was no certainty the late CRs would ever be ready for this release; staff had to do work rather than sit idle waiting, work had to be progressed if a software release was to be formed and delivered according to a schedule. These types of impacts occurred many times across a release.

5.5.5 Tensions Between IS Construction Group and IS Testing Group

The IS-testing group conducted integration testing for all business initiatives in a given release. This entailed the integrated testing of all systems providing new or changed system functions to support that BI. This usually involved 30 to 50 systems, but for some BIs, over 100 systems being tested together. The complexity of this testing was enormous. Establishing the testing environments for so many diverse computer systems, many running on unique operating platforms, required significant resources (people and machines) and co-ordination. Establishing the testing configurations needed for each BI's testing was an enormous undertaking.

Potentially thousands of test cases would be run and their outputs verified to ensure the systems provided the specified support required for the BI and for its
release to customer-facing staff and the customers of the new product. In this testing process, faults were expected to be found. These were returned to construction work-groups for ‘fixes’ before they were sent back to testing to resume testing and re-test.

When IS-construction was late in providing the software to testing, they had less time to adequately test the software. This resulted in extensive overtime efforts for each release by testing groups; often incomplete testing, which risked possible failure if the software was deployed; or descoping the BI from the release if the software failure risk was judged too great. These attracted business disappointment, frustration and anger, contributing to explosive tensions between CBAA’s testing and construction functions.

5.5.6 Tensions Between IS Release Management Group and IS Construction Group

Release managers tried to drive each release forward to its scheduled delivery window. IS construction typically had work-groups working on four releases concurrently. This often resulted in conflicting direction about task priority from the different release managers of respective releases. This created conflicts and tensions between the groups. Release managers were often critical of construction teams because of slow progress or finding new problems; actions that jeopardised release delivery dates. Construction teams were often critical of release management because of its inflexibility and lack of concern for the quality of the systems that would be deployed and have to be supported in production.

This section has extended understanding about this complex work-system, its structures and tensions, and some of the interactions of work-groups involved in software development. The areas of tension between work-groups and rifts in the fabric of the work-system, offered significant possibilities for further, deeper research to better understand the underlying causes of IS underperformance.
5.6 Key Themes in the Interview Data

This section discusses the thematic analysis of data from the initial 51 interviews. The methodology chapter sign posted several data analytic methods—thematic, historical events, critical events, and biographic timeline (Spradley, 1979, Patton, 2002). It was quickly evident that events did not happen at only one level in CBAA, they appeared to occur at four distinct levels:

i. pertaining to a participant's role and work
ii. pertaining to their group, its tasks and projects
iii. occurring at the level of the IS department as a whole
iv. company events.

The participants directly experienced some of these events, some were experienced second hand, and others were only experienced as impacts of the events, with no experience of the actual event. For example, the decision by government to sell off another tranche of shares in the corporation was a significant event that affected most work roles through the introduction of further uncertainty into their environment. Data suggest that it produced new anxieties in work-groups and evoked cynicism and some alienation.

"the senior executives are so edgy around the float of this tranche of the company ... there is so much work involved ... and everything written in the share offer documents has to be perfectly correct or the company is exposed (to litigation). No one is really paying any attention to anything else, it's highly volatile" (FN 7, executive, P&IS)

"it just feels like anything could snap ... our product promises carry so much more weight at this time, everyone in the business is on edge ... there's no reprise" (FN 29, senior product manager, C&G)

"I don't really understand the basis for all the fuss, but management is ansy [sic] and as tense as hell" (FN 8, product manager, C&G)

Event-based and timeline analysis were abandoned because they were oriented around individual experiences. Whilst events, such as new demands, expectations or oversight, were important markers of fresh instabilities in the work-system, this study had set the work-group as the primary focus.
Thus a traditional thematic analysis (Spradley, 1979) of the interviews was used as an initial basis for interpreting the data. The identified themes were strongly evident in multiple interviews and across different functional areas of CBAA. They provided a basis for further analysis and interpretation of the work-system’s dynamics.

5.6.1 Interview Data Analysis and Organisation

The themes identified through the analysis came out of the narratives of the interviewees as they responded to interview questions. The themes are the researcher’s construction from analysis of the most pressing and often reinforced concerns that prevailed from across the set of interviews. Many of these themes, categorisation of meaning, were cautiously tested in later interviews, consistent with an action research method. Some of the earliest themes were discarded, not having contained resonance in subsequent interviews. For example, from the first interviews there was much attention on the conflict and struggle between IS groups and between IS and the business. Early interviewees used the term “being at war”. But data gathered in subsequent interviews did not support the notion of ‘Being at War’; it was too strong a metaphor.

The final set of themes were discussed and validated across two days of workshops with the reference-group. In that forum they were clarified and refined. The themes formed a starting point for sense making of how work was going on and being experienced across CBAA. Individuals and informal groupings in CBAA were aware of these pressures, tensions and concerns, but they did not appear in the narrative and thinking-for-action processes of the formal work-system or factor in its authority and decision-making structures and processes.

Sixteen themes are discussed, each with a description and supporting interview quotations. Each theme was formed from data elements drawn from multiple interviews. The detailed view they offer into participants’ experiences and narratives offsets any brevity gained from further generalisation. Themes 1-8
contribute to the description of work organisation and conduct in CBAA. They do not encompass everything that could be known about how work was organised, rather they represent the areas of tension and concern that were voiced in the narratives offered by the interviewees.

Themes 7-9 consider the various identifications participants had with groups they were part of, interacted with, or that figured highly in their inner world. They consider limitations and concerns about identity and belonging that were found in the interviewee data. Themes 10-14 consider communications within the structure of CBAA, particularly from the perspective of the pressures and tensions that successful and failed communications created for the interviewees and their colleagues.

Themes 15-16 capture elements of the strained relations with business units, particularly the tensions they experience in relation to the demands of the business units.

5.6.1.1 New Silos – Old Silos

“the problem with CBAA are the silos ...” (I-45, project manager, Construction)

“we have to do something about them ... they cause so many problems” (I-2, senior manager (SM), Production)

“It’s not how we used to work ... everything was integrated and smaller“ (I-4, SM, Program Management)

“CBAA is much more manageable now with fewer voices at the table ... we can think about where we’re going, not just react to endless problems in the past” (I-4, SM, Program Management)

“I’m still working out how I work in this new arrangement of teams” (I-13, architect, Architecture)

“the old silos were bad, these are no different” (I-18, planner, Program Management)
“the old organisation around systems was chaos ... things got done because you knew people and they knew you, or because management kicked up a storm” (I-17, SM, A&R)

“what we’re doing makes sense, good professional practice ... not antiquated and outdated. ... this should work but there are a lot of old habits” (I-34, manager, Architecture)

“I liked the old way of working, you got to work across all parts of development ... we all pitched in” (I-48, technical designer, Construction)

“there is too much to do to co-ordinate each system’s progress ... too much reporting. We used to do a lot face to face ... a bit risky but it usually worked” (I-50, TL, Construction)

“I’m not sure I really remember how bad it used to be, but now it is very inflexible ... lots of reports, lots of meeting. Programmers are meant to be able to be redeployed to other systems ... it just doesn’t happen, it really can’t happen” (I-38, manager, Testing)

Participants described silos in CBAA in terms of IS development functions. They were seen as a problem to most work-tasks. The new silos were points of rigidity. At their worst they were ‘turf’ that people clung to or used to control others.

Newer staff had limited awareness of the old silos; 130 work-groups providing full lifecycle support for one application system. They were unaware of the new structure’s purpose to streamline software delivery and remove misalignment in delivery, believed caused by the old silos.

Staff with longer experience in TPT’s IS areas were aware of both the old ‘system based’ silos and the new silos based on ‘IS function’. They seemed to only think about their problems experienced with the new silos. They appeared to make no links to the past problems of the old silos; history was lost, even for people keenly involved in it.

In their new structure, seven senior managers managed the direction of the department and each release was co-ordinated by teams of two or three people

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43 horizontal organisation, see Appendix 6

44 vertical organisation, see Appendix 6
working with each IS function or system specific programming work-group. This compared to the old structure where 35 managers tried to lead and manage the department, but rather struggled and fought over the numerous release problems that emerged. They had been unable to plan strategy or improvements to the processes of work.

5.6.1.2 New Roles

“there are so many people trying to manage my work now, all asking the same questions” (I-3, TL, Construction)

“they all want the same report, but all in different formats ... it’s ridiculous” (I-49, PM, Construction)

“I don’t know who to listen to anymore, my project manager says do this, the release manager says something else is the priority, and the domain manager wants to make sure we don’t damage call rating for other products” (I-48, Designer, Construction)

“too many new roles, too many people wanting too much from us ... they don’t seem to know yet why they want it all” (I-45, PM, Construction)

“it’s getting very messy, we have a lot to sort out still, hopefully it will start working better sooner” (I-25, SM, Testing)

“people are having a time getting used to us and what we need from them” (I-37, DM, Release Management)

“I’m not sure I can keep managing 130 reports each week. There is so much volume of information that I have to control the flow of ... too many decisions too” (I-46, RM, Release Management)

“there is no other way to do it. The release has to be managed, it is the most important thing we coordinate here” (I-39, SM, Release Management)

“I’m not actually sure who does what anymore in bringing the software together ... and what’s worse, I don’t think anyone else does either” (I-38, manager, Construction)

The complexity of the number of systems, system interfaces, work-groups, and IS functions that CBAA had to manage, finely co-ordinate, and motivate to co-operate in order to deliver system changes to the business was enormous. The work-system had to maintain order in its work process, in the technical integrity
within and between information systems and deliver timely, cost effective system changes to support new business initiatives. Appendix 6 describes CBAA’s organisational change from a horizontal organisation, of separate workgroups for each of the 130 systems, to a vertical organisation of IS functions. With this change came two new roles, that of release manager and of domain manager. These specialised roles were designed to coordinate important aspects of the complexity of CBAA. The release manager role addressed the complexities of co-ordinating the timely delivery of software releases, each of 125,000 person days effort, with the requisite order required in the work-tasks, communications, and decision making. The domain manager role attended to the complexities of the technical integrity of systems over time (many releases) in supporting the business processes of billing, activation and assurance, fundamental to all products.

The decision to manage these complexities by introducing new roles and establishing new task based relations between the existing roles and the new roles, was seen by many staff as a new layer of management. This increased the interactions between roles significantly. The new management tasks were not absorbed into existing roles. This would have kept relational and interaction complexity fairly neutral whilst increasing the complexity of those management roles; possibly beyond what a skilled individual could cope with. From the data above, the complexity of the work-system was dramatically increased by these new roles. As seen in the quotes above, people described their experience of the proliferation of roles in the work-system as overwhelming. These new roles aimed to increase organisational responsiveness to IS work complexity and to address business units’ demands for increased IS performance.

The new roles became a default template within the work-system. Patterns of organisation were mirrored across the enterprise and appeared to be reactive and not thought through or designed for each local setting and its needs. The CBAA Construction group introduced a new role, the CRO (Change Request Owner). It was to provide liaison between the Construction group and all other CBAA work-groups and the release managers. All non-management (technical) interactions were to go through the CRO.
“we introduced the role to be a central point of contact for the construction group ... to stop everyone else distracting the design and programming teams” (I-16, SM, Construction)

“the role works like a mini BUIG for the coding for each release” (I-10, manager, Construction)

People describe the duplication of activity across CRO and RM roles. Managers and team leaders of the Construction group (500+) staff were no longer required to manage the boundary interactions with Release Management group or Functional Design. This had the effect of reducing turbulence within the Construction group but raising tensions in other work-groups and reduced the speed and responsiveness of software delivery. This re-organisation of Construction seemed to mirror CBAA; it was very inefficient.

“it is so much harder to get things done now, we can’t easily speak to colleagues we had been working well with, it can take days to get a response through a CRO ... and when they get sick and don’t come in, work stops there until they’re back. It is terribly inefficient” (I-13, architect, A&R)

“we are trying not to get too angry about this, but it is all going to shit” (I-18, planner, Program Management)

“they’re not very experienced people in the role, so they are making wrong judgements about priorities and access to the experienced developers all the time” (I-39, release manager, Release Management)

It was also proposed to apply a similar template to managing business initiatives across the whole of P&IS, where a BI had software changes in more than one IS department\textsuperscript{45}. The proposal recommended Business Initiative Managers, who were to operate within each IS department (CBAA and others) and follow progress on a whole-of-business-initiative basis. The proposal was not implemented before P&IS was disbanded.

It is possible to solve problems associated with the interactions between groups by increasing the complexity of the number of interacting roles between groups (i.e. increasing the number of types of roles in the work-system) or by increasing the complexity within existing roles. Whether the latter way of improving the

\footnotetext{45}{each IS department of P&IS was aligned to a business program, such as customer care (CBAA), networks, enterprise services, mobiles}
effectiveness of existing roles was considered or not was unclear. The former option was taken up, where new roles were created for the resolving problems of complex interaction between groups. Both approaches increase work-system complexity in different ways. Increasing role types increased the confusion within the work-system, contributing to software delivery delays.

5.6.1.3 **Hard Boundaries Between Groups**

“we have issues we are unable to resolve but we’ll try until the deadline ... if we involve them they will just be critical of us ... They are too busy to attend the review let alone start this work on time” (I-12, TL, A&R)

“we could be getting to know the design now while they finish it and we finish our current work ... it doesn’t happen ... the design is not due yet for delivery, even if it would help us” (I-48, designer, Construction)

“they are late and we are being delayed ... do you think they care if it makes our work impossible - no” (I-20, architect, A&R)

“there is not a lot of trust, and with good reason. The designers have been very aggressive towards the analysts on many occasions, despite the business not providing us the necessary information about a change” (I-34, manager, A&R)

“I know they have problems with the business, but they hold everything in their fortress until it is all worked out ... problem is they might never work it out and we still have construction deadlines” (I-45, PM, Construction)

The boundaries between groups often seemed open but in practice were not. People reported that procedures and processes prescribed an openness of information flow and participation across the boundaries between groups. Many also reported that there was in practice a very clear demarcation in the workflows between the key IS functional groups. Adversarial relations were described between functional groups at times. In practice, boundaries were closed until the work-task and its outcomes were finished. This can be thought of as a 'hard boundary' rather than a transparent, permeable boundary.

The boundaries between key IS functional areas were usually very tightly controlled. People were concerned about the perception of their deliverable. They attempted to control access to the deliverable until it was completed,
especially if their allotted time had been compromised or they did not get the necessary input from business groups. Often they were forced by management to provide documents in incomplete form to the next group. There was very limited willingness, in the normal course of work, to allow staff from other groups early access to work-in-progress. When this had been allowed, there was a history of criticism and aggressive attack on the work-group over issues of incompleteness, many of which they had not caused. This was most evident between Requirements and Design groups, Design and Programming, and Programming and Testing.

5.6.1.4 Absent Managers

From CBAA managers:

“I’m forever working on initiatives for the boss ...” (I-38, manager, Construction)

“I get back to my office about 4 or 5 most days ...it’s then I have time for the staff and their progress, but I have all my email to get through too ... so not much time with the staff” (I-49, PM, Construction)

“there are things they (his team) don’t know how to manage” (I-10, SM, Construction)

From staff:

“he’s never here ... it’s a good thing we know what we’re doing” (I-3, TL, Construction)

“there’s always things we don’t know how to handle, they can wait weeks before he (their manager) gets to them ... or to even realise they are important” (I-48, designer, Construction)

“sometimes there are situations no one is sure how he (their manager) would want it dealt with, issues with other groups we work with ... and he’s not here for days and days” (I-24, programmer, Construction)

From customers:

“so often the managers are not there ... and their teams don’t seem to know where they are either” (I-42, executive, P&IS BUIG)
“it can be weeks sometimes before I get an appointment with some system’s project manager, they say they’re off on other projects for their MD … not sure I believe it really” (I-29, senior product manager, C&G)

Middle managers were very often absent from their work-groups. Staff were left to get on with their group’s operational work tasks without support or ongoing direction from their manager. These middle managers were involved with extra tasks beyond those of their work-group. Their senior manager or the MD assigned these extra tasks. They usually involved process and quality improvement, human resource planning tasks or some resource development activity. These were tasks that were not staffed because the enterprise withdrew specialist HR and finance staff from business units like P&IS.

These other projects involved working with peers, managers from other work-groups reporting to the same senior manager. They were perceived to be a reward or recognition of the manager’s potential. Participation in these small ad hoc teams of managers was an indicator of a manager’s stocks rising.

Staff described feeling being left alone doing the ‘real work’. The pattern of managers leaving their work-group whilst they engaged in tasks in the broader system was seen at all levels in the organisation structure.

5.6.1.5 Stress

“... you don’t get credit for being stressed here ... most people don’t want to know. ... They’re stressed too and just getting by ...” (I-32, manager, Testing)

“our work is under a lot of time pressure ... from the business, other groups, management, release managers ... everybody wants something yesterday and it’s all important” (I-19, PM, Construction)

“there is a lot of moving parts, the systems are so damned complex and there are hundreds of interfaces ... it’s like unravelling a plate of spaghetti” (I-9, TL, A&R)

“we’re so busy and there never seems to be a break. ... have you seen how much we cost each year, hundreds of millions ... that’d make anyone edgy” (I-46, release manager, Release Management)
There were many allusions to stress, similar to those above, in the interview data. It was often observations during the interviewing process, that staff and the CBAA work-system regularly showed signs of stress. Most interviewees described some sources of stress associated with their work, varying from low level to very intense. People seemed reluctant to acknowledge the level of stress in their work or its causes. Some described coping with the causes of stress as a badge of honour and achievement. A variety of causes for stress at work were observed, often from multiple sources. Some observed stressors included tight work timelines, changes in what people were directed to work on, strong disagreements between work-groups, chronic lateness of work deliverables from upstream work-groups, new work procedures, confusing and conflicting messages from management, and the general uncertainty in the environment.

Section 5.6.1.12 describes the stressor for middle managers of interpreting to staff the senior management’s directives and how to establish these in work practices. Silos (5.6.1.1), roles (5.6.1.2), boundaries (5.6.1.3), angry management (5.6.1.10), communications (5.6.1.12), management inconsistency (5.6.1.14), and unsatisfiable business clients (5.6.1.16) were sources of stress for many personnel.

5.6.1.6 Managing Outcomes not Tasks

“they (management) expect us to come up with a solution ... they don’t care really what the solution is so long as it works and can be done in the delivery window” (I-24, programmer, Construction)

“We have to meet the deadline, somehow. And if we don’t, well, looking like we have will do most times” (I-45, PM, Construction)

“They (his team) have to solve this impasse, too much is building up behind it. It could cause the release to slip” (I-12, TL, A&R)

“We have to deliver this, we have no choice ... we have to get it there by the due date” (I-17, SM, A&R)

“At times you can’t push back on the business ...their expectations can’t be tempered” (I-21, MD, CBAA)
The management group were generally experienced by staff and middle managers as being primarily focused on work outcomes (delivering on time) rather than on the tasks that enabled those sought-after outcomes. In its most extreme form, there was no management of the activities involved in a task, no management of the people (described by very many staff), only managers focused on the delivery of the work-product.

“we were at breaking strain over this” (I-10, manager, Construction)

“the team only just held it together” (I-40, manager, Testing)

It seemed to have become only about managing a piece of the organisational reality—delivery of X by Y date. Rather than dealing with the fuller, more complex reality of managing the technical difficulties emerging from the task as well as managing the plan and customer expectations. The tensions and difficulties associated with particular tasks, made those tasks unbearable for staff and groups; with staff concerns and distress generally not managed.

5.6.1.7 Only Knowing What is Local

“I don’t really know what other groups actually do, beyond broad terms ... we are so focused on just getting through the testing here” (I-32, manager, Testing)

“we know what CBAA does, we know what we do, we know what we pass on and what we need to receive. Other than that ... not much ... not much more is important” (I-49, PM, Construction)

“it’s nice to know the big picture, but the main thing is what is happening here for this release and the next and the next. What we have to do” (I-27, manager, Construction)

“what other groups do and don’t do is usually a cause for pain and dismay, so unless it affects us its better not to know” (I-40, manager, Testing)

“I suppose it’s like our systems, you only pay attention to things you have to interface with (other groups)” (I-38, test manager, Construction)

“they’re the cause of our problems, why I’m working overtime most nights and weekends for the next six weeks ... just like in the last release too” (I-43, tester, Construction)
When the whole\textsuperscript{46} becomes too large and too complicated to know and understand, it seemed that staff reverted back to what was most certain to them. They retreated to the familiar, their current work-group and those they had worked closely with in the past, the sentient system (Miller and Rice, 1967).

They knew the tasks, people and authority figures (leaders) that were local to them or represented in local myths\textsuperscript{47}. For example, people in testing said they know a lot about their team. And that they know less, but still a lot, about other testing and support groups. They also know a lot about CBAA but much less about the construction group or about the business and very little about the program management or architecture groups. This made it hard for them to think about why things were as they were, particularly during periods of pressure. It may also have made it easier to blame those less well-known groups, for their group’s current problems. It is easier to split objects that are less well-known; another group becomes a bad group, a part-object. Splitting that other group as a defence to carry the 'bad' from their own group’s experiences.

Surprisingly, managers who had degrees in computing state that they did not know what other functional groups in CBAA did, despite having studied all IS functions and the systems development lifecycle. Some other effect was causing this loss of capacity to think—a strong indicator of high systemic-anxiety impacting a work-group (Hirschhorn, 1988, Bion, 1962, Armstrong, 2005).

5.6.1.8 \textit{Idealisation of CBAA Senior Management}

“\textit{they’re such a good group}” (I-43, tester, Testing)

“\textit{they try to get the best out of us for the company}” (I-18, planner, Program Management)

“\textit{they stop the users from giving us grief}” (I-15, programmer, Construction)

\textsuperscript{46} the CBAA work-system

\textsuperscript{47} such as myths about the MD of CBAA
“it’d be great to be up there too … one day … it’s only a couple of promotions away” (I-49, PM, Construction)

The senior management group within CBAA was called ‘the CBAA Council’ (CC). It was idealised by many staff, even by its own membership. It was described as very harmonious and co-operative, always getting consensus before action. In some respects it appeared too good to be true.

People did find areas where they were disappointed in the CC’s performance. There was evidence of significant conflict in the group and failure to successfully advocate CBAA’s position to stakeholders. Yet despite such rational awareness, many staff only saw the group as ‘all good and benevolent’. It was as if staff needed this myth of perfect leadership or benevolent protector in some way.

5.6.1.9 Angry Father Figure

“I’ve never met him (CBAA MD), only seen him in the distance at quarterly briefings” (I-38, test manager, Construction)

“you hear some dreadful stories about him” (I-48, designer, Construction)

“he’s never walked around here, I don’t think any of us have seen him” (I-45, PM, Construction)

“they say he’s not someone you want to disappoint … he drives people pretty hard” (I-13, architect, A&R)

“no, I’ve never had to work for him or interact with him … the managers that do seem worn down by it though” (I-5, TL, A&R)

Most CBAA members had not met their MD. They might have seen him at a department briefing, but after he would leave, never available to mingle and meet the troops. They usually heard his ‘message’ second hand, but directly experienced and felt the consequences of his actions: in the form of changes to their work plans, inter-system design and criticisms. They heard stories about him; stories that others had been participants in or had simply heard from others; stories likely to have been embellished. From this soup of dubious, contestable information, staff made their judgements about him in the absence of any direct experience. Several spoke of the fear of doing something for him that
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structures and Data Themes

goes wrong, the fear of his demands, anger and wrath. These views were not consistent with the experiences of his direct reports. This partial experience of the leader was a simplified and generalised view of reality of him.

He was certainly a strong manager who held the line with angry, demanding Business Unit leaders. He tried to protect CBAA staff and their reputation. The research experience of him as sponsor was of a thoughtful, engaged and concerned leader, quite different from the mythology that had formed around him.

A working hypothesis of the research was that when teams were under extreme pressure, having a harsh, demanding, punishing and terrifying leader gave them a ‘bad’ person to blame; to displace their anxiety and associated negative work feelings onto. Was this triggered from the reality of the highly pressured situations or was it triggered by unconscious memories and associations of similar figures in their past? He appeared to be blamed by staff for many of their painful experiences at work.

5.6.1.10 Positive Spin Up

“nobody likes to give bad news, it’s seen as not being proactive, not finding a solution first to your problem before flagging it” (I-46, release manager, Release Management)

“managers just do not want to hear bad news … it can be career ending” (I-13, architect, Architecture)

“one manager found the explanation for why we are always so over budget. He was virtually sacked on the spot … but it turned out to be true, so he kept his job, but his career is finished” (I-30, manager, BUIG)

Many managers and staff expressed an unwillingness to give ‘bad news’, fearing that they would be blamed for it, for not fixing it or for not notifying their manager earlier: it was ‘no win’. Managers had been harshly criticised for ‘bad news’. Many preferred to place a ‘positive spin’ on issues, recognising this often gave the wrong impression of the status of a piece of work or an issue.
“you never lie, but you emphasise what is going well, to schedule ... and you work like hell to find a solution to the things not going well” (I-24, programmer, Construction)

“I don’t know if they (executive management) realise I give them a ‘rosy’ take on progress ... I think other people do it too. I don’t even know if what my teams tell me is how it really is ... it’s probably not” (I-49, PM, Construction)

“I don’t want the hours in their office and the criticism for being frank about our risks and problems” (I-9, TL, Architecture)

Staff described unwillingness by their managers to represent and communicate to more senior management the issues that were causing problems for their work-group. They believed the manager preferred to leave it and hope it could be resolved rather than risk being noticed as someone who raised serious problems without having a solution. It was as if people were rewarded for the amount of ‘bad news’ held back, as though this reflected an ability to deal effectively with the issues behind the ‘bad news’. Often the broader work plot changed, so that a work-group’s ‘bad news’ went away naturally or could be attributed to a new problem from another part of the work-system, so the deliberate, earlier holding back went unnoticed.

5.6.1.11 Communication Down

“I’d like to know how many of the staff actually ‘get’ (understand) a briefing, and how many get the same briefing I gave to my reports ...” (I-16, SM, Construction)

“I get as upset as the staff about these ridiculous messages the MD makes to business units ... doesn’t he know we can’t possibly do it” (I-45, PM, Construction)

“they have to know we can’t do what they promised ... it seems like they’re trying to kill us, it happens so often” (I-27, manager, Construction)

“they (IS management) write the cheques, we have to pay them, it’s crap” (I-8, TL, Production)

“how do you make sense of this to your staff, especially when they’ve been working weekends for months already” (I-32, manager, Testing)
CBAA management made two key types of communication to staff. The first was directives about things that were policy and the second was statements about release delivery. The latter were often highly optimistic and positive, intended for external stakeholders but none-the-less heard by CBAA personnel. Communications were often confusing for staff, not knowing if the statements were just to pacify business unit executives or if they were also a coded message to them, particularly around release delivery dates and scope. Messages of internal department policy were also confusing to staff. Management statements like,

“our staff are our highest asset, all must be respected ... we are committed to a healthy work-life balance for all staff” (FN-A-27)

contrasted with

“we are redoubling efforts to deliver all release items that are behind schedule” (FN-O-46)

or

“find another solution, you have two days, it just has to work” (FN-O-17)

contrasted with

“in CBAA we are committed to developing high quality software ... software that provides a well architected base for future extensions” (FN-A-31)

These communications were confusing for staff and managers because a message often contradicted an earlier or existing message or policy. There was usually no assistance as how to reconcile the contradictions inherent in multiple messages. Middle managers and staff were often directionless in how they should take up these messages in their work or how this was to be done in a consistent manner across CBAA. Senior managers occasionally assisted with translations and clarifications. Many middle managers were quite cynical about the content of the leadership's messages, and allowed their own opinions and emotions to critically colour the original message.

One work-group of 40 was observed to be markedly less upset and agitated than other groups observed. This work-group's manager reinterpreted the
leadership’s messages, contextualising them to a meaning consistent with the mindset and context of CBAA rather than the BUs. He saw this as part of his role. Other managers appeared worried that they would misinterpret the message and be criticised for this. They presented it literally, with the inherent aggressive and persecutory tone heard by staff.

5.6.1.12 Moving to Answers

“we’ve got the answer, let’s move on … let’s get on with it” (I-3, TL, Architecture)

“the first’s the best” (I-32, manager, Testing)

“… now, got to be now, correct and concise … they’re (superiors) already impatient … and angry at anything less …” (I-45, PM, Construction)

“it’s more about not getting further behind, it can be really tense … solutions often take a lot to find. So we usually take the first reasonable one” (I-48, Designer, Construction)

There were many significant questions that got asked in the course of software development and program management. Many required solutions and answers urgently. There was often so much pressure that having an answer was more important than having a viable answer; solutions found too quickly to be thoroughly thought through.

“they don’t always work out” (I-48, Designer, Construction)

“there can be a lot of pressure …they (management) are impatient, we get impatient too and make stupid mistakes” (I-19, PM, Construction)

People described impatience with the process of getting to ‘the answer’ for a particular matter. The lower down the hierarchy the more urgent it became to get to an answer, the next level up expect it and put pressure on.

It seemed difficult to create a space in time to allow understanding to form about what was occurring, to think about what it may mean, to formulate a range of possible courses of action, and finally to select a course of action. The demand for action was so overriding that the capacity to think and reflect often appeared to
get lost. Knowing was prized over not knowing or the ability to come to know something new (Wilke, 2003, French and Simpson, 2000).

5.6.1.13 Inconsistency

“management are telling us we are going to get more staff in this group, yet we haven’t … I know of three people in similar roles … well regarded … with the kind of experience we need … that have left CBAA last week, contracts were up. Why didn’t they (management) move them here … they wanted to renew …” (I-20, analyst, A&R)

“I got told I will be trained for this new role, all the skills I will need for it. … I put forward training courses … consistent with my PDR. … I got told ‘no … there is no time … more important things … you’ll learn as you go along’ …” (I-24, programmer, Construction)

“We agreed we’d produce this for the business … and give it to them … I’ve done it now, the business want to see it but I’m now told we can’t present it to them” (I-12, TL, A&R)

Interviewees reported inconsistencies about many aspects of their work between what was done and what was said would be done with no explanation of the shifts. In situations that were significant for individuals or teams, this dissonance in management’s actions, decisions, or commitment was very distressing for staff and middle managers. They met the unsettling realisation that CBAA could not be relied upon on important matters. Was there real control in the work-system or only an illusion of control?

5.6.1.14 Interpersonal Rather than Systemic

“I didn’t do what they accused me of, it was the REPS development team that made that error” (I-45, PM, Construction)

“some people just don’t get on, it disrupts and bottlenecks work … their personalities clash” (I-47, manager, A&R)

“I know my manager doesn’t like me … the things he says … and I don’t really like him either” (I-24, programmer, Construction)

“there is still a lot of dead wood here … individuals who don’t deliver … I guess we’ll eventually be able to move them on” (I-16, SM, Construction)
When staff put forward issues and problems to their managers, they often needed their manager to intervene in the presented problem with peers from other groups involved with the problem. Often the manager only discussed the problem with the manager of the other group and endeavoured to work it out bilaterally rather than involve all the protagonists. Problems were resolved on an event-by-event basis. Some managers and staff recognised a reluctance to discuss these problems in management forums. Opportunities to look systemically at the causes of these problems and their recurring nature were lost.

The interviews identified situations where managers under a senior manager shared similar problems and that in turn had similar resolutions. But they were resolved in isolation from each other as separate bilateral discussions. One case took eighteen months to resolve, yet at its core was a straightforward matter. It may have been resolved earlier, if the systemic learnings from other cases were available.

5.6.1.15 The Unrelenting Business

“this is an ongoing problem, it is impossible for us, we can't manage with this onslaught, they (the business) should be more focused” (I-5, TL, A&R)

“the business is a problem, they change their mind and don’t accept the problems and mess it makes for us” (I-20, analyst, A&R)

“the business have every right to expect this, but it is just not possible to always do what they want” (I-26, SM, Release Management)

“they push, push, push ... change their mind and never say thanks for fixing their mess” (I-50, TL, Construction)

“I know my people are rude and unreasonable at times, it’s unfortunate and shouldn’t happen ... there is a lot they want and often they get so little” (I-1, executive, C&G)

The experience of the business for most participants was of an entity that was unrelenting, unsatisfiable and thankless with respect to the specifics of its needs, its confusion over priorities and scope, its demand for more automation and for
this more quickly. What differed most strongly between participants was the value they placed on it or the judgements they made about this unrelentingsness.

Broadly, there were two basic categories of response. The first saw the business’ demands as unreasonable, creating impossible situations that were not being managed. The second view was that it was fine for the business to expect a lot, but also reasonable to push back when it couldn’t be done. However, when under significant work pressures, most interviewees thought the business was harsh and punitive, had unreasonable expectations, were unwilling to compromise, and were never grateful or thankful.

5.6.1.16  CBAA Motto

“We Deliver on Time” (I-21, MD, CBAA)

This message went out to business groups, to all other IS departments and to all groups within CBAA. To many it was CBAA’s motto, to others it was an incessant mantra, to some, it was a direction, a guiding principle or measure of success. To a few it was a form of deluded impossibility.

“they (CBAA management) expect us to do the impossible ... we do so much overtime to try to deliver” (I-26, planner, Program Management)

“when we’ve just about given up they roll it out, we deliver we deliver ... well we can’t always, it nearly kills people” (I-43, tester, Testing)

“trying to pacify the business doesn’t work, they just feel more justified in their endless demands for faster solutions” (I-21, MD, CBAA)

“I’ve spent too many weekends here, away from my family ... it’s the same each release, it doesn’t get better” (I-43, tester, Testing)

“I know we can’t always ‘deliver on time’ but I still feel the pressure, the burden of it all” (I-40, manager, Testing)

“it’s a lie that we can never measure up to and never get away from” (I-37, DM, Release Management)

“it’s really Can’t Build Anything At-all (CBAA)” (I-52, architect, A&R)
People in CBAA all knew this message. Some were very proud of what it said about them and the department they were part of. They were proud of the work they did. Some understood and accepted that it could not always be realised given the pressures and uncertainties of the work and the technologies in use. Others understood it and because of the imperfections, tensions and uncertainties of their workplace, felt pressured and burdened, attacked and persecuted by it. Each perspective or state of mind produced different behaviours and levels of resilience. Many refused to accept it and considered it crazy, yet all felt the anticipation and worry when it was invoked by CBAA management. The rallying cry signalled impending troubles and provoked anxiety in the work-system.

In some respects, it was an aggressive statement, perhaps an attempt to meet business posturing and aggression about IS’s underperformance and under delivery with strength. It was aggressive to CBAA staff. There was an implicit demand on them to deliver, regardless of the impacts or costs to them.

5.6.2 Concluding Remarks on Data Themes

The themes lay out a view of the pressures and tensions that wore away at CBAA’s work-groups and their members. It would seem that many of the concerns represented in the themes had been present in the work-system for a very long time. They worried different interviewees to different degrees, as one would expect in a work-system involving subjective perception and agency. All interviewees registered a third or more of the set of themes as things they were concerned about in the course of their work. But from the response of the reference-group to these early findings (see next section), it would seem that no one in any role within the work-system had a view of or mind for all these concerns that were alive within the experience of work within the IS department. What might have been the positive impact on work and delivery if management addressed some of those pressures and tensions that generated these themes?
5.7 Reference-Group Discussion of the Working-Note

The discussions of the working-note with the reference-group occurred over four meetings over six weeks; the extended process seemed to represent something of the resistance and defensiveness that existed in CBAA management towards knowing itself and possible anxiety about what had been discovered in the research process and what it might mean. The first meeting occurred after the interviews in early December and was scheduled for 90 minutes. It was convened with two members absent, one sending one delegate and the other sending two delegates. But the time pressures from other work-tasks on several reference-group members resulted in the meeting being reduced to 30 minutes and the decision to reconvene in two weeks. Ninety minutes would not be enough time to discuss the working-note, but senior managers in CBAA had a policy to never meet on any topic for longer; holding the view that “if it can’t be resolved in ninety minutes it must be the wrong thing to work on” (FN 81).

At the second meeting the working-note was read out by the researcher, again one member was absent again but sent her two delegates. Members were then given a copy of the working-note. The discussion was limited because again time was tight. It was observed that there was some shock about the findings, their scope and intensity. The group was reminded that these findings came out of the narratives of the interviewees, that they remained a work in progress and were not judgements, neither good nor bad, just what was described by staff (including themselves). People were not angry, but were somewhat shocked and not sure what to do with the information. The delegates sent on behalf of senior managers seemed especially unsure about how to respond as they did not usually interact with so many senior managers on sensitive topics—it was as if there was something private or intimate in the dialogue about the working-note and the felt-to-be confronting topics it revealed about the work-system. The MD suggested the group reconvene in the new year and that the reference-group meet for four hours to work through the working-note, and to do it again if necessary. There was no baulking at committing such time to the document, despite their ninety-minute meeting policy.
At the third meeting the reference-group began to work through the document. It followed on with another four-hour workshop in the same week. Participants commented that they had never committed so much time to consider the findings of any report or assessment. This was not said critically, more that it was a new thing and possibly task-appropriate—to think deeply about issues that were likely disrupting the effectiveness of their organisation and its work.

This third meeting began with the managers all expressing how “I didn’t find it (the working-note) shocking or surprising” (RGT-148), and after a few minutes of consensus building some moved on to “I understand it all, but the themes on ‘angry father’ and ‘idealisation’ I don’t get” (RGT-1). Discussion further moved on to “this has captured the essence of the challenges that are out there” and “we start to appreciate the issues we have in front of us” (RGT-1).

“you kind of know ... you think ‘well it’s not that big’, but when you see it written down ... we as senior managers in the organisation need to make sure we address these sort of things” (RGT-1)

There had been an awakening about the impact the issues their staff were discussing in the working-note, and that they were not just some fancy that could be dismissed as ‘silly’ without performance being impacted.

The meeting had a tone of seriousness and working—concentrated thinking and endeavouring to remain open to the thoughts and feelings the working-note’s contents provoked in them. The earlier interactions seemed to have built trust in the working-note’s contents and with other reference-group members, including the researcher. It became possible for reference-group members to disagree with the data and even with each other, and that this still allowed for good ongoing working relations on the task.

As the dialogue went on there were some themes the CBAA members of the reference-group disagreed strongly with, despite earlier “having no problem with any of them”. This was excellent as it indicated the group was willing to risk discord to do its task, and this could lead to robust testing of the data and

48 RGT-1 –Reference-group transcript for the dialogue on the working note
interpretations drawn from it, more strongly validating the data. One example was theme 4, absent managers. All six CBAA members disagreed that this was the case, some very forcefully. The discussion moved from one member to the next, each giving their thoughts and experience as to why this was not so. At the end of this, the second speaker, a middle manager member said that the discussion had convinced him that it was in fact the case, that “managers were absent from their teams and core duties”. He said the discussion had “connected me with my own experience of this … I am absent on projects from my teams too”, the reference-group being on ongoing example. The others again disagreed then one senior manager member spoke up saying that “yes I assigned three managers to HR stuff … it didn’t seem that big … but took them weeks of effort to finish”. Others acknowledged they probably did too, with one manager noting “I just want the thing done, I’m not concerned how long it actually takes … and I suppose I forget I’ve stripped out managers to do it”. The MD recognised that he also did it with his direct-reports (some of whom were in this group) and that it was done to him by his boss, taking him out of CBAA sometimes for a week or more.

What was seen in the dynamics of the reference-group were swings in the group’s behaviour that are typical of groups thinking and considering unpalatable realities (Main, 1975, Rice, 1965, Kreeger, 1975). The swings ranged from the cordially testing out with each other their thoughts about the working-note with agreement, convergence, and discomfort with conflict; to near universal disagreement with authority⁴⁹, expressed through temporary unwillingness to test the data against the actual experiences in the room (an irrational, reactive, defensive group behaviour); and finally, to working with different understandings and experience across the reference-group membership and being able to tolerate this tension of unresolved matters and not knowing for extended periods of time—for hours whilst the dialogue evolved. Throughout this, there were many direct experiences of themes or topics posited in the working-note:

⁴⁹ the working-note and its author
“we struggle to not work on the first ‘answer’ or explanation, to not grasp at any understanding but to stick with the discomfort of not understanding until we do” (RGT-1, RG member 4, in reference to theme 13)

“it’s a challenge to hold back from speaking or acting, to sit and take in the ideas and cope with not rushing to action” (RGT-1, RG member 1, in reference to theme 13)

“we really benefit from lengthy blocks of time working on big problems ... sound facilitation helps and perhaps we can’t always do that for ourselves” (RGT-1, RG member 6, in reference to theme 15)

“many of these things are dynamics of the organisation, even though it seems like you are having a go at me personally, or that someone in a team seems to be ‘dead wood’ and should go” (RGT-1, RG member 5, in reference to theme 15)

Toward the end of the dialogues over the two half days, the working-note was accepted with minor modifications and having surfaced more data to support the findings thus far. The next phase of the action research was discussed and planned. Approval was given to conduct extensive workplace observations of CBAA teams, and six were identified by the reference-group. Three action learning projects were identified, two involving role analysis across role boundaries at key pressure points in the CBAA structure. One would look at role interactions between senior and middle managers, the other between analysis, design and construction roles in the software development process. The third action learning project would explore new ways of enacting the boundaries, creating more transparency without any loss of accountability. The next phase of the action research was approved by CBAA management. The research project would continue to explore the issues and tensions that detrimentally disrupted the fabric of group life and delivery performance as the IS work-groups endeavoured to build new software.

The reference-group members were used to positive capability, using their skills, experience and techniques to focus in and fix things that seemed wrong. It was a ‘doing’ attitude. What they struggled with and railed against was the experience of negative capability (French, 2001, Bion, 1970). To experience and learn new

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50 all six teams accepted the request to observe them in their work
aspects of and things about the work-system, required them to listen with even attention rather than make quick judgements, to wait rather than jump to the first idea in their mind, and to reflect, assess and discriminate about how, when and in what ways to act. This is Bion’s (1961) notion of binocular vision, the use of different vertices, points of reference or perspective; two forms of attention, one evenly spread across a situation without judgement, the other directed and discriminating on specific aspects of the situation.

After these reference-group meetings, the CBAA Council endeavoured to weaken the conditions that supported work-group fantasies about CBAA leaders, and to actively challenge the reality of communications to them, particularly about ‘work progress’, in order to stop positive spin.

5.8 Summation

This chapter has looked at the structural complexity of this work-system and the central themes that emerged from the interview narratives of participants from across the organisational hierarchy, from their experiences of working in this social-system. It has highlighted many of the pressures and tensions that are on the work-groups and roles within CBAA. It gives insight into feelings that members experienced in the course of their work. As a researcher listening to their corroborating stories of work, it often evoked the experience of anxiety in me, anxiety about the uncertainties, the unknown, and the unboundedness of the work situations they were experiencing.

One function of the organising structures of any work-system (role, task, authority, location, time) is to enable work (Miller and Rice, 1967). This requires the structures to absorb and contain the anxieties associated with work; to reduce the psychologically (and physically) threatening dimensions of work so that the experiences of groups and their members do not significantly disrupt their engagement with their work-tasks, performance or the delivery of work-products. The structures, including the management and regulatory functions, are to absorb and dissipate anxiety at the boundary of the group, so it does not
negatively affect the state of mind of group members, reducing their capacity to work. CBAA’s structures tried to minimise the psychic impacts from its internal and external pressures and tensions, often to only limited effect.

Jaques (1989) would insist that all problems should be solved by correct structure that lays out task assignment and the accountability hierarchy: that in a correct structure there is no disturbing anxiety or stress. IS development and turbulent business markets are unstable, emerging unpredictable pressures and tensions and their consequences. In such emergent settings structural certainties evaporate as work-systems scramble to cope with such onslaughts. Even when anxiety was a consequence of poor work structure, how people dealt with the feelings and defences (largely unconsciously) produced further dynamics and anxiety, adding to this vicious cycle and further compromising cost, quality and timely delivery.

Most CBAA work-groups appeared to want to do good work. Members turned up, absenteeism was low, they faced the conflicts with other CBAA groups, and the negativity of BU managers. They did this day after day, release after release. At times work-groups stumbled and things went wrong, work-products were delayed and release delivery was impacted. There was limited contingency or systemic resilience in the work-system to accommodate such inevitable human events.

The next chapter scrutinises the presence of anxiety in the work-system, principally from looking at work-group behaviours that are symptomatic of defensive behaviour rather than work-task oriented. These defensive behaviours will be examined making the case that systemic-anxieties are a consequence of unconscious feelings and thoughts, drives and urges that are provoked in the course of work by the pressures and tensions in the work-system, as discussed in this chapter.
Chapter 6  Dynamics of Defences

This chapter builds on the discussion of the previous chapter about the pressures on the IS department and its relationships and interactions internally and with stakeholders. The themes contribute to the development of interpretations and working hypotheses about problems with the process of IS development in this complex setting. This chapter starts by exploring the presence of anxiety in the IS department. It endeavours to show some of the defensive behaviours undertaken by IS work-groups to survive the worst onslaughts of the anxieties they experience. Vignettes discuss defences against systemic-anxiety. Defences are either dynamically formed in-the-moment responses or stable defences (routinised patterns of behaviour) that moderate the extremes of systemic-anxiety.

IS development work is done by groups or by members in role representing their group in various forums; largely, it is not individual. Large projects are done by groups of groups of more groups. Communication about tasks, deliverables and progress all occur through interactions between roles and groups, ultimately represented in the documents exchanged between groups co-operating on a common task.

It must be remembered that defences are unconsciously motivated re-action, protecting against perceived serious threats. They are neither good nor bad, just human responses to anxiety.

This chapter endeavours to show the defensive behaviours of work-groups in the IS work-system, linking this to the high levels of systemic-anxiety that provoke these defensive behaviours. This systemic-anxiety is an inevitable consequence of the constellation of undigested feelings and thoughts staff and work-groups experience, undertaking work-tasks, with the pressures and tensions inherent in IS work-systems.
The analysis in this chapter uses data gathered from extensive interviews with staff, long duration workplace observations of work-groups, and documents from the research-host.

6.1 Anxiety in the IS Work-System – an interpretive framework

The central theoretical tenet of this thesis is that when anxiety builds up to intolerable levels in human systems (individual or group), it disrupts their capacity to think, reason and focus attention, unconsciously shaping re-actions and behaviour. In such conditions, the human system becomes reactive and strongly disposed, in those moments, to primarily ensuring its own survival. Anxiety is produced when the experiences of the human system evoke feelings that are unable to be given adequate expression in the work-system. The unresolved pressure of these feelings creates dread, concern, worry about the feelings, the associated thoughts and their meaning. It is this dread of the undigested\(^{51}\) feelings that is anxiety in the human system. The pressures and tensions inherent in the composite of the work-tasks, interactions, expectations and imaginings that constitute work today, lead to the experience of feelings and subsequent anxiety in human systems.

But anxiety is unlikely to explain all variations from task engagement. Managers and staff have many legitimate demands on them. They make rational, considered decisions that compromise some tasks in the interests of the portfolio of tasks they are accountable for, due to limited time, high workloads and confusing work contexts. Considered choice and agency account for some withdrawal from tasks but not all. Staff are often distracted; such mild lapses in attention can be attributed to anxiety taking the group off-task for a moment (French and Simpson, 2015). Reactive, defensive anti-task collective behaviours indicate the likely presence and influence of unbearable anxiety (Armstrong and Rustin, 2015a).

\(^{51}\) Insufficiently, inadequately expressed feelings
The reaction of human systems to this primordial sea of experience will be unique, as all human systems are unique. It is not possible to know or predict the details of what will happen. But it is possible to wonder, to hypothesise, to enquire and to interpret what happens. From practitioner-theorists like Freud and Klein with respect to individual human systems, and Bion and Menzies with respect to group systems we see there are fundamental patterns of behaviour that are enacted in these reactive states of mind; patterns of behaviour that serve to defend the human system from the psychic onslaught of the threat from the physical world of often real dangers and the inner world of primitive unbounded psychic threats. These behaviours protect the human system from the dread behind the symptom of the anxiety. This restates ideas discussed in Chapter 3 and is used here to interpret data of the research case.

### 6.1.1 Feelings in the Work-System

The previous chapter introduced the many pressures and tensions on workgroups as they undertook their tasks in delivering software changes on time to the TPT business. It introduced many of the worries and concerns members of these groups had about the situations they were working in. These often stressful and demanding situations evoked many feelings for staff and managers that remained unprocessed, undigested and often unacknowledged by them, accumulating to levels that were often unbearable, such as:

**Fear**

“it’s frightening where this will end” (I-18, planner, Program Management)

“there’s so much agro in those meetings ... it can be scary, really scary” (I-41, architect, A&R)

**Anger**

“... now, got to be now ... they’re (superiors) already impatient ... and angry at anything less ...” (I-45, PM, Construction)

“yeah it makes them (product managers) angry” (I-24, SM, Release Management)
“… it breaks people and makes me so angry …” (I-29, senior product manager, C&G)

Disappointment

“we felt so down when it was dropped from the release” (I-22, analyst, BUIG)

“our proposal was smart ... it was very disappointing it never got progressed” (FN-0-16, PM, Construction)

“it was a huge let down to be moved off the project” (I-49, PM, Construction)

“it gets really sad here sometimes” (I-3, TL, Construction)

Hate

“They (the business) hate us, there’s not doubt about it” (I-48, designer, Construction)

“I hate the way my team gets treated” (I-32, Manager, Testing)

“there are times when I hate what I’m doing ... and some of the users too ... I know I’m not alone” (I-13, architect, A&R)

Guilt

“the release failed because we couldn’t get the design working” (I-48, designer, Construction)

“we let everyone down by not finding those bugs” (I-43, tester, Testing)

“we had no room in the release for the product, but it was so important to the business” (I-4, SM, Program Management)

“the document was so very late ... we couldn’t have done better ... it hurts to fail” (I-49, PM, Construction)

“I feel like it’s my fault ... and I feel bad” (I-24, programmer, Construction)

“it is actually their (architecture group) fault, they should feel bad about it” (I-32, test manager, Construction)

Very often, feelings are not welcomed in work-systems (Gabriel et al., 2000, Frost, 2003). The feelings of anger, happiness, sexual attraction are rarely allowed institutional space to be expressed, tolerated and digested. Unaddressed feelings become defended against as the often culturally unaccepted urges they
evoke seek expression. Anxiety is a symptom of such undigested feelings and thoughts. It is the awareness of these feelings threatening to emerge back from the unconscious they had earlier been exiled to.

It is not always possible to know what people feel in their work, or the feelings that were prominent in the mental life of groups; so much is below the level of conscious awareness. What is possible to see are the symptoms of anxiety associated with unresolved feelings experienced at work. The previous chapter gave a sense of the worries and unsettling events and anxieties work-groups were contending with as they acted and reacted to the pressures and tensions experienced in the pursuit of their work-tasks.

6.1.2 Anxiety in the Work-System

What group members individually think and feel is not the most important determinant of the state of the group’s mental apparatus (Bion, 1961). If sufficient members of the group experience anxiety, other members will be affected by the anxiety felt by the few\(^{52}\), and it may even be amplified (Rioch, 1976, Hirschhorn, 1988, Gabriel, 1999). Not all members may experience the work-related feelings that provoke the anxiety, but they are likely to experience the anxiety of their colleagues and be affected by it. If the intensity of anxiety exceeds the group’s current tolerance for anxiety, it responds by behaving as if the threat the anxiety represents was really happening rather than just threatening to happen; and defends itself from this.

In analysing the data, it was difficult to understand why there was so much defensive behaviour from work-groups in this setting. There were many things happening to work-groups that could be interpreted as threatening\(^{53}\). Many of these were real. Some were constructions or imaginings of the group, only real in the inner world of members of the group. These threats to the groups’ wellbeing produced persecutory anxieties. Persecutory anxiety concerns the “painful

\(^{52}\) it is also possible that most or all members are directly aware in their own experience of the anxiety

\(^{53}\) such as the threatening behaviour of managers, other IS and business groups, and threats to their existence through reorganisations, performance improvements and possibilities of outsourcing
experiences of objects that threatened annihilation” (Hinshelwood, 1991, pg.159). Klein (1955) indicates that persecutory anxiety results in the temporary fragmentation of the ego or unity of the human system. But could the persecutory anxieties experienced by the groups account for all the unconscious defensive behaviours in the work-system? It seemed unlikely—these work-groups often giving as good as they got in the push and shove of work.

There were other anxieties that were less obvious but none-the-less-present in the work-system. The data presented examples indicating depressive anxiety experienced by IS groups. Up to this point, the analysis had attended to the things that went wrong for the work-groups and external threats, largely symptomatic of persecutory anxieties. However, this was not the total of all anxieties in the work-system. What became evident was the presence of significant depressive anxieties active in the work-system. Depressive anxiety concerns a felt state of inner danger produced by the fear of having harmed good internal objects (and/or their representations in the physical world) (Quinodoz, 1997, Hinshelwood, 1991). It involves sorrow and guilt about harm done to internal objects—both loved and hated. It represents a more integrated state of mental functioning than with persecutory anxiety (Klein, 1955). A working-hypothesis developed around this.

*Guilt about harm done to others and its associated depressive anxieties contributed significantly to IS work-groups’ anxiety load, disturbing task performance, leading to project failure.*

### 6.2 Dynamic Defences

In CBAA, on many occasions, work-groups reluctantly accepted changes, coped with and sorted out the implications of these to their work plans, then got on with their new situation. Also, many occasions where they resisted and stepped back from their task. The first cases are ‘adaptive to the task’ in the turbulence of their setting; it speaks to their resilience. The second set are ‘adaptive to the emotional (psycho-social) needs’ of the group and task performance suffers.
An indicative example was a design team undertaking four change requests (CRs)54 planned to be delivered across two CBAA software releases. They may be directed to undertake an additional CR in the same timeframe with no extra staff. With working overtime, making low risk compromises to the thoroughness of their design documents, and given the stability of the areas of the software that would be changed, their judgement is that the extra work of the additional CR can be done, at a stretch. Of course over the passage of time their judgement may prove to be wrong, in which case, the assumptions that underpinned the decision were somewhat flawed. But at the beginning they accept the change to the direction about their scheduled work.

Another similar team may be similarly directed to take on more work, changing the scope of their work, and they do not accept the change to their work plan. There may be very rational reasons for this, or reasons that stem from the unconscious psycho-social situation of the work-group at that time. There can be many reasons for a group to unknowingly or unwittingly step back from the demands of their work-task, some of which are explored in the following vignettes. They are drawn from the interviews and hundreds of hours of workplace-observations. These vignettes recount situations and dynamics that played out many times across many work-group settings, not isolated incidents.

6.2.1 Vignette 1  Conflicting Business Requirements

At face value this example is of an IS requirements-group not completing its deliverable on schedule for the next team. On closer analysis, it was about an impasse between two powerful business units (BUs), the denial of this problem by business and IS executive management, and the inability of IS management to identify the real problem rather than reactively blame and criticise the IS requirements-group.

54 see Appendix 6 for explanation of a Change Request (CR) and its relationship to other documents used in CBAA
From the outside, what was visible was a work-group not doing its work. But 'why was this so?' would have been a more useful response than aggressively criticising the group or its members, which middle and senior IS managers responsible for the group did. These managers appeared to be very frustrated at the situation and angry with the group.

“This has been going on for months, how can your people be so incompetent” (FN-O-78, SM to PM)

“just get on and fix it ... please” (FN-O-79, PM to team)

“take some initiative, get a resolution urgently” (FN-O-78, SM to PM)

“What do you mean the two business units are not in agreement about the requirements, they agreed to the investments ... you should have solved this” (FN-O-79, SM to team)

“get this moving or there will be hell to pay ... it’s already a complete disaster” (FN-O-78, IS executive to PM)

The managers assumed they knew the commitment of the BUs to this business initiative (BI). They assumed the commitment of the BU’s analysts was the same as that of the business executives. They assumed the BUs would agree at the micro level of the BI’s detailed requirements in the same way as they did for the big picture view of the initiative. This was not the experience of the requirements-team working with the analysts from the different BUs. These assumptions of IS management were faulty. There was intense time pressure to overcome the delay and deadlock of this BI, and to get the requirements definition (RD) document completed urgently. The development timeline was 15 months, with two months for RD, yet after four months, there was still no RD document—severely late with no possibility of changing the release delivery date.

Observing the requirement-group, they met regularly, and often forcefully, with analysts and managers from both BUs—separately and together. It seemed impossible to get both parties to common ground for the requirements of the system. Both groups had fundamentally different needs of the system, which would serve very different markets where the respective customer profiles the
system was to support were at opposite extremes to each other. The requirements-group was understandably very frustrated and often frightened about the consequences of this impasse.

“it’s impossible, they need two completely different systems ... we can’t do this” (FN-O-77, analyst 1)

“we’ll be crucified over this ... no one (IS management) is listening, they’re just expecting, demanding” (FN-O-76, TL)

“I can’t stand this ... it’s never going to end at this rate” (FN-O-77, analyst 2)

Whilst the requirements-group did spend extended periods of time working on its tasks, there were extensive blocks of time where they were observed avoiding their primary work-task. After their workshops with business staff failed to make progress they took lengthy breaks, often out of the office for some staff. Over the six weeks of observations, these breaks drew out from tens of minutes to many hours. Conversations between staff moved from being confident in themselves and the team’s resources and ability to do their work, to ‘having to wait for management to fix this’, expressions of self-doubt and uncertainty about colleagues and a mindlessness to their demeanour, that had not been evident in the early weeks of the observation. They appeared easily distracted and moody.

Eventually, they blamed the other groups involved and were at times verbally aggressive to BU staff. In the privacy of the group, members spoke very critically of the BUs:

“they (BU staff) just don’t give up ... the same line that they know goes nowhere” (FN-O-80, analyst 2)

“it’s infuriating going around and around the same circle again and again and again” (FN-O-81, TL)

“it wastes everyone’s time ... yet they won’t tell their bosses it’s stuck and can’t be solved” (FN-O-81, TL)

“I can’t stay here, this is wasting my life” (FN-O-81, analyst 1)

and of their management:
“they’re idiots (IS management), they’ve got no idea what is going on with the business” (FN-O-81, analyst 1)

“it’s colour by numbers for them ... they say people are promoted because of their incompetence” (FN-O-80, analyst 2)

“they don’t even understand the work they get us to do ... I’m furious about this” (FN-O-80, analyst 1)

“if they helped us that would be great, but they don’t ... they just expect the factory formula by the book with no excuses or exceptions” (FN-O-80, TL)

They described seeing their managers behaving irrationally, behaving defensively. Similarly they saw the business teams behaving territorially and irrationally with respect to this BI. They appeared to understand that somehow the enterprise would not be able to find a timely resolution to this impasse other than to expect them to solve it; something they did not have the resources or authority to do.

“we are the bunnies that are supposed to work a miracle here, but it’s impossible because they (the two BUs) can’t agree, they never will ... and all the while the pressure builds” (FN-O-82, analyst)

The signs of the group’s distress were observable in their resistance to their task and in the defensive behaviours described above. Yet IS management ignored them, possibly caught up in other matters until this problem was so severe and intractable that they too were overwhelmed by their anxieties about another failure.

Senior IS managers only saw the ‘objective facts’; the team had sufficient time, sufficiently skilled people, suitable work practices, and adequate access to business experts. Their conclusion that the failing group was ‘hopeless’ was made from the rational parameters of the situation and did not consider the psycho-social aspects.

The work-task of the requirements-group for this BI was an impossible task given the dynamics at play at that time. It was never clear why the two BUs had agreed to a shared development effort and a shared system. The automated functions they wanted were conceptually the same, but at the detailed level they
were radically different and utterly incompatible. It is curious to consider what
may have been at stake in the most senior levels of the enterprise to make it
impossible to reconfigure the BI so it could succeed.

“they (BU) can’t solve their impasse but they won’t be seen to be the
roadblock either. So it (IS work) proceeds as if it is clear ... which is not the
case” (FN-O-84, RM, Release Management)

Failures like this were not uncommon in the IS development process, although
usually only with problems engaging with one BU, not the disagreement and
incompatibility between two BUs as in this case. From observations and access
to planning documents, most failures of this ilk meant such BIs would be
delivered three to nine months late and would waste between $100,000 and
$10m. For the case discussed here, it took three years to resolve the impasse
before two separate initiatives were begun. During that time, $200m was lost to
software licensing fees for the many thousands of users anticipated to be using it
‘soon’ and the IS resources working on the failure.

In this vignette the requirements group was blamed for a failure beyond their
control. BU staff and managers denied their parts in the problem. IS management
was so captured by their own anxieties about failure, they adopted a basic
assumption ‘fight’ state of mind, attacking the requirements group and providing
no support to resolve the problem. The anxiety-load on the requirements group
and IS management was very high. Little could be discerned about the pressures
and anxieties driving the BU’s behaviours.

6.2.2 Vignette 2  Steering Group and the Work-system’s Unconscious

This example demonstrates the broader notion of what is unconscious to a work-
system. Numerous managers or staff may know facts and have impressions
about a work situation. They may remain known only at the level of individuals
in the work-system unless these facts or impressions are spoken into the work-
system’s structures for thinking. Until they are discussed in work-groups, the

55 this vignette echoes themes 5.7.1.3, 5.7.1.6, 5.7.1.10, and 5.7.1.15 discussed in Chapter 5
information is unavailable to the work-system and it remains unconscious to the work-system.

In this example, the IS development effort for a BI was costing on average $2m per month and would run for 15 months, utilising between 50 and 400 staff during the different phases of the SDLC\textsuperscript{56}. Managers called this two million the project’s ‘burn rate’. The BI was of great importance to the business, as it offered a unique opportunity to generate large new revenues from a new market. Work on the BI had moved through all the PDOM\textsuperscript{57} functional and investment checkpoints and the early phases of the software development lifecycle. But in the design phase it began running into problems. It looked like it was fundamentally flawed. From observations of teams working on it,

“it can’t be supported on this technology, nothing can make the data access viable short of massive changes to ‘xxx’ and ‘yyy’ core systems ... that’ll never happen\textsuperscript{58}” (FN-0-56, designer, Construction)

“I can see how they (the architects) thought it would work, we just got it wrong by a factor of 100” (FN-0-55, manager, A&R)

“this has to be stopped, we’re just wasting resources” (FN-0-56, PM, Construction)

There was an IS steering group of eight managers for this important BI. This was unusual, but it was for a high-profile product launch. The steering group met monthly to assess and discuss progress. The initiative limped through design and programming began\textsuperscript{59}. From observations of different IS work-groups, it was apparent that the BI’s problems had become even more pronounced in the construction phase, which seemed to be common knowledge. Yet each month the steering group endorsed its continuation.

\textsuperscript{56} SDLC - system development life-cycle

\textsuperscript{57} PDOM – product development and operation model

\textsuperscript{58} upgrading the technology and database platforms for those two huge systems would cost hundreds of millions of dollars and risk shutting the business down for an extended period

\textsuperscript{59} the spend during programming was about $800K per week
The research observations never directly covered this steering group; there was no data from that forum. There were observations of groups where five managers on the steering group worked. Some of their conversations about the BI were observed. From these observations, it was evident that these managers knew the project was beyond ever being controlled, that it would fail and that it should be stopped. For four months the steering group met, with individuals having this knowledge about the project and their judgement that it should be stopped immediately, yet after each of these meetings the project continued. Below is an extract discussing this, from FN-O-61.

(manager A&R) “so did you discuss it?”

(SM A&R) “what”

(manager A&R) “you know, the ‘new market BI project’, the ‘problem’”

silence

(SM A&R) “no …”

(manager A&R) “why not?”

silence

(SM A&R) “well they’re scared of talking about it ... He’ll be furious (GMD P&IS) ...and the business, it’ll be off the charts”

(manager A&R) “why not you?”

(SM A&R) “you’re kidding right”

“well … you know … it’s not my project, it’s not my direct area now, we finished our responsibility with requirements”

(manager A&R) “yeah”

(SM A&R) “you know it’s just too big to think about ... it’d be a career ending message”

(manager A&R) “like when Ray told them why the releases were costing nearly double the estimates”

(SM A&R) “yep, only probably worse”
Individual members of the groups were conscious of the problem and the necessary action to remedy it, but the steering group behaved as though it had no consciousness of this. If the steering group followed CBAA’s methodology for project reviews, they would have gone through the project progress, costs, issues and risks and tried to identified mitigations for these. They probably did, as the few reviews that were observed all took this approach and it appeared to be well understood by managers. Yet the most obvious and necessary action of stopping the failed project early did not happen, perhaps because of the anxiety about what stopping it would mean to them, to the IS department and to the business. Eventually the project was stopped by the business sponsor, not through any decision of the steering group.

The steering group moved between basic assumption mode flight, where it was in flight from their task of managing the BI for fear of the impending failure, and basic assumption mode dependency, where they were seeking a leader to look after them, to solve the problem.

### 6.2.3 Vignette 3 Two Stuck Teams

Two work-groups had reached an impasse they could not resolve; the staff involved from each group had exhausted their resources. A work-group in the Architecture and Requirements (A&R) group had prepared the requirements definition documents for a number of systems that were required to be changed to support the BI. These documents had been passed on to the respective functional design work-groups. One of these groups found their document to be insufficient with many requirements needing further qualification. They had a number of meetings with the requirements group, which in turn sought clarification from the business experts who were unable to provide answers to the questions. Many weeks had gone by in this impasse and the design, to go to the construction group, was now late. This was a fairly common situation.

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This vignette echoes themes 5.7.1.5, 5.7.1.7, 5.7.1.10, 5.7.1.13, and 5.7.1.16 discussed in Chapter 5
“we’ve taken that risk too often, been wrong and been shit-canned for it” (FN-O-29, TL1, functional-design-WG)

“if they (IS management) want the process followed ‘to the letter’ they have to accept the consequences” (FN-O-29, lead designer, functional-design-WG)

“as it stands we don’t know what the business wants, it should have been resolved but it hasn’t … it’s a wasted effort if we get it wrong” (FN-O-29, designer, functional-design-WG)

“if we get it wrong it may not be picked up until it has gone live, then the consequences would be awful” (FN-O-29, designer, functional-design-WG)

“yeah, I’ve told you not to work on things that are unclear … from on high” (FN-O-30, TL2, functional-design-WG)

The requirements and the design work-groups involved their respective managers who also were not able to progress the matter. The business was unable to clarify what they wanted and the IS groups were not prepared to take on the risks associated with assumptions or unvalidated requirements.

“the business people who know the product have moved onto other products whilst the solution is built, they’re not available to get back to this now” (FN-O-52, manager, requirements-WG)

“more likely they don’t know what to tell us” (FN-O-52, analyst, requirements-WG)

These managers had each involved their respective senior managers—all to no avail, with no answers coming from the business or approval for assumptions from IS. Senior IS management still expected them to find a solution and ensure the release was not affected; that CBAA delivered. It was an important BI and IS management knew they had to deliver. The seeming impossibility of conflicting demands and expectations led to many email and face-to-face arguments between the two IS work-groups and between their managers. Both teams arranged a joint meeting, inviting their respective managers to attend and decide on a way through the impasse. The following observations (FN-O-33) were drawn from the meeting:

“well have you got a solution yet” (manager, A&R)
“no, that’s why we are meeting and you are both here” (TL, requirements-WG)

“we’re still stuck ... we’re just burning time ... and it’s well past affecting morale, people can’t believe this can’t be solved by you guys (IS management)” (TL, functional-design-WG)

“same with us” (TL, requirements-WG)

“well we don’t have an answer, you (requirements TL) have to sort it out, it’s your job” (manager, A&R)

“yes, we can’t ... we’ve tried and we can’t ... it’s your job (starting to yell)” (manager, Construction)

“but we can’t” (TL, requirements-WG)

“but you have to ... sort it out, (starting to yell) fix it up, make it work, get it done ... (yelling) now, now, now ... stop holding the process up, just fix it (hysterical yelling)” (manager, A&R)

“(yelling) make it work, now ... deliver ... just deliver” (manager, Construction)

The meeting broke down, both managers going on in their tirade and the four staff from the teams moving to one end of the meeting-room. Eventually the meeting broke up with no resolution other than the clear understanding in the teams that they were left with this to carry and would get no assistance from IS management.

“so what can we do?” (analyst, requirements-WG)

“probably nothing, we’re certainly on our own” (TL, functional-design-WG)

“figure out what you want to do going forward and we will help you in whatever way we can” (TL, requirements-WG)

The work-groups had witnessed a very unusual episode of their managers being out of control and verbally aggressively attacking the work-groups. The managers were visibly distressed, angry, irrational and seemingly unable to think coherently—all characteristics of basic assumption behaviour and a consequence of anxieties that, at that time, were unable to be adequately contained by the managers.
In the face of overwhelming anxiety, both IS work-groups adopted ba mode
dependency, trying to defensively cope with their situation by mobilising a
leader to care for the groups and to find a solution. The managers exhibited ba
mode fight in their hysterical attacks on their own teams and the splitting-off and
evacuation of their own competence and resources onto others, rather than
dealing with this problem situation\textsuperscript{61}.

6.2.4 Vignette 4  Design Review Meeting

This vignette is drawn from observations made on the 5\textsuperscript{th} observation session
with this work-group. This group was characterised in earlier interviews and
observations as being under much pressure and often unfairly blamed for
problems outside their control; the reference-group recommended this group for
detailed data gathering. The data used is drawn from FN-O-7. All speakers were
PPS members attending the meeting.

A group of eight designers from the Pre-Processor System (PPS)\textsuperscript{62} met with the
expressed technical task of finalising the physical system design that will define
the system changes required by this system to support a specific BI. They had
met on several other occasions to work on the physical design for this CR. This
specific detailed design defined the elements of the system's software that would
have programming changes and would require testing. In the following dialogue,
the team members refer to another team, the Raw Events Processing System
(REPS), doing work for the BI.

"so, are we satisfied that this will work and that it will stand us in good
stead for future extensions and changes we think will come along?" (TL)
silence

"yeah, we know there are these other ways too. One will take too long but is
more solid, those other two we discussed last meeting. We know they won't

\textsuperscript{61} this vignette echoes themes 5.6.1.3, 5.6.1.5, 5.6.1.6, and 5.6.1.11 discussed in Chapter 5

\textsuperscript{62} PPS had a staff of about 30 technical designers, programmers and testers
stand up over time ... this other one is good but means that REPS will have to do more work – it’s the most elegant solution but it’s probably impossible now for them to schedule the extra work” (Senior Designer)

“That’s no reason to not try” (Lead Designer)

“We’ll get a whole lot of crap if we do” (System Tester)

“They’re bastards (REPS), lazy bastards. Why do we keep carrying the can for them” (Programmer 1)

“Yeah I know, it sucks” (TL)

“Look, it’s not them, it’s the architects who lay out the overall design, they got it wrong” (Senior Designer)

“Again” (Lead Designer)

“Yeah okay, again. But ... ” (TL)

“They accept it (REPS), they know it should be done in their system. They just duck the work” (Programmer 1)

“They’re fuckers, they work over the architects early on to get the designs they want. They do it over and over again and get away with it” (Senior Designer)

“You know they are strapped too” (Team Leader)

Silence

“They have a lot of new staff too that are learning the system” (Programmer 2)

“Who cares” (Programmer 1)

“It’s wrong, this is a shit solution and we’ll have to maintain it ... forever. I don’t want this. Do you? Let’s get it done right” (Senior Designer)

“They’ll have to do it then, we’ll have to sort them out” (Programmer 1)

“But we’ll have to get Tony (their manager’s manager) on board with this” (TL)

“You know he’s sick of their (REPS’s) crap too” (Senior Designer)

“Yeah” (TL)

“Yeah, it’ll be fine” (Senior Designer)
In their meeting there were lots of grunts of agreement and emphatic nodding of heads, along with mildly aggressive body gestures when REPS was discussed, such as pointing of fingers in the direction where the REPS team were located on the same floor of the building, forming of fists, and the occasional firm banging of hands on tables by many staff, who appeared to be quite unaware of what they were physically doing.

The task they were doing was for a BU they had a chequered history and strained relationship with. They had been severely and publically criticised over faults in software releases that BUs perceived (largely wrongly) to be this group’s fault. They had taken some humiliating reputational damage, which had stuck within the IS community, for the development failures of the REPS team. Similar patterns had played out on other occasions.

“pre-processing gets heavily criticised ... it’s happened over many releases” (I-47, manager, Architecture)

“pre-processing get blamed a lot, but they’re actually pretty capable” (I-52, architect, Architecture)

“What they (PPS) had to implement made no design sense” (I-50, TL, Construction)

“They (PPS) are almost a joke to some teams” (FN-O-37, designer, Architecture)

Despite the difficult situation the group felt it was in, different people held different perspectives; for some “they (REPS) are bastards”, for others “we have to think level headedly about this, go through the process properly”. These opposite views, one emotional the other rational, represented aspects of their relationship with REPS and the situation on the shared BI. When the meeting broke up, staff returned to their desks to go on with their respective allocated work-tasks. No work has progressed on this new physical design for the CR. Nothing was finalised for the CR and BI, nothing was documented about the alternative systems architecture proposal. No dialogue was initiated with the REPS team, or with their manager, on this matter. The situation with the CR was left to hit the wall.
Not taking control of the situation could be seen as a reaction to the intense anxiety associated with taking on powerful, aggressive work-groups. They were unable to do their required task; to manage a piece of work through to its completion despite the practical and emotional challenges the setting threw up. They were angry that they had to work on a task that was a bad solution and one that would impose ongoing burden on their group in supporting this poorly designed system change. “This is a crap solution, let someone sort it out so it’s better, then we can work on it”. From this state of mind, the work did not get done, causing delays and concerns about the ongoing functional quality of the system that were not addressed. This microcosm was a small instance of the broader manifestation of the problems that plagued many IS development initiatives; they under delivered, were late and had extra costs; often because of a group’s psycho-social weakness.

They appeared to be angry, but their work setting did not allow them to express this. They could show some of their anger to each other, but they could not be angry. In the structures of the PPS work-system, the work-group did not have a mechanism to adequately digest the feelings experienced in their work. Often the feeling stimuli remain present for extended periods of time, yet within the social structures of the work-system (CBAA), staff or managers cannot bang the table or raise their voice to express or externalise these feelings.

“some behaviours are completely unacceptable” (I-16, SM, Construction)

“people don’t come to work to face angry colleagues” (I-2, SM, Production Support)

“nup, ya can’t be angry ... not okay” (I-45, PM, Construction)

“you’ve gotta keep it in ... walk away” (I-18, planner, Program Management)

“there’s so much stupid stuff happens here, of course you get angry ... you just don’t ‘get’ angry!” (I-49, PM, Construction)

They had to tolerate these intense feelings within themselves or within their group’s ad hoc structures for coping. When this could no longer be tolerated, anxiety, a product of the unconscious mental processes of the group, threatened
the group and eventually provoked defensive behaviours to alleviate the perceived threat to the group’s existence. These periodic surges that erupted out of the unconscious threatened the group’s capacity to do its work, to maintain its coherence and integrity, and its sense of existing.

From Bion (1961) we see a range of fundamental patterns of defensive behaviour: the group will blame or criticise another group, withdraw from the issue waiting for someone to step forward and lead them through it, or wait for a subgroup of the team to come up with ‘the brilliant idea’ that offers the way forward. There was a dissonance between the constellation of feelings experienced in their work, the intense disturbing nature of some feelings, and the lack of permission to give expression in the work-system to those feelings. Feelings without adequate expression produce the experience of anxiety, in turn disrupting the performance of groups.

The PPS work-group appeared to feel threatened by the other groups, such as REPS, architecture and management groups. But there was no evidence to suggest that the other groups were actually threatening them. The group felt threatened. This may have been imagined, perhaps a projection of members’ own phantasies of aggression or violence, already carried out in their inner worlds towards these other groups in reaction to their work experience. There is no absolute way of knowing if this was so; it was a working-hypothesis.

The dynamics are more nuanced than ‘they feel angry and this disrupts their work’. The PPS staff from that meeting stopped working because the content of their meeting and the conclusions they drew from it were very unsettling for them. In the work-system there were not structures to safely give expression to the feelings that were disturbing them. It is very unsettling to have strong feelings that must be held in. The group members’ feelings seemed reasonable in the situation.

They were aware of what they were doing even though they were likely not aware of why they were doing it. Staff would still say they were working even though they were distracted and not working on their task (finalising the CR’s
physical design). Rather, the observer noted they were doing an array of non-critical tasks; emails, intranet viewing, or updating old documentation.

Such feelings of helplessness and of giving-up increase the anxiety in a group and reduce members’ motivation for their work-tasks. This was a serious consequence for the enterprise and contributes some explanation of failure in the IS department. Leaving staff unsupported in such environments, resulted in them becoming demotivated. Such dynamics in small settings like this were observed to lead to process and delivery delays, senior management interventions, blame, aggression and simplistic messages such as “this will be done on time”; which in turn were observed to unwittingly fuel further cycles of primitive emotion, anxiety and disruption to work.

This was one team of thirty people that provided design, construction and testing for one system in the CBAA suite of 130 systems. These were observations from a meeting of eight staff working on one of five CRs this team had for this release. It was one of hundreds of similar meetings that went on in CBAA that week; some like this were intra-group, while others were inter-group meetings. All of them had conditions and the history to likely throw up a composite of strong feelings which would similarly have to be ‘pushed out of mind’ by staff, adding to their ‘anxiety-load’, moving such groups closer to their anxiety threshold, and the inevitable defensive, reactive, anti-task, survival oriented behaviours: that in turn were likely to create new pressures and tensions in the work-system on other work-groups, moving them towards the limit of their tolerance too.

The work-group fluctuated between ba modes of fight and flight behaviour to defend against the perceived aggression of the REPS team. It failed in its endeavours to mobilise a fight leader to take up the fight against the REPS team and carry forward what in their mind was a more reasonable IS architecture and design for that BI.

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63 one of thirteen CRs they were concurrently working on for the three active releases

64 this vignette echoes themes 5.7.1.3, 5.7.1.5, 5.7.1.13, and 5.7.1.14 discussed in Chapter 5
6.2.5 Business Impasses

For each release, requirement documents (RDs) were done for each system involved. It was common for 20-30% of these to be incomplete because business and product staff did not know yet how the product would work in detail. Sometimes there were not people in the business available to provide statements of requirements. Only 2-3% of business staff worked on new products. They had to liaise with engineering, finance, other BUs as well as IS. They were spread very thinly. In other situations, the people who were available did not have enough experience or understanding of the product to be of any help. Often, product staff had been seconded to other projects with no capable backfill of their role. These were planning issues within the BUs, but they did severely impact on IS development quality and timelines, causing spikes of intense anxiety.

CBAA and other IS departments had in the past regularly made assumptions about what the business needed in order to continue IS development without delays. They would draw on their substantial, but incomplete, appreciation of their colleagues’ business and products.

“in the old days we used to just figure it out for them (the requirement gaps) ... usually it was okay” (I-12, TL, A&R)

With the advent of quality frameworks like ISO9001 and CMM and a more open and accountable organisation structure, these practices were weaned out—often punitively.

6.2.6 Closing Thoughts on Dynamic Defences

Across these vignettes, one element of the dilemma involved how the different protagonists saw the external reality of the situation they were involved in. This was sharply influenced by: group members internal worlds; the impacts these had on the group’s mentality; the anxiety-load the group was experiencing; and whether or not it was high enough to affect orientation towards work-task
behaviour or ba-modes of defensive, non-task behaviour. As the vignettes show, different groups often saw an external situation quite differently from each other (see Figure 6.1), quite differently from the objective situation and were unable to reconcile these differences in perception. Psychoanalysis emphasises, through the reality principal (Akhtar, 2009), a strong engagement with actual reality and challenging the assumptions established in the internal world that may distort this.

![Divergent perception of external reality](image)

People can rarely say comprehensively how they feel in relation to an event or situation they were a part of (Gabriel et al., 2000, Symington, 1986, Price, 2015, Watkins, 2013). People are not aware of what they are anxious about; it is unconscious to them (Gabriel, 1999, Long and Harney, 2013, Hirschhorn, 1988). They may realise they are anxious about a meeting, but not specifically the source of the anxiety.

Not every diversion from task is anxiety driven. Unless there is a clear rational considered choice made, such diversions from task warrant close consideration as being an unconscious defensive withdrawal from threatening psycho-social dynamics.

Through group and individual reflection, members can become aware of the link between certain group behaviours as symptoms and some of the pressures and tensions experienced in the course of work (Stokes, 1994, Hirschhorn, 1988).
Defences endeavour to make difficult group experiences feel better (French and Simpson, 2015). It is possible to understand that over time certain behaviours are a defensive response to stimuli from the work setting. Such behaviours, symptoms, can be indicators of disruptive anxiety levels. Being aware of such behavioural indicators can lead to identifying and addressing the pressures and tensions in the work-system provoking the disturbance to work-groups and their outputs.

Impromptu group defensive behaviours are a symptom of systemic-anxiety. It is essential to understand the symptom in order to form a view or working hypothesis about the anxiety that is causing them. Bion (1961) described archetypical responses that human groups utilise in defending against systemic anxieties (the basic assumption behaviours of dependency, fight/flight, and pairing). When something is understood of the symptom (defensive behaviour), it may be possible to understand the anxiety behind it; what is motivating this move away from the work-task; what is driving the group away from the task at that time. With such information, managers can then intervene in the work-system and address some of the sources or precursors to the anxiety and the defensive behaviour. When some of the pressures and tensions are ameliorated, the intensity of feelings experienced in complex work settings may reduce, resulting in the group’s anxiety level remaining within the group’s ‘window of tolerance’, such that they won’t withdraw from their work-task.

Understanding starts by seeing the symptom, which may be ‘they are not working’. It is important to find what can be understood of the systemic dynamics that are affecting the work-group and causing the symptom. This is done through exploring what has happened in the group (their state of mind) with respect to the pressures on them; it may explain why they have stopped working.
6.3 Stable Defences

6.3.1 Overview

Social defences, discussed in Chapter 3, are a form of group defensive behaviours that have become stabilised into an organisational routine, procedure or cultural practice (Krantz and Gilmore, 1990, de Board, 1978). Social defences offer a way for work-groups to unwittingly protect or defend themselves against workplace anxiety that is both chronic and unbearable to the work-group. Such anxiety stems from a subset of intolerable thoughts and feelings experienced by group members whilst working and that are unable to find satisfactory expression within the formal structures of the work-system. Social defences begin as an emergent interplay between a work-group, its anxieties, and the ‘opportunities’ offered to it for defensive behaviour by the work setting. Once the defensive behaviour stabilises the work-generated anxieties, the behaviours become routinised in a pattern of work, whose primary function is to contain the unconscious anxiety of the work-group.

There are socially constructed patterns of behaviour that protect work-groups from painful experiences associated with work; they act to reduce systemic-anxiety. People are aware of what they are doing and can see some relation back to their work. They are unconscious of the ‘why’, the unconscious motivation of a set of collective behaviours; what tensions, thoughts, dynamics and anxieties these behaviours are unconsciously enacted to moderate.

In the case examples that follow, various social defences in CBAA are explored. Social defences are neither good nor bad, it is the extent to which they constrain or disrupt task performance that marks them as either useful or unhelpful to the work-group. Such behaviour patterns repeat themselves in the face of the ongoing anxiety experienced from the threats and pressures that emerge in the course of the enterprise’s technical work.
6.3.2 Structured Absence of Managers

A routinised behavioural pattern of ‘legitimate’ absence of managers from their work-groups emerged to address the psychological needs of middle and senior IS managers to cope with work-system anxiety (Dalgleish, 2001).

Workplace observations gathered further data about the situation of absent managers. Section 5.7.1.4 examined the absence of IS middle managers from their work-groups, working on special projects for their senior manager and leaving their staff to operate in a quasi leaderless group. This analysis was extended through data from observations of such work-groups and managers. The ‘absence’ offered a convenient opportunity for middle managers for flight from the anxieties experienced when engaged in work-tasks. It was a pattern of behaviour that was repeated, and regularly instigated by senior managers.

There were many legitimate work-tasks that took managers away from their groups, such as attending training courses and retreats. Whilst these may have evoked a measure of task anxiety for the managers, they did lead to defences. The social defence of absence described here involved senior managers establishing special projects to serve their needs for coping with anxiety. Similarly, for middle managers, the special projects offered them a defence against their work anxieties. This complex dynamic was initiated over and over again.

As discussed in themes 5.7.1.10 and 11, many middle managers withdraw from open, transparent communications with senior managers with respect to problems with their work-groups’ performance. Their unwillingness to engage with certain work issues of their staff was observed and examples of this were discussed in the case data of sections 6.3.1 and 6.3.3, and the idealisation of senior management roles in 5.7.1.8.

There were a number of dilemmas that flowed from this affecting managers’ work-groups, such as the work-group’s lack of direction, uncertain decision making, poor interpretation of communication, limited responses to problems,
increased stress, and primitive feelings of abandonment. The latter will be discussed at length below.

6.3.2.1 Management

The research identified that middle managers had strong, generally positive identifications with senior IS managers. They were well aware of the stress, complexity, pressures, and long hours inherent to these roles.

“I’m learning to be like him, not just him but also like his boss too” (I-49, PM, Construction)

“I can see myself in my boss’s job one day. I give it two years ... he will have moved on by then” (I-11, planner, Program Management)

“I suppose I’m here to do what my boss wants done. Just like I expect my staff to follow my direction. I discuss what we are going to do, but at the end of the day she is accountable ... it just has to be done ... regardless of my personal or professional feelings” (I-34, manager, A&R)

and more cautiously,

“there’s no way I want her job the way it is now. Work has already contributed to my marriage break up. Things will have to be more balanced here for me to do her role ... but things do change” (I-47, manager, A&R)

It appeared that most middle managers wanted to take up senior manager roles and believed they would learn how to do so, in part through their relationship with CBAA’s senior managers. Some were actively mentored by a senior manager.

There is a classic middle manager squeeze here, with managers ensuring junior staff fulfil their tasks whilst also implementing senior management’s plans (Harding et al., 2014). They were caught between identifying with the workers and the work they had only recently left, and identifying with senior management whose roles they aspired to, perhaps enviously (Smith, 1982). They were squeezed by the, often contradictory, expectations by them of their staff and their managers.
6.3.2.2 The Primary Task of CBAA

The primary task of P&IS was to deploy and operate information systems for TPT that met agreed business requirements, to provide a sustainable systems environment in all, and to do all this in a cost effective manner. The primary task decomposes into a number of sub-tasks supported by P&IS departments, CBAA being one such department.

CBAA’s primary task was to build and operate high quality software systems, on time and within budget: software that would cause few operational problems and deliver the required functions and benefits to the business. For CBAA to survive and succeed, management had to ensure the following: to operate and sustain information systems; to develop sustainable information systems that were aligned with business needs and that were timely and cost effective; to improve work processes including quality, timeliness, architectural alignment and business alignment; to reconcile competing business priorities for information systems; and to manage a skill base to support IS development work. In addition, they had to deal with the inevitable criticism and blame from BUs and other IS departments. This was a very complex and often conflicted set of demands made of CBAA and its staff. It created significant stress, confusing and contradictory thoughts and feelings, anxiety, and uncertainty for individuals and work-groups.

It was not surprising that people in CBAA, middle managers in this instance, grasped opportunities to step away from this onslaught.

The special projects usually involved process and quality improvement, HR planning, staff development planning or IS financial analysis. They were usually undertaken by small groups of peer middle managers and were supposed to take 40-70% of a manager’s time. They usually consumed much more time, often 60+ hours per week for some managers. They were more a pseudo assignment. The manager role was not back filled. Managers were (unrealistically) expected to still manage their team. Yet,
“most senior managers knew we were gone from our teams ... there was no other way to get the projects done” (FN-A-14, PM, Construction)

Staff reported no meaningful improvement from these special projects that were meant to improve the situation of the entire department.

“we are no better off from the (systems) lifecycle review thing he worked on, neither are any of the other teams” (FN-A-11, TL, Construction)

Yet senior and middle managers reported:

“the project is helping things work better” (FN-A-16, PM, Construction)

“we’re in less of a mess than we were” (FN-A-17, SM, A&R)

In these dynamics there was a split between management and staff. Depending on the state of mind middle managers were in, which was affected by the anxieties they were experiencing, their identification wavered between their team and their idealised role of senior manager. Through these temporary reassignments, middle managers were brought closer to senior management, a group they aspired to join. They escaped the tensions of the work-group. They could enact the fantasy of (nearly) being in their idealised role of senior manager. From this state of mind, middle managers defended against work-systems anxiety by using splitting to establish, in their inner worlds, the work-group and work setting as difficult, constrained and stressful, and senior management as rewarding, satisfying and powerful.

Aspects of the special projects they were conscripted to could be seen as fun or career enhancing. They were part of the collusive dynamics of this social defence. There may well have been parallel, individual self-oriented motivations, but the broader motivation for these repeated, routinised socially constructed practices was their defence against anxiety. They helped senior managers cope with often overwhelming anxiety by getting unfunded critical work-tasks done, and helped middle managers with often unbearable anxieties through abandoning their teams and the associated distress.
6.3.2.3 **Staff**

For many work-groups, these special projects meant their manager was not present or available with them, not returning phone calls or emails or not having sufficient time to spend with them, even when the manager was physically in the office. For example, a requirements-team hit a roadblock in their work. They did not have the experience or authority to resolve. It resulted in a work-product being delayed for six weeks; it took the absent manager 4 weeks to respond to staff notifications about the situation, then another week to give a clear direction from which the team could resume work on the change request. By this time there was no possibility of resolving it in time to meet the release date, resulting in the BI being dropped from the release, severely impacting the product launch.

It was observed that, from time to time (with regularity), staff experienced complications in their work-task delivery and in the working relations with other work-groups. They needed the middle manager\(^{65}\) to mentor, guide, solve problems, and take up issues with other areas on behalf of the work-group. In general, these manager roles oversaw and managed a complex set of relationships on behalf of their work-groups: addressing engagement with business customers about their needs and expectations; interacting with other IS work-groups on combined tasks; and the communication through the hierarchy regarding the work-group’s progress, doing this with sensitivity to interpreting and presenting information to specific audiences. In the absence of the manager there was less coordination and consistency within and between these activities. The middle manager role was also needed to hold the work-group as it grappled with the uncertainties inherent in its work-tasks. When this holding was required but not available to the work-group, work outcomes suffered and the group’s morale fell.

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\(^{65}\) a typical middle manager role is the project manager of a construction work-group
6.3.2.4 Absent Managers as a Social Defence

The case study data suggests evidence of an unconscious, socially constructed set of defensive behaviours in CBAA to ameliorate the pressures and tensions experienced by IS management roles. This social defence had significant effects on work-groups’ task performance and the emotional experience of individuals and groups. In endeavouring to further understand these phenomena, the following working-hypotheses have been formulated:

*The routine absences of middle managers from their work-groups is a socially constructed defence by which specific anxieties experienced by middle and senior managers are displaced onto staff in the work-groups, exacerbating work-product failure.*

*The possibility of selection by senior managers to participate in special projects, for the selected middle managers, collusively draws on their phantasies and idealisations of senior management and their aspirations for such roles.*

The social defence reconciles the unrealistic hopes of IS senior management regarding systems delivery with the actual uncertainties and anxieties faced by the work-groups in doing the detailed work tasks of information system delivery. IS senior management were seen by middle managers as detached from the reality of the detailed work of IS development. The middle managers knew their work-groups were fearful of being punished and blamed for failing to deliver as expected.

When staff were left without managers, no one was accountable for the wastage of group effort or for late delivery. When middle managers were on ‘special projects’ they had been directed to undertake by their senior manager, their actual accountability for the failed delivery their work-groups was diffused. Staff and team leaders took up similar authority whether the middle manager was present or not. This authority allowed them to operationally work on their tasks and the natural exceptions that emerge in the course of the work task. When work events fell outside these bounds of their discretion and authority, it fell to the middle manager to make decisions about action or to negotiate acceptable outcomes with the group’s stakeholders. Without the middle manager, the group lost its ability to adapt to its changing circumstances. It was observed that when
senior managers established IS improvement projects, they were less criticised or held to account for IS failures.

This social defence enabled a general dispersal of accountability for outcomes, particularly outcomes that had failed. No group, not middle managers, senior managers or staff would consciously desire to organise work such that work-groups were effectively leaderless. Yet this was an unconscious consequence of the complex interlinking of the respective group behaviours in this social defence. The social defences of group are collusive and unconscious in nature, helping to control the tensions and anxieties, moving the tensions and anxieties around the system and displacing them onto roles that could not be held accountable.

6.3.2.5  *Insight from Observations*

During an observation session of a functional-design work-group, whose manager was absent on a special project, a conversation between six staff discussing their manager was noted. They talked about difficulties they were having with a change-request and how his absence was felt in progressing the issue. A similar problem had been observed four weeks earlier and had only just been resolved by the manager and group. Whilst details were different, the patterns of behaviour and the experience of these behaviours appeared similar. He had spent ten of the past twelve weeks away from the team and they seemed extremely frustrated by his absence.

They took great care not to criticise him, yet from their frustrated and tired tone, his absence was taking a toll on the group. My own feelings, from observing them, were of sadness and despair: best explained as a parallel process of transference from the observed system to the observer system. It seemed likely to be something I was picking up from the group of staff being observed.

One member of the group had been flicking through a newspaper for most of the group’s conversation. He started exclaiming about a dreadful situation reported in a news item. It was about young parents who had abandoned a newborn baby
at a public building. Other members expressed their disbelief and distress about this event. I had images from the morning paper's headline article return to my awareness also. The word ‘abandoned’ from the article kept going through my mind. The sub-group of six moved off to get on with other things. One of them joined me in a brief conversation. It was one of those moments where the researcher is drawn out of role, not so odd considering I had been observing them for over 30 hours over five weeks at this stage and had previously interviewed three of them.

She continued to talk about their absent manager and “how upsetting it was to never get to talk with him about work issues”. Considering data from other observations, her assertion was not objectively the complete truth of the situation. He was around for limited periods of time and other group members had got access to him in those odd hours. He had permanent email access, so the group was never completely cut off, even if he did not reliably respond.

But what she was describing to me was actually something of how she felt about his absence. We went our separate ways. I reflected on these events and drew out the notion of abandonment from the group’s discussion about the baby. They had discussed it immediately after their cautious and protective discussion of their manager’s extended absence from them. It seemed to me that the baby’s abandonment was an association the group made to their experience of their manager’s absence. Perhaps the female staff member who spoke with me was actually ‘feeling abandoned’ by her manager. Bion (1967) has a concept of a selected fact. He describes it as the new fact about a situation that re-organises many other facts to produce new insight into the situation or dynamics; new meaning that explains the intensity of things that prior to the selected fact, were unsatisfactorily explained.

Abandonment had become the selected fact that organised these observations, statements and rudimentary working-hypotheses gathered and formed over many months into something meaningful and robust. Reviewing the earlier workplace-observation data for this work-group, the following field-note annotations (FN-O-37) were found:
some of the staff are being very ‘silly’ with each other today

they are shy and quiet with Jack, very unsure. He is here for the morning. Some staff seem annoyed he is here, others are just clinging, hanging around with no purposeful interaction

it’s like he is a curiosity to them

This data indicates some team members’ behaviour on the short visit from their manager. It had a childlike quality to it.

Breaking further from my observer role, I approached the group member who had spoken with me earlier. I asked her whether the ‘upset’ feelings she described about the manager’s absence might be described as ‘feeling abandoned by him’. She responded:

“yeah, that fits … I think it’s right, it feels it … but not just for me, it’s in all of us. … I really do feel left for dead by him” (FN-A-19, designer),

she went on to say

“I’m pretty sure he would rather be managing us and the release work than be off doing his other stuff” (FN-A-19, designer).

During the next observation, she approached again to say she had talked to a few other group members about the notion of abandonment

“It fitted for them too … perhaps it’s why we carry on like little kids sometimes when he comes back” (FN-A-20, designer)

This working-hypothesis was formulated,

The absence of their manager evoked primitive feelings of abandonment for staff and a dependent, infantalised state of mind, negatively impacting their capacity to work.

The idea that ‘the extended absences of their manager’ carried such primitive, unsettling feelings of being abandoned was helpful to her to hold the whole experience together in a new way. In the space of the following two days she appeared to have regained tolerance of the team’s situation regarding the manager’s absence. She was observed leading discussions about how to progress
task issues that had been blocked for weeks awaiting the manager’s return. It appeared that her abandoned infantile self had been replaced and her thinking adult ego had returned. She was helping other members perhaps make a similar journey in the mind from dependence to action. Asking her ‘what had changed? ... That she seemed more settled’, her response was:

“the situation isn’t great but I am seeing it more clearly. He hasn’t left us, he’s here sometimes and he will come back. He’s been given other duties for the time and has to do them, just like I have mine here to do as well as I can” (FN-A-21, designer).

The selected fact of being abandoned provided links between various facts about this work-group and others like it. It offered a link between group member’s aggressive feelings (frustration, anger, hostility, withdrawing from tasks) and their passive and dependant feelings (not knowing, waiting to be told, doing what you’re told), provoked by the absence that in certain anxious states of mind was experienced as abandonment, with all its early and primitive vulnerability.

6.3.3 Interpersonal Problem Solving Patterns

Disagreements in the CBAA Council (CC) between senior managers were described as ‘quite common’. They were usually about the progress of certain change requests for specific system changes supporting a BI, or more general application of resources across the department. Members of the council had a distinct pattern of behaviour in resolving their contentions and conflicts with colleagues.

“I know William (SM Construction) and Jayne (SM A&R) are having problems over some work that is stuck between two of their teams ... no, I don’t know how it is going ... I’m sure they’ll sort it out” (1-4, SM, Program Management)

“Peter (SM Release Management) and William are going head to head over the release and a group of systems that are very late, they usually get over it” (1-25, SM, Testing)
“no, Alec (CBAA MD) wants the council to focus on strategies for how we improve performance and are rated higher on the service quality reporting the business do on us” (I-17, SM, A&R)

“look, if the fights really brokeout in the open there’d be bloodshed, well it seems like that” (I-34, manager, A&R)

The tensions between senior managers were described as flowing down the hierarchy of their area and influencing decisions and actions of work-groups.

“well the boss is at war with Architecture, so we have to be careful too ... not give in to them too much, push them ... but it will likely change” (I-38, manager, Construction)

“it’s good actually, it means we can give a bit of stick back to them for a while” (I-34, manager, A&R)

“of course the right thing to do is be patient and wait for them to get it (RD document) progressed further, but with the tensions between Will and Jayne, we kind of have to push them harder - criticise. Even if it doesn’t help get the BI through” (I-49, PM, Construction)

“you have to support you manager ... they take their lead from our senior manager ... no choice really but to hold their line” (I-9, TL, A&R)

These varying, unstable states of relations between functional areas of CBAA caused uncertainty and contributed to the unboundedness of the work-system, increasing the anxiety-load on work-groups.

It was observed that the problems between functional areas escalated to senior managers and the problems between senior managers were usually resolved in bilateral or trilateral discussions between the senior managers. The pressure to resolve issues seemed to be linked to:

i. there being no evidence that one area would back down in the face of the pressures and criticisms brought to bear on them
ii. the narrowing of time of the release, making a resolution urgent for CBAA’s overall performance
iii. a softening of relations between the senior managers, often in the face of a more significant shared issue, making them more prepared to compromise on other matters.

Whilst the accounts suggested they came to workable solutions in most cases, for the dilemmas their functional areas were struggling with, their capacity to learn
as a management group from these events was limited by this interpersonal, rather than systemic, approach. Furthermore, dilemmas between pairs of senior managers were often repeated between other pairs. Again, the experiences and learnings from one situation were not available to be applied by others. If a matter between two functional areas was more global, existing between many functional areas, this approach of bilateral containment for resolution was still applied. Learnings were isolated without broader applications.

Such issues were not seriously discussed at the CBAA Council. The senior managers described it as ‘efficient’. The resolutions, arrived at between senior managers, were brought to these management group meetings, where they were tabled and discussed briefly with satisfaction that the matter had been resolved.

“they (senior managers) work it out before the meetings” (I-9, TL, A&R)

“they only want short meetings, so there is little time for discussion given the number of issues they have on their agenda each meeting” (I-9, TL, A&R)

“they (CBAA Council) don’t discuss the stuff, although they’ll tell you they do” (I-9, TL, A&R)

“we try to stick to 60-90 minute meetings, anything longer is an unnecessary indulgence” (I-25, SM, Testing)

“of course we discuss things, but usually they have already been worked out” (I-16, SM, Construction)

“he (CBAA MD) expects us to go there with solutions not problems ... there’s not the time otherwise ... the council is not to be a bottleneck” (I-26, SM, Release Management)

These agreements were often not supported by their respective functional teams, because they did not re-establish balance in the work-system such that the affected work-groups could continue with their work. Often the brokered solutions introduced new sources of anxiety in the work situations of specific groups. Such an example is seen in the earlier vignette presented in section 6.3.3.

The resolution of issues often occurred outside the formal structure of the department’s management group, with the thinking and decision making about
action being determined between individuals, in isolation from the group. In a similar vein, available data indicates that these matters were often viewed as interpersonal rather than systemic; as disagreements between two people rather than disagreements between two role-holders, representing their groups in the pursuit of their tasks. This propensity to see the world interpersonally rather than systemically was widespread across the work-system, as seen also in section 5.7.1.14.

The senior managers recognised their role as leaders of their functional area with all its groups, staff and tasks. They advocated for their functional area and for resolving the obstacles their work-groups experienced. But the other part of their role was as part of a group to lead the IS department. This required thinking beyond the local interests of their functional area, balancing often competing concerns to achieve the best performance and development of the department as a whole. Data indicated that their functional responsibilities took precedence over their departmental stewardship responsibilities.

Problems the software development process had in any of the 130 information systems in the highly time sensitive and constrained release plan, created significant amounts of anxiety\(^{66}\) for management. There were many pressures and tensions on their roles and on the management group as a whole. This pattern of interpersonal enactment and interpersonal resolution of problems can be seen to represent a social defence employed by the management group, to minimise exposure to work-system anxieties and to defend against those they experienced. Particularly, anxieties about airing unresolved problems in public and thinking in public. These bilateral resolutions allowed them to think and act on concerns of the management group. It meant many issues that had common threads were rarely discovered because they were never thought about in a forum that had knowledge of all the threads. When discussed in the reference-group, this pattern was a surprise to the senior managers:

\(^{66}\) and the precursor feelings associate with the anxieties
“I’ve never thought about it that way… there are common elements to many of our issues that we step over… perhaps we’re just grateful the problem is fixed and we are onto the next issue” (FN-RG-4, SM, Testing)

“We do that… I thought it was efficient… not about what doesn’t get learned” (FN-RG-4, manager67, A&R)

“I don’t even think about doing it, it’s just how we operate… but I get annoyed when others do it and I am out of the loop… what I missed and what I wanted to contribute” (FN-RG-4, SM, Testing)

“We could agree to do it differently in the council, I wonder if we could” (FN-RG-4, SM, Testing)

They were operating on auto-pilot, unconsciously in this regard. Yet in seeing the problems it created and what they may have lost, it was possible to think about it and consider finding a new way to work together68.

6.3.4 Creating Enclaves and Mirroring Structures

P&IS created new groups called BUIGs (business unit interface groups) with the task of co-ordinating and controlling all day to day interactions between the IS division and departments, and business units. It was a response to the historic situation where business people would contact IS people they knew in the hope of progressing their business area’s change requests (CRs). By all accounts these were very chaotic and subverted centralised planning processes. These BUIGs, one for each BU, were gate-keepers to the IS departments; formalising and stabilising the interactions between IS and its business clients. In socio-technical terms (McCann and Selsky, 1984, Emery and Trist, 1965), this structure isolated environmental turbulence69 and created comparatively stable enclaves in the IS departments (such as CBAA). What appears to have been lost in this streaming out of most informal interactions was the informal feedback from a trusted source (a business person’s colleague in IS) to the business about how IS was

67 this manager was often in an acting senior management role and working in the CBAA Council

68 this vignette echoes themes 5.7.1.1, 5.7.1.6, 5.7.1.12, and 5.7.1.14 discussed in Chapter 5

69 turbulence from the chronic informal ad hoc demands from business people to IS staff or groups
progressing, how busy they were and how hard they were trying for the business—all things that had been communicated before the BUIGs. The enclaves reduced noise and improved stability, but inadvertently created isolation, reduced transparency, and constrained communications.

Similarly, CBAA release and domain manager roles were endeavours to isolate aspects of the complexity of the work-system into specific roles in order to reduce confusion and turbulence in the work-system. Without such moderating functions, software development created disruptive turbulence and that negatively impacted role and work-group performance. These new roles tried to ensure that release co-ordination, release quality, and functional domain quality were addressed by the work-system rather than ignored. The release and domain work-groups were similar to the macro structure of the P&IS BUIGs.

“the roles (domain manager) weren’t there to begin with … many PMs were worried about how it would all hang together” (I-4, SM, Program Management)

“there was a real concern about the functional quality … as if the architects and strategy people couldn’t provide oversight and direction” (I-12, TL, A&R)

“now people complain about the overheads these roles impose … they used to be concerned about how it would all stay co-ordinated” (FN-O-24, manager, Construction)

“it just happened … the roles appeared, over a weekend, in a revised plan for the new structure, it was reactive to all the backlash … was it fixing a real problem or giving injured folk a bigger role” (I-45, PM, Constructions)

The release and domain manager structures, from these accounts, just emerged in response to anxieties about how the new vertical structure of CBAA would hold together. It also allowed two more of the old CBAA senior management group (of 34) to retain senior, influential roles. The sidelining of so many managers had been a source of significant anxiety in the work-system. This social

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70 managers who had in the previous Horizontal structure (established months prior to the research) had been direct reports to the CBAA MD

71 IS function oriented
defence emerged first for a single release, with a release manager and domain manager. The reactions to the new structure released tensions and concerns about the workability of the new structure. These new gate-keeping roles and functions were expanded to have carriage across all releases and the domains of billing, activation and assurance.

The final example of this reactive impulse to moderate unstable work settings was seen in the CRO role (change request office) the CBAA Constructions group established. Observations of this role, discussions about it and documents describing it, all indicated it was an analogue of the P&IS BIUG or CBAA release management. It was established to control interactions between the Construction group and other CBAA functions with respect to work on change requests (CRs). It was expected to moderate out all unnecessary distractions from the work of programmers and designers, enabling them to fully focus on their work-tasks without any ‘noise’ from colleagues elsewhere in the work-system: colleagues who would seek answers to ad hoc questions about systems, often prerequisites for future planned system changes. The control exercised by the CRO role had its problems:

“why are we only hearing about this now?” (FN-O-42, designer, Construction)

“we have much less visibility into the impacts future plans will have on us” (I-10, manager, Construction)

“sometimes it’s the scuttle-butt that warns you of important things” (I-19-PM, PM, Construction)

“sometimes I feel like there is no air anymore ... we miss what’s going on” (FN-O-42, programmer, Construction)

“the structure (Construction’s) isn’t working ... the people in the role are not skilled enough. Every other group has to interact with them, you can’t just fence them off” (FN-O-42, manager, A&R)

It started as staff in Construction reacting to the demands and interactions made of them by other CBAA work-groups. It was not planned. It was described to the researcher as “staff were sick of the push and shove from other groups, it was out of control” (FN-A-7, manager, Construction). What early forms of the role were
doing made a difference to how work happened in Construction: lessening the tensions, helping staff feel less powerless. The researcher observed the role as it was developed over weeks as it was established by Construction’s senior manager. It was a reaction to work-group pressures and anxiety from the unbounded interactions programmers were drawn into by other IS staff; interactions that overwhelmed the programmers and significantly reduced their work-output. This new role and practices, and the constraints it introduced in its local area were a socially constructed defence against overwhelming systemic-anxieties.

Yet within six months the role had disappeared, for it also created new problems and anxieties as well as those it had reduced. The CRO role over-regulated the necessary task-based interactions between architects, designers and experienced programmers; the only people in CBAA and TPT who knew exactly what the information systems did in detail. These interactions were important for CBAA’s primary task. Also, the CRO role was staffed by the most readily available people who were also the least experienced. They showed no flexibility in executing the role. These practices left many staff in Construction feeling isolated and disconnected from the movements and happenings within CBAA more broadly; things that would eventually affect them when it came time to program code.

The BUIG structure was used as a template to address problems perceived to be similar in nature. In both the cases of release and domain managers, and of the CROs, there was limited organisational design or rational consideration of the roles, their deployment, appointment of staff, and their impacts. They were reactive responses to anxieties that unsettled the work-system.72

These gate-keeping structures (BUIG, Release Management, Domain Management, CRO) were constructed to reduce the performance disrupting impacts of environmental and enterprise turbulence, uncertainty and the intense anxieties these created. They were social defences because they were reactions to disruptive forces and the subsequent anxieties created and amplified amongst

72 this vignette echoes themes 5.7.1.1, 5.7.1.2, 5.7.1.4, and 5.7.1.14 discussed in Chapter 5
IS work-groups; they coalesced into place quite rapidly, as last minute additions to new organisational structures and as inadequate work-practices, all to appease concerned and dissatisfied personnel.

6.3.5 Over Defended Boundaries

The pattern of behaviour around functional boundaries between work-groups in the IS development chain was repeated at most work-product handover points between work-groups. It was more usual than not that work-groups were late in passing on their deliverables to the next team. As earlier data has presented, this was often caused by their upstream groups not providing information in a timely manner. The case has been argued in sections 5.7 and 6.3 that there was considerable systemic anxiety around the handoff of deliverables, particularly if they were incomplete or if the change-request or BI was controversial or high profile. These things made deliverables handovers highly charged. The receiving groups knew if they did not criticise the producing group for the deliverables’ deficiencies they would be ‘stuck’ with responsibility for any inherited problems. The producing group knew they were likely to be criticised for the smallest error or omission. In the face of this dread, the producing group often delayed the delivery of work-products in the hope of getting them ‘perfect’, beyond criticism. The receiving group tried to get the deliverables as early as possible in order to not have their scheduled work time shortened. They could deal with compromised deliverable quality by criticising the earlier work-group; they could not deal with compromised time other than by being late themselves, which exposed them to criticism from their receiver group.

This created a fortress-siege mentality where the producing group withheld its work-product behind its boundaries, which were laid siege to by receiving groups and those managing the release’s progress (reported in 6.3.1 and 6.3.3)\textsuperscript{74}.

\textsuperscript{73}business product teams for architecture and requirement definition teams, requirement teams for construction teams and construction teams for testing groups

\textsuperscript{74}this vignette echoes themes 5.7.1.1, 5.7.1.3, 5.7.1.6, and 5.7.1.7 discussed in Chapter 5
It was an over-simplified defensive view of boundaries and their function. It failed to appreciate the part boundaries play in the exercise of authority, task, political process and identity (Hirschhorn and Gilmore, 1992) in enterprises.

At its worst, these scenes created enormous conflict and bad feeling between work-groups that occasionally went on for years. At the other extreme, it could be a modest blip in the development process. But it happened in nearly all handovers of work. Through this socially constructed defence of withholding work-products, anxieties about lateness and incompleteness were moderated and the hope of successful completion could be kept alive, despite obvious signs to the contrary. It also provided a legitimate focus for the building frustration and anger of the receiving groups (late, incomplete, or ambiguous deliverables) and for the anxieties associated with dependence and vulnerability such situations posed.

6.3.6 Stealing Time

Time was a subtext throughout all the things that occurred in CBAA. The time available of IS personnel to work was a currency, perhaps more valuable than dollars, in the enterprise. It was exchanged in the shifting priorities as BIs, prior to design, were jostled into future release configurations. Time was a critical issue\(^\text{75}\) at all levels of the work-system, clearly provoking anxiety in the work-system.

All work seemed to become time critical. All work-tasks were scheduled into one or more releases. All tasks had to be completed by a certain date, if not, the time of the next work-group in the development process would be compromised. This usually produced a wave of lateness that would further reduce other groups’ available work time. It was very rare for time to be caught up, except by the final group, integration testing, that had to manage this or else cause the release date to slip or BIs to be dropped. Amidst all this, there were informal, unauthorised

\(^\text{75}\) on the form of deadlines, release dates, ‘we deliver’, late delivery
bids to ‘shoe horn’ in extra tasks for past friendships, for the love of the enterprise, or other local or corrupted motives.

IS management did not have time to meet to work through issues in detail. Instead many were delegated to other time pressured roles. There was never enough time for process improvement activities aimed at reducing system development timeframes. Managers were removed from the line but still expected to somehow oversee their teams whilst working on special projects. Staff were expected to work long blocks of overtime to catch up their team’s work-tasks back towards schedule. Time was everywhere; it was in short supply, and it was an oppressive dread. This pervasiveness of time appeared to be a significant and chronic cause of systemic-anxiety in CBAA. Its consequences have been discussed in 6.3.3, 6.4.2 and Chapter 5’s themes.

The insidious process of one work-group consuming another group’s allocated time was a regular characteristic of the traverse of a change request down the development lifecycle. Requirement-groups often overstepped and consumed Functional-Design’s time, who often did the same to Technical-Design’s time, who did the same to Programming, and they to Integration-Testing. Where it all came to a halt was with the unshiftable release window of two weeks in which all 130 system deployments had to occur.

This pattern, of a work-group having a problem, withholding incomplete work-products, and delaying the next group’s start, went on repeatedly from release to release. Staff knew it happened, they even expected it to happen. Stealing time was a socially constructed defence to help work-groups cope with the systemic-anxieties and primitive feelings associated with: not being able to complete work-products for reasons beyond a work-group’s control; being criticised, blamed and attacked when work-products were late; not knowing or able to do ‘correct’ work; and their powerlessness to influence these events. The formal structures and processes of the work-system were insufficient to contain the anxieties work-groups experienced in these situations and insufficient to guide and manage actions to address the causes of these situations when they occurred.
Gilmore and Ronchi (1996) suggest that time has two frames. The usual time’s arrow or time as history as discussed above: a linear unfolding sequence of events with past, present and future. Or time’s cycle with enduring patterns and events have limited meaning as distinct occurrences, yet are immanent to reappear: where the past will be reasserted in the future. This latter view was evident in the ongoing dilemmas of the testing groups, always having their task time compromised by other groups. Gilmore and Ronchi (1996) see these cycles as the reassertion of transference and transposition (individual and collective), of past emotions routed onto contemporary workplaces. This view of time is analogous of Bion’s (1961) binocular vision (French and Simpson, 2015).

Of course, delays can be caused by many factors: sick staff, underestimation and ambiguous scope. Despite the reasonableness of these factors, CBAA management expected the work-groups to work with them to find solutions to such situations that did not compromise the release delivery window of this very complex junction where 130 large information systems deployed changes for 20-40 business initiatives, representing 125,000 days of IS effort and over $150m of investment. The ‘we deliver’ philosophy was adhered to, ensuring no system would forestall this massive co-operative endeavour and investment. Problems potentially causing delays evoked panic, avoidance and aggression very quickly in the work-system. The anxiety levels experienced by work-groups in this position appeared to be enormous, until a viable solution was found. Such overwhelming and unbearable anxiety inevitably produced survival (not task) and defensive behaviours. Where rational planning and management could resolve these problems they did. If they remained unresolved for too long, work-groups were overwhelmed by the dynamics of systemic defences and had little conscious control until the problem was resolved by more senior IS management.

It was in situations like this that groups, quite unconsciously, enacted patterns of behaviour to change their situation and moderate the overwhelming anxieties experienced. Patterns that successfully achieved this were likely to become regularly used routines, and to be unwittingly copied by other groups facing
similar pressures and anxieties. In this way, the social defence of ‘stealing another group’s time’ was established.

6.3.7 Technical not Business Objectives

Faced with demanding, stressful, seemingly unresolvable situations, work-groups retreated to their core technical expertise, abandoning the confusing, ambiguous and contentious terrain of working and interacting with other work-groups. This was a retreat to an enclave, a place of comparative safety, where the group could be comfortable and find certainty and confidence through their technical expertise and remain closed to other explanations about their work predicament. Applying technical expertise, or the achievement of technical objectives, were used as defence against the anxieties associated with broader failure.

Wastell (1996) refers to the use of IS development methodologies which protect work-groups from the anxiety of failed projects or software development. “Real problems require a real engagement with the task; turning to methodology can be an elaborate way of avoiding problems not solving them” (Wastell, 1996, p.29). Real engagement was not always enjoyable, as it could be very confronting and painful. Methodologies or formalised work practices become bastions behind which IS staff often retreated for protection from systemic-anxieties.

Such retreats to technical objectives often occurred in IS review processes. In the case of a product failing to launch or requiring 100s of staff to do unplanned manual workarounds to make good the information systems deficiencies, IS reviews usually resulted in retreat to the technical. Significant ‘disconnects’ occurred between what CBAA built and what the BU claimed it formally authorised to be built. Earlier data has shown that this was common. Regardless of whether CBAA had wrongly descoped the BI or if the BU was confused or misrepresenting their case, the outcome to the enterprise was partial software

\footnote{this example echoes themes 5.7.1.2, 5.7.1.3, 5.7.1.5, 5.7.1.7, and 5.7.1.14 discussed in Chapter 5}
support for a product temporarily fixed by using expensive human resources to make it viable: impacting product profitability. In such cases the enterprise’s objective had been poorly met, often CBAA would fiercely argue their view that it was a success; that it was technically a successful systems implementation. This seemed somewhat vacuous when it was not paired with a business objective being successfully realised.

From the workplace-observation (FN-0-51), the following quotations come from IS personnel at various points in time during a product review meeting.

“what we did worked …it worked really well” (TL, Construction)

“the teams delivered to their specifications” (PM, Construction)

“if the business conditions have changed they have to manage that through into the release … we don’t have a crystal ball” (release manager, Release Management)

“it’s an unfortunate situation … we did the work we were asked to do … we did it despite great problems” (SM, Construction)

“we were right, we met our objective … to hell with you lot (business product-manager)” (designer, Construction)

“this has been an exhausting three hours, so without wanting to be completely rude, please stop complaining and accept the situation … otherwise how do we move on” (manager, A&R)

These strong statements did not come out at one moment, but were scattered throughout the dialogue of the meeting. They were observed to be made at points in the meeting when the CBAA staff were being pushed about their contribution to the product failure and in particular CBAA’s perceived inflexibility in adapting to changes in the product specification during the development process. These were sometime attacks from the business people; other times they seemed to be genuine endeavours to open constructive dialogue. They nearly always appeared to be perceived by CBAA staff as attacks and as such were always defended against. What part did unresolved (perhaps unadmittable) guilt play in this single aggressive tone towards endeavours for genuine discourse and exploration by the business staff?
From these data, it seems possible that a particular state of mind can be adopted across a large group like the CBAA work-system, and for this state of mind to become an entrenched social defence; something that shaped ongoing behaviour in the face of a situation with its composite of guilt, threat and associated anxieties. It was a defensive state of mind, of technical correctness, from which repeated patterns of defensive group behaviours and actions unwittingly and unconsciously came forth. 

6.3.8 Corrupting the IS Development Process

During the workplace observations, there were three occasions where business product managers visited the IS work-group being observed and engaged them in discussion about informally progressing work outside the planning process. The business person was trying to progress their task through informal relationships, relationships not part of the enterprise’s formal task-system relations of the enterprise, but part of the sentient-system (Miller and Rice, 1967).

“the product groups are under a lot of pressure to grow revenue ... they need systems delivered quickly” (I-34, manager, A&R)

“many of us used to work with them (business unit people) or for them, many years ago. So of course they try to get us to do stuff” (I-27, manager, Construction)

“We’ve worked closely for years (with BU people), we’re friends I suppose ... they’d contact us wanting favours ... sometimes you do it, even though you shouldn’t” (I-43, tester, Testing)

“They want it for the company and don’t see why there are so many delays or obstacles ... their heart’s in the right place” (I-18, planner, Program Management)

“My boss is happy for us to help them on the small things” (I-15, programmer, Construction)

77 this vignette echoes themes 5.7.1.5, 5.7.1.6, 5.7.1.10, and 5.7.1.13 discussed in Chapter 5
“this crap happens all the time, we’re trying to weed it out” (I-16, SM, Construction)

The observed requests were to: check IS planning estimates that had been provided for their product to the PDOM process, estimates they described as ridiculous; or change the requirements document (RD) scope or release scope, typically trying to expand the scope to correct gaps in earlier thinking and documentation. The product managers observed appeared to be stressed and quite prone to agitation. They had run out of formal options to progress their product in the timeframes they had hoped for.

Product mangers made strong appeals to old loyalties:

“oh come on, do it for the company” (FN-O-42, product manager1, C&G)

“you remember what it is like ... when you used to be in the branch⁷₈” (FN-O-42, product manager1, C&G)

“you agreed this makes no sense ... it’s a good product ... good for business” (FN-O-43, product manager2, C&G)

Ensuing discussions between members of the IS team would move from “we have to” to “we can’t”, backwards and forwards between these two polarities. The following dialogue came from a Construction work-group recorded in FN-O-42.

“he’s a mate” (TL)

“I know ... but we can’t do that work ... it’s not approved, we don’t have the wiggle room to do it anyway” (PM)

“he’s a mate, he’s in a spot ... they made a mistake ... we should help” (TL)

“I can see that ... I’d like to help, I can see it is bad ... but we can’t ... imagine the fallout if we did” (PM)

“I think we have to” (TL)

“yeah, but we are NOT going to. He will have to go back to the BUIG” (PM)

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⁷₈ a common reference to work-groups in areas of the business, a residual from the long past times of bureaucratic organisation in a government department
They were heavy, guilt-laden conversations, suggesting that if they said no, they would be letting down old colleagues and the business. This seemed to unsettle them, even though it meant they were upholding the authorised formal planning processes and relations between IS and BUs. If they said yes, they broke the structures they were supposed to be working within, and this too seemed to be unsettling to them.

This dance by IS group members between these two polarities did not appear to be rational or well reasoned, with the decision being made in a reactive and agitated way. Typically, small matters would eventually be informally taken on. Larger matters would be refused. Occasionally the IS group would represent the product manager’s concern within the CBAA planning processes, advocating for their position.

This was a social construction of routinised defensive behaviours. A business representative tried to subvert business and IS planning to cover-up or correct a mistake or oversight. In so doing confronts the IS work-system with the ethical dilemma of what is the right way to work: through personal relationships with their history of shared meaning and experiences, or through impersonal dispassionate planning and management protocols. These situations left the IS people questioning where was the humanity in their work life. Such ethical and existential dilemmas evoked great tension, worry and anxiety within work-groups. These situations occurred often enough and sought to address the product managers’ anxiety—but created dynamics that evoked anxiety in IS work-groups.

This social defence corrupted task-based role-relations and compromised formal authority, the planning process and approved release plans. It provoked anxiety in the IS work-system, but also offered a behavioural response to groups that introjected the guilt and anxieties exported to them by the product manager. It also offered the product manager the possibility of containing their anxiety.79

79 this vignette echoes themes 5.7.1.1, 5.7.1.5, 5.7.1.13, 5.7.1.14, and 5.7.1.15 discussed in Chapter 5
6.3.9 Reorganise the Enterprise

Reorganisations can be seen as a social expression of defence, a reaction to unbearable levels of anxiety that cause the task-system to break down. Reorganisations may always carry an aspect of anxiety about failure with them. It can also be highly personal, with an executive manager being very disappointed in a subordinate’s performance and reducing their responsibilities by reorganising work-groups to other managers’ structures.

The CBAA MD’s (I-21) perspective of reorganisation was about improving function and performance in the medium term:

“I reorganised the department and management reporting to get out of the day-to-day problems, to concentrate on the bigger issues plaguing the department”

“the balance was all wrong, too many problems with too many people putting out the fires and nobody free to make sure they didn’t happen in the future ... it was a recipe for disaster, completely unsustainable”

But his staff experienced it quite differently,

“They don’t trust that we can fix things, so instead they change things around” (I-41, architect, A&R)

“no one knows if it’s broken or if it’s just the teething from the last ... 4-6 months ago” (I-32, manager, Testing)

“we just start making the new relationships and structure work ... you know, we’ve adjusted to the new connections ... you can see it coming out fine and then they go and change it all over again” (I-10, manager, Construction)

“They get scared, I don’t think they really know what we do here anymore ... so they get in the consultants who see dollar signs and they tell them to reorg ... it’s a revolving door now” (I-5, TL, A&R)

“We see it starting to work and get traction, then they change again ... it’s impossible, I’m always expecting another ... it’s confronting, always living with that much uncertainty” (I-19, PM, Construction)

The CBAA MD left the enterprise after the second reorganisation,
“somebody has to be seen to take the blame for the failures to improve ... it’s not really personal, the symbolism of leadership perhaps” (FH-A-27)

Reorganisations enabled redistributing the systemic anxieties from one constellation of work-groups, tasks and roles to another; from old locations in the enterprise terrain to new locations—until the next reorganisation was provoked. During the 36 months the research project gathered data, four reorganisations of CBAA occurred, a fifth preceding the research’s commencement by 4 months. These resulted in a range of simple restructuring to decentralisation and outsourcing—see Appendix 6.

In a reorganisation, causes of systemic-anxiety may be relocated around the work-system, from one part of CBAA to another, from business units of TPT into CBAA, from P&IS into CBAA. These pressures and tensions imposed on work-groups as they worked. Pressures and tensions from within the IS work-system, from business units, and from the broader market system, all contributed to increased levels of anxiety within CBAA. This was reported and experienced by individuals and groups working within the IS function of the company. Anxiety got moved around the IS work-system, depending on the organisation structure and the status of the current development releases.

The process of reorganisation of IS services had become a social defence, it was the reactive measure taken when anxiety and threats about IS performance became too great. It was the vehicle of choice within the enterprise for the quest to drive business performance—with decentralisation and outsourcing of IS service (refer to Chapter 5). It was deployed to manage anxieties about under-performance and the serious disconnections between the business and its IS service provider. An alternative to reorganising to improve performance may have been to reduce the anxieties in the work-system that were negatively impacting the performance of the current organisation80.

80 this vignette echoes themes 5.7.1.1, 5.7.1.2, 5.7.1.3, 5.7.1.5, 5.7.1.10, 5.7.1.15, and 5.7.1.16 discussed in Chapter 5
6.4 Financial Performance

Researching an enterprise, paying close attention to the details of work as it occurs, it is possible to forget that at one level, it is all about money. IS work gets commissioned because leaders believe the investment will give the enterprise an advantage: reduce costs, increase value or revenue. The money is spent on IS services; people get paid, others sell equipment; customers buy new services, and investors get dividends from the enterprise. When IS investment costs blow out, the financial equations for increased revenue or reduced costs no longer hold true. When IS investment fails to deliver, the financial equations similarly do not hold true. It would be naive to think events such as these do not increase anxiety in the work-system, or at least in specific sub-systems.

Through the phase of workplace-observations, two additional data collecting opportunities presented themselves around financial matters and performance in CBAA. First, was a detailed look into the financials of a software release and conversation about this, second was a series of observations and conversations about the CBAA chargeback rate to the BUs being too low to cover IS development costs.

6.4.1 Release Performance

A manager who oversaw all planning and progress activity for CBAA’s Construction functional area\(^{81}\) sought out a discussion (FN-A-31) about the make up of a complete CBAA release for the 130 systems. This was a release that was in construction at that time and would be deployed in four months. It would deliver 23 BIs. Systems support for sixteen of the BIs were in serious difficulty at this late stage. Work-groups were working overtime in the hope of remedying the situation. He had a lot of experience in following the progress of the releases and he had a good sense of the likely outcomes for each component of the release; would it be delivered on time or not? Would it cost more? Would it do what was expected of it?

“I think twelve BIs will not deliver as required ... three of them will be dropped to a later release ... this will really piss-off the business, one of them they are expecting huge revenues from ... they’re about to start training

\(^{81}\) comprising physical design, programming, and system testing
their CSRs, thousands of staff ... and they’ve booked millions in advertising for the launch. They haven’t got a clue yet it won’t get there”

“another nine or ten will get deployed, but some will be so reduced in scope they won’t do anything of use ... the others will work but will need manual workarounds ... no idea of the cost of those, but it’ll be high”

“these problems will stymie work commenced or planned for the next three releases at least ... there’ll be a lot of very pissed people in the business in the next couple of months as it all becomes clear”

I questioned some of the assumptions he was making about the effectiveness of some of the ‘successful’ system changes being delivered. Based on data from workplace-observations some of those also seemed dubious. In this discussion, his prognosis of problem-free IS support for the release’s BIs went down further: from just over 50% to around 75% of BIs would suffer some significant product limiting quality issue with its IS support. Some months before, the GMD of P&IS had claimed:

“we have a very healthy success rate IS development ... only 25% of work has quality problems that have any impact on the business” (I-6, GMD, P&IS)

Had his claim been correct, TPT’s IS departments would have been outperforming the industry by nearly three times. As it was, it was a little worse than described in industry and IS academic literature of 70% (Lyytinen, 1988, Standish_Group_International, 2013).

This construction manager thought this release was typical of most CBAA releases in terms of software quality and the successful support for BIs. If that was to be the case, 70+% of TPT’s one billion dollar software development budget failed to deliver value to the enterprise in the timeframe it was required in; with flow on impacts of later delivery by 3 to 12 months for many BIs. In this frame, many products would miss being first to market, being taken instead by TPT’s competitors. This represented significant waste for the enterprise: even without quantifying non-IS costs associated with delays and manual workarounds associated with these IS failures.

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* customer service representative - CSR
6.4.2 CBAA Chargeback Error and Consequence

For months during the observations, there had been snippets of conversations about a budget problem in CBAA or P&IS. They were not open conversations amongst staff, but were one colleague letting another in on the information. This was happening across at least four teams in different parts of the work-system. It was likely more widespread. From the pieces heard in the observation (FN-O-68), the gist of the shared information was that:

“the software releases are well over budget and no one has understood why, as no additional staff were employed”

“that the releases were now costing around 30% more than they had previously cost”

“finance has finally been picking up the costs of work effort in the pre-release phase of IS development work”

“a lot of architecture and requirements work was being charged to pre-release work codes and had not been being assigned to the costs of a release”

All this was identified by an investigation of a manager in the Program Management group. He was ‘dressed down’ by the GMD (P&IS) and was likely to be sacked. People appeared to be very upset about this because ‘it is unfair’ and because he was very well liked and respected by staff.

I was approached by two middle managers who wanted to discuss the matter; they thought it was important that these types of situations were also represented in the research (FN-A-27).

“the GMD was incandescent with rage, it might have been better if only he and John were in the room, but there were others. Managers saw it, he (GMD) fired him (John) ... on the spot. I don’t think it will happen but it must have been crazy” (manager 1)

“were you there?” (researcher)

“no, but close colleagues were, they were shocked and furious. What John found was becoming visible anyway with the new (financial) reporting, he just brought it all together. It was like his (GMD) world collapsed ... one minute we (CBAA) cost the business $1100 per development man day, the next was $1600. That is over 300 million dollars a year over budget. ... no one knew, no one even expected it was anything like this” (manager 1)
“we knew we had anomalies and were over budget. But not that much, not 30%” (manager 2)

This was an enormous blow for the GMD. He had established CBAA, along with its financial reporting. He moved up to create P&IS, again with all its financial reporting (an overview of the financials are in Appendix 5). Of the $1100 average cost per person day for CBAA staff, 50% of that went to P&IS to cover the costs of their 3700 staff not in the four IS departments\textsuperscript{83} that charged the BUs for ‘contracted’ services\textsuperscript{84}. The costs charged against approved business initiatives covered P&IS salaries, on-costs and all other associated hardware and service charges.

These data offered a brief window into what was at stake in this setting, the aggression below the surface and its expression. The manager who identified the problem had been interviewed in the first round, and was interviewed again a few months later.

“it was the end of my career here, I’m not sure there is any coming back from that day … I thought I was just providing useful information, I hadn’t thought about what it would mean to the GMD … I knew it was a problem, but I thought it could be fixed” (I-62, manager, Program Management)

He was caught in a technical view of the matter, what his training and experience had prepared him for. He did not seem to appreciate other meanings it may have in the social-system.

“afterwards I suppose I thought it spelled the end for the GMD, perhaps I wanted it too given what he did to me … but he moved on CBAA’s MD, the guy who had inherited his (the GMD’s) shitty financial processes” (I-62, manager, Program Management)

CBAA’s MD did leave, from work-system observations it appeared that staff believed he had been pushed. The GMD remained for another year, until the next two reorganisations\textsuperscript{85} of P&IS were done and most staff were transitioned to staff roles in outsource providers. This event appears to have shattered the remaining faith enterprise leaders had in their internal IS services. It was a $300m breach of trust and confidence, in a context where the

\textsuperscript{83} the four IS departments were: CBAA, Networks, Enterprise Services, DBoR (Data Base of Record)

\textsuperscript{84} IS services were contracted through a series of SLAs (Service Level Agreements), including the availability of software delivery days

\textsuperscript{85} discussed in Appendix 6
enterprise was already extremely anxious about what they were getting from P&IS and CBAA with the chronic IS delivery problems and underperformance. The decentralisation of IS services was accelerated, as was the move to IS outsource providers taking over all design, programming and testing functions of IS development; with those IS functions moving completely outside of TPT.

The blow out in costs may have been the result of work effort being wrongly assigned to general cost codes rather than release or BI specific cost codes. It may have been due to the huge volumes of overtime charged to general or specific cost codes, overtime worked to try to catch up on IS work-tasks for BIs that were running behind and at risk of being descoped from its release. No official answer was ever available to the research, but there were problems with the technical practices used to record, and correctly assign to a valid cost centre, the work effort of CBAA staff.

6.5 Observations on Theory

The research has conceptualised the notion of an anxiety-load for a group: an anxiety-load is carried by each work-group and by the work-system. It is likely to be different for each grouping, as each group perceives its external world differently. It is the sum of all anxieties a group is experiencing at a point in time and varies over time. Each group also has an anxiety-threshold, the point at which the level of anxiety the group is experiencing is enough to tip it into intermittent defensive behaviour. The anxiety-threshold is fairly stable, and would only shift when the group learned how to cope better with anxiety through its internal resources. Figure 6.2 below shows the relationship between anxiety load and a group’s capacity to work at a given time.

The first zone above the anxiety-threshold is the oscillating zone, where groups move between work-group behaviour and basic assumption (defensive) behaviour. If the group’s anxiety-load increases, eventually it will be pushed into the pure BA zone (Bion, 1961), where the group will operate from a basic assumption mentality until its anxiety-load drops.
Below the anxiety threshold is the work zone, where a group is in work mode and engaged in its work-task rather than survival re-action. This is the zone where work gets done, work-products are completed and performance happens. A group’s capacity to do work can be increased by increasing this zone: by raising their anxiety-threshold, through training, development and other supporting structures; or by reducing the group’s anxiety-load, which involves broader work-system structures that contain systemic-anxiety or ameliorate the sources of such anxiety. It is important for optimal work output and performance to maintain conditions such that a group and the group mentality remain in the work zone, coping with tolerable levels of anxiety.

![Figure 6.2](image-url)

**Figure 6.2** Relationship between a group’s anxiety level and its capacity to work
Work-groups appear to regulate systemic-anxiety in one of three fundamental ways (see Figure 6.3). Response one schematically shows a quantum of anxiety experienced by a work-group being dissipated by its boundary regulating functions. That is by its management and other structures available to it to ameliorate the anxiety rather than becoming disturbed or overwhelmed by the anxiety. When a group can do this, it remains in work mode. The second response shows the same quantum of anxiety being dealt with differently. Much of the anxiety is contained and dissipated by the regulating structures, but some flows through to the group, increasing its anxiety-load. This additional anxiety-load may push the group above its threshold and into a ba-mode of defensive, non-task behaviour. The third response sees the group’s regulating structures being overwhelmed and not able to contain any of the quantum of anxiety. The anxiety floods into the group, possibly being amplified. Such an event is likely to overwhelm a group’s capacity to remain in work mode, pushing it into a ba-mode of defensive, non-task behaviour.

Kierkegaard defined anxiety as being possibility, those that are daunting and those that are creating (Chamberlain and Ree, 2001). Allowing creative possibilities in the midst of the need for ongoing business continuity and certainty appears very difficult to achieve. The anxiety that creativity presents as a by-product is challenging to contain without crushing the creativity or without it tyrannising the enterprise. Kierkegaard’s ‘creating’ dimension of possibility, of anxiety, can evoke the ‘daunting’ dimension of anxiety in an enterprise.
6.6 Summation

This chapter has discussed the observed symptoms of distress in the work-system, specifically unconsciously motivated work-group defences against anxiety. The work-system’s systemic anxieties account for the symptomatic, anti-work-task behaviours; both the dynamic, reactive defences (Bion, 1961) and established defensive routines (Menzies, 1970). These defensive modes of behaviour were largely responsible for reduced performance, work-product output and delays that compromised software delivery. Such impromptu defences that are re-used and that adequately cope with recurrent systemic anxieties are seen to become embedded in work practices, forming a new social defence.
Anxiety involves feelings of persecution or of remorse and guilt, threatening to erupt into consciousness. Defensive group behaviours are likely signifiers of such anxiety. The presence of anxiety indicates these disturbing feelings are not adequately contained by the work-system. Feelings push to find conscious expression. This may threaten the identity and continuity of work-groups. Defences work to protect the group (or individual), but usually also disrupt the work task behaviour of the group, impacting performance and output.

Anxiety shapes work-practices, as seen in social defences. Over time, work structures are shaped by anxiety, with management and technical work-groups unconsciously selecting work-practices and structures that lessen the anxiety-load they experience. Anxiety causes structural pressures and tensions in the work-system, often resulting in structural change to the work-system. But the absence of adequate anxiety-containing structures in the work-system, allow anxiety-amplifying dynamics to propagate anxiety throughout the work-system. Faulty structures are likely to cause anxiety. Unchecked anxiety seems to break weak structures.

One explanation as to why work-groups of educated, experienced and savvy people fall foul of the dynamics of systemic-anxiety is that some of these dynamics are propagated in parts of the enterprise that these work-groups have no influence over or authority to effect change. The possibility of intervention in work-groups or the work-system to better contain the anxieties evoked is also explored in the following chapters. The next chapter scrutinises some of the dynamics, pressures and tensions that were imposed on CBAA from outside.
Chapter 7  Macro Dynamics

The previous data chapters identified and explored the work pressures and tensions that were local to IS work-groups. This chapter expands this analysis by examining pressures and tensions beyond the local area of influence of the IS department, by including the macro-dynamics from the broader enterprise.

Work-groups, when dysfunctional, were not just affected by their own intra-group dynamics. Many of the pressures and tensions contributing to their anxiety-load came from outside the work-group. Some of these pressures and tensions were caused by unchecked dynamics that flowed across the broader enterprise. It is not sufficient to criticise a dysfunctional work-group, a group in basic assumption mode of acting (Bion, 1961, Riech, 1976), for being unable to resolve its internal conflicts because the sources of its anxieties may be external to it, and it has neither the resources nor authority to influence them.

The macro-dynamics observed clearly evoked unsettling feelings in CBAA members and increased the systemic-anxiety in the work-system. There were dynamics that had a broad sweep across the terrain of the enterprise, impacting large parts of its divisions. These dynamics originated in other parts of the enterprise or its environment. Most of these macro-dynamics were beyond the direct control of CBAA and had to be weathered. Despite their experience and technical expertise, there were anxieties (usually potential threats around survival or tasks) that pushed CBAA work-groups beyond their window of anxiety-tolerance, into reactive, irrational, defensive behaviours. Recognising this helps understand the scope of pressures on CBAA, offering some explanation about why they were so caught in defensive modes of behaviour.

On every desktop in TPT, including the one provided to the researcher, the top right-hand corner had the company’s share-price displayed in 24 point in real-time from the stock-market trading floor. All 30,000 staff in TPT had a constant reminder of what was considered to be most important whenever they were looking at a computer screen. The window could not be suppressed; it sat over every other window. It was dispiriting and concerning for staff when the share-
price was falling, as it often did throughout any given day. It contributed to the psychological pressures and tensions they had to try to accommodate in their work.

For a work-group in CBAA, in the throes of being overwhelmed and disrupted by the work-system's anxieties, it was largely impossible to influence the causes of anxieties produced by dynamics outside CBAA or the enterprise: dynamics often unmoderated by the regulatory effects of the enterprise's boundaries or management. By contrast, dynamics from within the work-group or its immediate work-group interactions were far more possible to identify, influence and counter.

7.1 Narratives

Many narratives ran through the IS department, like threads in the fabric of a garment. Some narratives were 'heard' across the whole work-system, whilst others were unable to be heard beyond the work-groups who tried to voice their experiences of work. The unhearable narratives were often those that were negative, or about pain in work, or contrasted starkly with CBAA’s core narrative. For example, work-groups in the testing functional-area had narratives that expressed their distress at again being put in impossible work situations, release after release; having their testing window dramatically compressed, having to work 7 days a week to get as much testing done as possible. This strained the testing staff’s family relations and reinforced the belief that they were unvalued by CBAA management—because the situation was never fixed. Within CBAA, Testing staff had low status and moderate salaries.

"we're kind of the bottom rung here" (I-43, tester, Testing)

"historically most testers came from the business for special projects and wanted to stay ... they don't get paid much better than BU staff. Our exec is trying to up skill the function, bringing in experienced professional testing managers and new testing tools" (I-40, manager, Testing)
The core narrative of CBAA was ‘We Deliver, On Time’. This narrative entailed several things: an expectation, a source of pride and motivation, a goal, an advertisement to business units, a source of distress and pain to work-groups, a myth, a lie, and a believed truth for the CBAA Council. It was a narrative about overcoming obstacles at all costs. It had a seductive heroic quality to it. It was about crashing through, giving it your all and succeeding. It was a narrative originated by the GMD of P&IS when he set up CBAA as its MD. Staff described him as:

“he storms through ... anything missed is gone, it’s like it doesn’t exist, even if it’s important” (I-10, manager, Construction)

“going too fast to see the things he’s missed ... he behaves like they weren’t there”(I-5, TL, A&R)

As a retired US Topgun fighter pilot, he had a forceful approach that permeated the CBAA narrative.

At a literal level, the ‘we deliver’ narrative required: finding out what the users want; building what the users want; and testing what was delivered. Simple straightforward ideas, yet difficult to execute in this huge, complex and turbulent setting. At a symbolic level, it was CBAA’s war cry, the banner around which they were all meant to rally; a key element in their collective identity. But inescapably it was their measure too. As discussed in earlier data chapters, the repeated failure to uphold their motto, to deliver on time, resulted in despair and disillusion within CBAA work-groups, and criticism and ridicule from the BUs.

Meaning is a function of exchange: an exchange with an emotional accompaniment that is the consequence of acts of interpreting a situation (talking, seeing and doing) that is engaged with by others and which enables something new to happen; such as a new understanding or appreciation about each other or a situation (Armstrong, 2010). It changes inner reality and consequently how reality is engaged with externally. Things are different after such an exchange, after new meaning has been formed. For example, many work-

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86 work-group and individual
groups were alarmed by the MD’s communication to business units that CBAA would deliver as planned for the current release. But one group’s manager engaged them in their concerns and reinterpreted the leader’s message, orienting it to an internal CBAA perspective. There were intense exchanges between the group and their manager with many exchanges containing strong emotional content: fear, resignation and despair. It appeared that the group, through this engagement, came to a view that their future would be safe, despite the risks they believed the MD exposed them to through his communication. The authentic exchange with their manager had allowed new meaning to be formed (FN-O-48, Construction). Similarly, in the reference-group workshops, working through the working-note (see section 5.7) as another instance of new meaning becoming possible through full engagement; engagement that considered the emotions experienced in these dialogues about ever present work tensions and situations.

With the absence of engagement, including engagement with the emotional aspects of a situation, the exchange is blind, without meaning. It becomes a way of attending to the context of meaning, the artefacts of meaning, rather than working at meaning (Armstrong, 2010). Very many of the exchanges between managers and staff did not engage with current experiences and the meaning (new and existing) that could be found there. They addressed meaning as a non-living form—a stasis. An example was IS development methodology artefacts with no reference to current experience of creating development work-products.

Narratives carry collective meaning and they support inclusion or exclusion: joining with or disaffection and alienation from the group or enterprise identity. Narratives simplify things. They suggest how things ideally could be. How they tried to make things be, to imagine things. When a group was not able to bend its experience of its work sufficiently to fit the core narrative; when the gap between actual experience and the narrative was so great that the group could no longer pretend to identify with the core narrative; the narrative became an obstacle to inclusion and to engagement with the range of experiences of work across the work-system. The ‘we deliver’ narrative ignored the experiences of work that were very painful. When the dissonance between experience and fantasy was too
great (as with testing work-groups), these groups become alienated from the whole. Where the dissonance involves less painful experience, it remained possible to go along with the narrative, as was the case for Program Management’s work-groups.

“no, CBAA doesn’t always deliver, but that’s okay ... it’s a story to help focus us on achieving our goals” (FN-O-27, manager, Program Management)

Program management staff had moderate status and moderate salaries. Their experience of work was also painful, but not so painful that it could not be offset by other rewards87. They tended to go along with the core narrative88. This was also the case for release managers who had very complex, distress-laden jobs, but also had high status and high salaries.

The old ideas of organising the enterprise were embedded in its narratives, narratives that got endlessly restated and repeated, shaping the psychic life of the work-system for better or worse. CBAA operated through a mechanistic control paradigm, where work was tightly prescribed and determinism reigned, despite the constancy of ambiguity and ambivalence evident from earlier data. It was a true modernist project (Bauman, 1991), seeking to explain, categorise and define everything it dealt with. Lawrence (2005) suggests that as the old ideas of control, determinism, power, certainty, growth, master-servant and totalitarianism fail to offer meaning and hold enterprises together, enterprises may have no option but to fundamentally re-organise themselves around symbiotic ideas of mutual benefit for all participants and work-groups, if the enterprise is to survive. Old forms of organisation fail because their connecting ideas no longer provide meaningful connection and identification for their members. New ideas have to be found through which connection can be made anew, to the enterprise and its purpose and tasks.

Dissonance between a team’s experience of their work and the core narratives of the work-system caused anxiety. It weakened the identification with the work-

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87 money, status, influence, autonomy

88 at least until it was really broken during the outsourcing process
system and resilience to face the threats, conscious and unconscious, inherent in doing work-tasks in this complex setting.

7.2 The Insatiable Desire of the Business

There was always far more IS development work the business units wanted done than there was budgeted within the enterprise. The desire, need, even longing for enhanced systems seemed insatiable.

“when you see what they ask for, it’s years of work for every year we can do ... it goes on endlessly, forever ... it’s never ending” (FN-ALP-110, architect, A&R)

“once they have what they need, it grows, there is more and more ... sometimes it seems like a bloodlust, an unquenchable thirst” (FN-ALP-110, RM, Release Management)

“whatever we do it is never enough ... complete the impossible for them and it means nothing, it is what’s expected, even when it’s a miracle ... then they complain about what is not there, what they never planned for or asked for, nothing is good enough” (FN-ALP-110, PM, Construction)

It was deeply disheartening for many IS staff that the business was rarely satisfied with their efforts, even when they were near perfect. There was always more that could be done, and little gratitude for what was done. These were very disturbing conditions to work in: an unbounded sea of demand and no satisfaction from what was achieved.

Psychodynamically, this can be seen as an overwhelming and threatening presence; the unrelenting demand for more. It was an unbounded experience and as such very disturbing and anxiety provoking. The statements above express the quality of desire that Lacan writes about. Desire is founded on a primitive, futile quest for what is lacking. For Lacan, ‘desire’ is insatiable, it is a state of mind that cannot be met, it is driven from the unconscious. It is distinguished from ‘need’, which is satisfiable, bounded, knowable (Agamben, 1993). Desire finds expression in fantasy, it is decentred, dynamic and seemingly unending (Harari, 2001, Leader and Groves, 1995). What was lacking for the
business was certainty about the future, particularly in the turbulent, fickle world of markets it inhabited.

The PDOM and IS planning processes generally ensured that only formally approved work was undertaken. This did stop the BUs or individual product managers from trying to get IS work done for their initiatives by other means. As discussed earlier, informal attempts to conscript well meaning IS staff to work on extra tasks for the business were not uncommon. More common were attempts to rescope a BI once it was in a release.

“sometimes we get had, they try to expand the scope of what has been approved, to go beyond the resource limits and budget ... was it us misreading the brief or is it the business being tricky?” (FN-A-19, architect, A&R)

Regardless of the intent, the commercial imperatives to generate new revenue and reduce costs created much frustration amongst business work-groups because of the cap on IS spending and the limits on how much IS work could physically be done over a time period. This in effect created a limit that the business pushed against.

“there has always been heated discussions at senior ranks to let a BU define its own IS budget, even to independently employ outside IS vendors to build software for them ... it would lead to a proliferation of badly architected systems, a mess of spaghetti systems ... this was how the company ended up with over 200 large scale systems99” (FN-A-18, Executive, P&IS)

The demand for more or faster IS development was a source of enterprise-wide pressure to improve IS. It resulted in an imperative to decentralise IS and delegate the authority for IS spending to BUs. At face-value it seemed straightforward, but it was not. Questions of ownership, multiple BU dependency on shared systems, and the uncontrolled proliferations of systems (perhaps with duplicate functions) were conveniently unconsidered in these scenarios. This dilemma flows into the heart of the next section.

99 P&IS managed around 220 systems, 130 by CBAA
In contrast to frustrated desire, BUs allowed themselves to completely depend on CBAA experts. Zizek (2008) suggests that experts that are depended on, are attributed with omniscience or super knowledge; a fraught position. They become indispensible, what he calls the ‘subject supposed to know’. He sees this process as a defence by the non-experts against the anxiety of not knowing. But when the expert fails or is found not to be omnipotent, this produces enormous frustration and disappointment with the breaking of expectations. Business groups often placed IS groups in this role, not just for technology, but about aspect of the business itself. IS failures were felt deeply by the business and their disappointment was often intense.

### 7.3 Tension between IS and Business Units

There was an inherent tension in CBAA’s tasks. It had to ensure for the enterprise the durability, extensibility and stability of the suite of systems in its charge. Business continuity through stable information systems was critical to enterprise success. Simultaneously, CBAA had to introduce IS changes to these systems on an enormous scale: 530,000 person days’ work-effort and $800m of software development spent per year. Coupled with this, the business units demanded low cost and short turnaround delivery of IS changes.

These two sets of demands imposed limits on each other. One can only be satisfied with some cost to the other. This situation was further exacerbated by the business’ isolation from the process of system development, a process that was undertaken by IS specialists to fulfil the business requirements. This passing off of responsibility to IS in many situations was reckless and irresponsible, with virtually no regular detailed oversight of progress by representatives of the business, followed by dramatic complaints when system delivery failure occurred. This was shown in earlier chapters and subsequent sections. This disengagement from the IS development process, something quite important to survival (sustainable system enhancements for new products), followed by quite hysterical, aggressive responses when serious problems arose, was not mature
or reasoned behaviour. It was reactive, defending against intense accumulated anxieties.

“product managers are often aggressive at the point it has all gone to shit ... it’s the same guy who didn’t come to our regular meetings” (FN-O-63, SM, Construction)

“there is fear and panic in their eyes when it sinks in that it’s too late ... it’s all over ..., yeah, we’ve run into problems and maybe screwed up, but they know they haven’t been paying attention ... sometimes they wear it – it takes guts – others go ballistic and it becomes our fault, our problem, we are to blame completely” (FN-O-63, RM, Release Management)

“execs aren’t so bad, but those still fighting for a place at the big table, they’ll go nuts” (FN-O-43, PM, Construction)

A working-hypothesis was that:

Business disengagement from the IS development process was a defence against anxieties aroused by dependency on IS technical specialists for product failure or success.

This was a form of splitting as defence, where aspects of experience or identity were split off and projected into others. The working-hypothesis suggests that aspects of business work-group’s technical competence was split off and projected into the IS department, with the business-group losing part of its competence and this opening the business-groups to feeling childlike, infantalised and angry. This was not to suggest that business work-groups were always in this state of mind, they were not. But this splitting and psychic state with its associated behaviour were returned to at times of high vulnerability and high anxiety-load. The anxieties mentioned were very real, but when they were not managed and kept in check, they negatively affected business work-groups’ capacity to think and act congruently. The hysterical aggressive behaviour was indicative of this. From the hundreds of hours of observations, events like this were not uncommon. They did not assist in finding effective solutions to the emergent problems in the IS development process, often causing late reporting
of problems by IS\textsuperscript{90}, or the false ‘positive spin’ put on problems as discussed in chapters 5 and 6.

Co-creation was missing in the ISDP; co-creation with both IS and business work-groups taking responsibility for the delivery of changed systems and business processes. In a co-created world, business groups would have more intimate knowledge of the problems IS was having in developing the software changes, rather than running away from such awareness. They would be better able to accommodate such problems within business planning and activity.

Many business personnel had a history of ‘bad’ experiences with IS projects, often becoming assumptions that business managers operated from in their dealings with IS. But there were some business groups that had in the past very unsuccessful dealings with IS, events that had been very traumatic to them. These past events were remembered, particularly when new interactions with IS were begun. In many cases, the original staff who had experienced these trying events had left the work-group, or had even left the enterprise. Yet the current staff who often had not directly experienced the events, remained strongly affected by them; with this influencing their expectations of and interactions with IS (FN-O-45). Fromm (2011) introduces the idea of transmission, where the dynamics of transmission of psychic distress from large traumatic events gets passed on from one generation to the next, affecting their sensitivity to similar situations, events or protagonists. He discusses this at a societal level, considering major events such as New York’s 9/11, Hurricane Katrina, and the Holocaust. These dynamics of transmission can be seen in the above data to occur in enterprises. The generations have shorter time-spans, the major events affect fewer people and the psychic harm was less dramatic. But IS development failures affected business staff, particularly managers, badly, even traumatically. This psychic distress was often passed on to future generations in the business.

\textsuperscript{90} often too late for delivering the BI as required, or planning alternative release with well managed impacts in the business
7.4 Management’s Containing Function

Fear about how their work-group’s performance would be assessed or perceived was a familiar experience for middle managers and staff working in software development (Dalgleish, 2001) and more generally across enterprises (Hirschhorn, 1988, Kets de Vries, 1991). Earlier chapters discussed the anxiety and dread IS work-groups had about criticism of their work being incomplete, late or wrong, often in circumstances where they had little influence over the accuracy, completeness or timely availability of the prerequisites for their work-tasks. There was the possibility of aggression by other work-groups in this uncertain and volatile setting. Examples include work-groups projecting threatening aspects experienced in their work onto management; or work-groups projecting their members’ disowned aggressive feelings onto another group and imagining that group instead being threatening to them. Fear was an ongoing experience in the work-system.

Describing executives as being fearful is unusual. Fear anticipates some danger or form of punishment or sanction. Executives often appear omnipotent to both staff and themselves. They often collude and identify with the unconscious phantasies, projected onto them by staff, of them being powerful and ‘in control’ (Krantz and Gilmore, 1990). This phantasy may have had a temporary effect of containing work-system anxieties, the sense of the enterprise being in ‘safe hands’ (Dalgleish and Long, 2006). Such omnipotence may be hard to sustain when confronted by a fear-evoking object from the environment; an entity the enterprise was dependent upon, such as the financial market. This appeared to be the case in TPT for its new CEO. A ripple effect of fear and anxiety washed through the enterprise, including CBAA.

7.4.1 Executive Management’s Fear of the Markets

Markets are complex and dynamic things and as the following data show, groups can irrationally imbue them with measurable and rational human characteristics, endowed with volition, intent, cognition and power. Through the unconscious
group dynamics of TPT's top-management, the market took on\textsuperscript{91} a unified organised characteristic in the minds of these leaders. This section argues that the fear these executive managers built up through their experiences of the financial-market affected their behaviour, allowing a cascade of anxiety\textsuperscript{92} to seep through the enterprise, including into CBAA, becoming part of the anxiety-load work-groups had to cope with.

There is an important distinction between an aggregate of social processes such as the financial market, and dynamics found in socially engaged systems such as the CBAA work-system or TPT. Financial markets are not an ordered social-system, institution or functionally coherent organisation endowed with human characteristics of reason and volition. They are a dispersed aggregate of unrelated actors functioning independently, at best a network or matrix with no intrinsic common purpose (Dalgleish and Long, 2006).

Fear anticipates some danger or form of sanction or punishment. In the work setting this is about judgements made or imagined about role or work-group behaviour or task outcomes. The experience of fear is unpleasant and is likely to generate anxiety. TPT executives expressed fears of the market and being negatively judged by it.

\textit{“the share price continues to fall, as you all can see on your desktops ... this is a grave concern for the company’s leadership ... it’s terrifying actually”} (FN-A-17, executive, CBAA)

\textit{“people (top-management) are more than worried about the current position with the share price”} (FN-A-17, executive, P&IS)

TPT's leadership appeared to experience significant anxiety about the enterprise's ongoing poor valuation by the financial-market. Quite unexpectedly, the CEO announced two actions. The first was to set up a conversation with the financial-market. It was premised on the optimistic yet irrational notion that the market could be rationally engaged with, talked with as a whole entity. It was a

\textsuperscript{91} for a time under the new CEO

\textsuperscript{92} anxiety about the financial market and its appraisal of TPT
grandiose simultaneous teleconferenced presentation and Q&A with hundreds of
participants from three stock exchanges: Sydney, Hong Kong and London. This
event was meant "to restore faith in TPT’s exceptional growth prospects" (CEO
e-mail to staff). This conversation failed to address concerns that parts of the
financial-market had about TPT. It perhaps evoked more analysis of TPT from
the market; the share price continued in free fall. It was an irrational action
because it is not possible to converse with a financial-market\textsuperscript{93}. It was a phantasy
of the CEO’s inner world and turmoil, rather than a realistic engagement with
external reality; a way to defend against anxieties about TPT’s share-price
valuation. Secondly, the CEO announced a new cut of 7000 jobs. This plan was
formulated in three days with seemingly limited concern for the ongoing
capacity of TPT to function in the long term. Both actions were to appease the
financial-market; they were unrealistic, anxiety-driven reactions that suggested
how desperate and off-balance the TPT top-management was at that time.

7.4.2 Management as Container

One task of management is to have in place appropriate and effective task-
oriented structures to contain systemic-anxiety. Sound structures provide staff
with psychological safety in their work, that enable them to undertake their
Often, this involves managing the boundary of the work-group, ensuring that not
every influence pushing at a work-group makes it across the boundary.

"in the first instance control the 'boundary conditions' – the forms of
exchange between the enterprise and its environment" (Emery and Trist,
1965, p.294)

From socio-technical systems theory, it is important to regulate boundaries;
interactions with the enterprise’s environment and those between its
subsystems. In particular, between the task system and the sentient system in
order to identify nascent psycho-social issues and to ameliorate them before

\textsuperscript{93} it is not a coherent unity
they negatively impact and disrupt the task system and performance. There is an interdependence between the technical and the social dimensions of work.

Without an understanding of the symbiotic nature of the relationship between a group and its environment, the group will struggle to function. Ambrose (2001) describes the necessity to balance and optimise the interplay of forces both within and outside a group or enterprise. Balancing the internal interdependence of objectives, activities, structure, technologies, people and other resources of the group; assessing the options offered through environmental changes; enabling internal variation and flexible responses to those environmental changes from the available resources of the enterprise. The functioning of a group or enterprise is only optimal in the context of the opportunities and limitations of the environment it operates in, and in the balance it achieves between the practical and psychological capacities of its people and work-groups (the sentient system) with the technologies of the task system (Miller and Rice, 1967).

To achieve this balance, leaders and managers can define and regulate the boundary; what is ‘inside’ and ‘outside’ the system. The group or enterprise “is effective in as far as management is aware of the reality outside the organisation” (de Board, 1978, p.92). Management is the regulating function, defining and linking the activities of the group with its environment (usually made up of other work-groups). While it is recognised that the role of management is to regulate systems of activities or task systems (Miller and Rice, 1967), it is also recognised that people perform these tasks; human beings who interact in order to perform these tasks, human beings with individual agency and collective identity—an understanding expressed in socio-technical systems theory (de Board, 1978, Miller and Rice, 1990).

A well-managed boundary was evident from a workplace observation described here. A team-leader of a logical-design work-group was confronted by three of her staff claiming the physical-design team were complaining to higher management about the lateness of the logical-design team’s work-product. They protested that they were not late, that the document would be delivered as
planned and that she should set the other team straight, making sure it didn’t happen again. She asked how they came by this information, and they responded that it came via a program manager. She then suggested they contact key people in the other team to find out if there was any truth to these claims. Reluctantly they did over the next couple of hours. They came back with the information that the problem was not with them, but with another logical-design team working on a different BI for the same release. The other team had no issue with them or their work (FN-O-52). The team leader had regulated her team’s boundary well, obstructing the free flow of untested inflammatory views within the team, testing the reality of the claims and setting the record straight; rather than being emotionally drawn into reactive basic assumption behaviour of fight or flight towards the physical-design group. Her capacity to think in the face of a perceived threat and the associated feelings, and to help other team members think rather than react, avoided the disruption and lost work-effort of a conflict founded on the inner world of group members rather than external reality and facts.

A poorly managed boundary was shown in section 7.4.1, with the discussion of TPT management’s fear of the market and management’s inability to contain the anxieties experienced about the financial market with its perceived power and impacts on TPT; this resulted in these anxieties flowing unchecked through the whole enterprise.

7.4.3 The Function of Containment

Just as fire doors in buildings are used to contain fire, limiting its spread and adverse impacts, organisational structures are designed in part to regulate and contain the movement of systemic-anxiety across the work-system. The structures limit the detrimental impacts on work-groups and work-product completion and quality. Managers may be unaware of this function of their role as they go about ensuring clear work-tasks and plans are in place, securing resources, dealing with obstacles, following up deviations from plan, keeping
morale and motivation up, and developing team cohesion and capability; all of which provide clarity for work and engagement with reality, elements that contribute to containing anxiety.

When this is working well, anxieties are experienced locally and have limited spread across the landscape of the work-system. When the containing structures do not work well enough, anxiety from one work-group’s experience of work spreads to other groups, often amplifying into an intense and disabling conflagration. Throughout chapters 6 and 7 there have been many such examples of anxiety, often out of control for extended periods of time, severely disrupting IS performance and delivery.

7.5 Headcount

“He’s (new CEO) got to get headcount down … it doesn’t matter where they come from” (D-45, executive, C&G)

“one of our current goals is to dramatically reduce the operating costs of the corporation … where this does not adversely jeopardise operational performance” (D-45, CEO, annual address to staff)

“our competitors are mostly green-field start-ups, they cherry-pick the most profitable markets and use new information system technology to deliver services to their customers. It is all lower cost … and far fewer staff … so here we are cutting staff and trying to survive” (I-51, executive, Networks)

“it is a new philosophy thrust upon us … it’s no longer about providing services to subscribers, it’s about making money … and we are learning that this also involves cutting costs … cutting people” (I-44, executive, P&IS)

“reshape and resize the organisation … the market has metrics we have to perform to … international metrics for telco performance … headcount per service is one of them … we have to do our part too” (I-6, GMD, P&IS)

7.5.1 Pruning with a Chainsaw

At the commencement of the research, TPT had approximately 50,000 full time employees (FTE). At the commencement of industry competition 10 years earlier, it had 120,000 FTEs. At the end of the research (three years), there were
28,000 FTEs and neither the IS outsourcing nor the network construction sell-off had occurred at that stage.

The enterprise had historically been managed and controlled by engineers. Engineers had built the enterprise up to provide telecommunications to all across the disparate geographic regions of the country—fundamental infrastructure for the modernisation and competitiveness of a nation. During the research, the last bastions of past engineering dominance were surrendered to marketing and business-management control of the enterprise.

During the time of the research, the telecommunications industry and observers used an enterprise performance metric 'the ratio of FTEs to SIOs’[^94]. Where this ratio is higher than the industry benchmark, the fear is that the enterprise will be assessed as inefficient and its share price will be sold down. Within TPT this metric was an obsession for top-management.

> “there is a lot of attention on staff to SIO numbers at the moment … so there are likely to be many rumours about staff cuts, new employment freeze and outsourcing … I stress this is only rumour” (FN-A-17, executive, CBAA)

In practice, TPT’s 'staff to SIO' ratios were often unfavourable and the share price did not fall. Conversely, when significant staff reductions were made, share price falls were not stabilised by this improved metric. Yet top management held to it like a great hope, a fantasy talisman.

The volatility and fickle nature of financial-markets and TPT management's inability to control it, was unsettling for them. As discussed earlier, they operated from a phantasy that they could hold a rational conversation with the financial market and help it see reason about the value of TPT. This projection of human sentience and reason onto the market can be seen as a defence by top-management against their anxiety about the share price collapse[^95]. The share-price dropped 30% in value (TPT Corporation, 2015) in the first ten months of

[^94]: SIO - services in operation

[^95]: share price fell from $8.95 on 20.7.1999 to $7.37 on 18.10.99, recovered to $8.95 on 15.12.1999 to $5.65 on 25.9.2000 to $4.81 on 31.8.2001
the new CEO and it continued to drop below 50% over the following year. Management’s actions were not in accord with external reality, rather, they more closely reflected their inner turmoil about company performance.

7.5.2 Outsourcing

Whilst outsourcing offers many possible positive effects, it can also represent the psychological projection or handing off of painful work experiences that provoke intense systemic-anxiety; with outsourcing being a defensive behaviour, the literal embodiment of this splitting defence, getting rid of the intolerable ‘bad’ object.

Having made the decision to outsource all of TPT’s IS services, management declared it would take one to two months to implement. The outsourcing plan was that the IS outsource providers would employ TPT’s IS staff. In preparation for this process, all IS management roles were spilled. Managers would be able to apply for jobs in the new structure of parcels of application systems and support work-groups that the new outsource providers would take over responsibility for; most of the 7200 IS staff would go over to one of the ISOPs.

The IS outsourcing arrangements were very complex. They required detailed contracts covering an annual development spend of around $1 billion, development and operational performance service level agreements, the transitioning of over 6000 staff and managers with their accumulated entitlements, IP exchange, system ownership, and more. TPT entered into discussions with four domestic IS outsource providers. Four were selected to take on parcels of TPT’s IS suite of around 200 systems. It took between 9-12 months to get all this in place. Even so, it failed. Within twelve months all but one IS outsource provider was sacked and another, an Indian ISOP, was engaged.

These events provoked a great deal of systemic-anxiety in the work-system about the consequences of the outsourcing for the staff, for the IS function, and for services delivering to the BUs. Staff and management shared a lack of trust in the vendors’ capability and their integrity to service TPT’s interests ahead of their own.
“when we started with outsourcing a few years ago, the MD created dozens of shadow management roles to pair with key roles in the outsourcer’s organisation ... publically it was to learn from them ... to us he was clear it was to oversee them ... he didn’t trust them” (I-26, SM, Release Management)

“They (outsourcer) can’t be relied upon to always do the right thing for TPT. They’re here to make money and a reputation, that’ll invariably create some very bad system decisions” (I-21, MD, CBAA)

“It’s just too complex for some of them ... their companies might do a lot of work, but their proposed managers have no experience of this scale” (FN-A-28 SM, Construction)

“They show no appreciation of the complexity of what they are getting themselves into” (FN-A-28, Executive, P&IS)

“After six months some still don’t realise they will need the current staff, let alone they have no commercial choice in the matter ... god help what happens after the agreements are all signed” (FN-A-28, SM, A&R)

There was significant anxiety about the process that was undertaken to determine which outsource vendors were successful in bidding for parcels of TPT’s information systems and the work-groups and staff who supported them.

Users of services like IS, through measure and audit activities, and best practice advice can exercise an informed choice about the continued use (or not) of the particular service provider. Through engagement, re-engagement or dismissal they can reward success or punish failure of IS development service providers—in-house or outsourced. Such dynamics exercise formidable pressures and provoke intense systemic-anxiety in work-systems.

### 7.6 Summation

There were many sources of events or situations that produced dynamics that flowed beyond their local sphere of influence, moving across the enterprise. Their intensity varied over time, but all contributed to the anxiety-load of other work-groups, carrying them towards basic assumption behaviour; where protection and survival of the work-group from these perceived real or imagined threats took priority over the work-tasks. What were needed were methods to
reduce systemic-anxiety in the work-system and to increase work-groups’ tolerance of anxiety. The next chapter discusses research activities that sought to explore how to do this.
Chapter 8  Action Research Impacts

This chapter looks at the effects the action research had on the research-host. Not all can be known, as the processes of enquiry, findings validation and dissemination into TPT touched many staff; only a small proportion of participants indicated any impacts this had on them or their work-groups.

The principal interventions were the action learning projects that were part of the original action research design. The reference-group endorsed three action learning projects (ALPs) as research interventions in CBAA. Their conduct and findings are discussed.

In the original research design, it was anticipated that the reference-group would be a forum where participating managers would find new ways of relating to their work and teams through exposure to the findings and the applied theories guiding the research. For some managers this appeared to be the case: these are discussed along with other unplanned constructive influences of the action research.

8.1  Action Learning Projects

The ALPs were the final stage in the research. It was hoped that through them, insights would be found and tested about how, in an IS work-system, to reduce the background systemic-anxiety and its sources, how to increase work-groups’ capacity to tolerate and work with the presence of high levels of anxiety and what structures would assist in identifying systemic anxiety, the critical points it impacts and the means of managing it. These projects represent an active participation in the work-system by the researcher—designing and facilitating processes within CBAA to identify and manage extremes in systemic anxiety.

8.1.1  Dialogue, Across Roles

Two sets of across-role dialogues were commenced; each planned to be run over three sessions. The researcher facilitated both sets of dialogues. Their purpose
was to explore with staff working across role boundaries, the conscious and unconscious assumptions each role had of the other and how this impacted on their interactions in work (Long et al., 2006). It drew heavily on the organisational role analysis process set out by Armstrong (2005). One dialogue was between an IS senior and middle manager. It sought to understand why communications between these two levels of management were so distorted and what could improve the situation. The other was between team leaders of a requirements team, a design team and a programming team. Its purpose was to explore why there regularly were problematic dynamics between roles from these functions. The latter group met only once, yet it offered many useful insights into interactions between these roles.

8.1.1.1 Manager Dialogue

The senior and middle IS manager dialogue was surprising in that the senior manager (CBAA’s MD) dominated the discussions for the three sessions and showed little interest in engaging in a dialogue or exploration. Power and seniority were on display. This was markedly different from earlier data gathering activities.

“well the problem you are raising has to be addressed like this ...” (FN-ALP-102)

“when I was in your role, or one like it, 10 years ago ... I did ... I don’t see it being very different today ...” (FN-ALP-100)

“just hold on and listen for a bit ...” (FN-ALP-101)

He would interrupt and cut across questions he seemed not to like or topics from the middle manager that were teasing out how he and colleagues communicated back in the ‘office’.

“no, that’s not the point here ...” (FN-ALP-102)

“let’s get serious, that is not what is important” (FN-ALP-102)

“I think you’re on the wrong track. I see it like this ...” (FN-ALP-102)
As discussion ensued, he completely appropriated the dialogue, making it more a monologue, with neither the researcher facilitating the dialogue nor the middle manager able to open the interactions into an exploration of experiences around communication and the difficulties experienced in practice in the work-system or this dialogue. This echoed the issues identified around communications already discussed in Chapter 5. It degraded to a telling-listening mode of interchange. It completely lost the associative quality of a dialogue, where participants say what comes into their mind, without self or other censorship of the thoughts.

Perhaps what was being witnessed was authority in action in the work-system. Those with less authority, who respectfully listened and waited for the more senior person to finish, ceded control of the discourse when the person in a more senior role sought control. Even as an external researcher, who had been in the work-system for 18 months, it appeared long enough to have unconsciously internalised how interactions went with very senior roles. The enterprise delegated authority through roles to people (Miller and Rice, 1967, Chattopadhyah and Malhotra, 1991). The more senior the role, the more authority it had.

On reflection, these dynamics were familiar, having been observed in meetings or work-group discussions during the workplace observations. Some of those interactions had been very odd: less senior staff listening to monologues that appeared to mean very little, only to be later ignored by the staff who had seemingly listened dutifully. Witnessing and directly experiencing this dynamic in the across-role dialogue, it was evident that this passive influence of authority to shut down communication also caused disagreement and dissent from subordinates. After the last dialogue session, the junior manager said, “he’s wrong about so much, but what is most wrong is that he doesn’t want to listen or think about what I’m saying”. From many observations, when the listeners (subordinates) went their own way after such discussions with managers, they often did what they thought was right rather than what they had been directed.
“we don’t know what the business will decide, so just assume it will be resolved as we want”\textsuperscript{96} (FN-A-61, manager, A&R)

“they (A&R) have said it will be delivered (requirements document) by Friday, so sit tight and let them be”\textsuperscript{97} (FN-O-38, manager, Construction)

Role-holders in authority, anxious about what was really going on, shut down interactions and thinking, and blocked communications, especially negative or unpleasant communication.

The other observation from this dialogue series was the monologue fstate of the MD and the teller-listener roles that were polarised from it reflecting tensions about knowing and not knowing.

“well I manage the department, so of all people I should know how communications are meant to go … so I’ll tell you what I think … what I expect …” (FN-ALP-102, MD)

There was systemic-anxiety about knowing, which is in the nature of IS work. The IS department was meant to know about building information systems, meant to know about finding solutions, meant to know about fixing things that were not functioning: it was meant to know. Pressure to ‘know’ was evident throughout the data. Here, the MD appeared to believe that he could prescribe how communications should occur. That he could do this without input from other parties to these communications patterns. That he could know and should know on behalf of the work-system and with omniscience about the work-system. It was unrealistic and rationalist, it was defending against severe uncertainty; the consequence of an internalised expectation to know; to know how to do or fix things, an unspoken expectation.

\textbf{8.1.1.2 IS Functions Dialogue}

The analyst–designer–programmer across-role dialogue surfaced surprising and frank assumptions these role-holders had of each other’s roles; assumptions that

\textsuperscript{96} despite historic evidence that this is unlikely

\textsuperscript{97} despite historic evidence that this is unlikely
negatively impacted working relations between roles and fuelled tensions between work-groups.

“you know we don’t really like architects or analysts much, but you seem okay … I’ve been listening to you, you seem like you get what goes on in systems … the analysts we get to work with are hopeless … name1, name2” (FN-ALP-110, TL Design)

“we work pretty similarly … I’ve never had problems with their work” (FN-ALP-110, TL A&R)

“no they’re not, they don’t know what they’re doing most of the time … they get in the way with ridiculous demands” (FN-ALP-110, TL Design)

“that surprises me” (FN-ALP-110, TL A&R)

All three presented similar dismissive, critical and negative assumptions about other IS work-groups. Equally, each were surprised that the representative from these ‘other’ groups were reasonable people, capable and engaged IS professionals.

“I’d never thought there was anybody worthwhile in requirements” (FN-ALP-110, TL Programming)

“programming has always seemed so arrogant and disinterested, you’re not like that” (FN-ALP-110, TL A&R)

It was also confronting for them to realise that the other functional groups were not working against their group, but rather had legitimate needs for the things they pushed for. When they began to see this, they realised there may not be the need for such animosity and defensiveness between their work-groups.

“it has always seemed like you’re (Requirements) working against us” (FN-ALP-110, TL Design)

“what they (Requirements) wanted made no sense to us … but I can see that now, I’d want it clearly stated on paper too if I was doing that” (FN-ALP-110, TL Programming)

There was a general recognition that there was so much about the other functional area they did not understand and that would be helpful if they did better understand. Perhaps working relations could be improved and workflows could be streamlined.
“it would be helpful for me to know more about what your teams do and why ... but it should be happening for many more staff than us” (FN-ALP-110, TL A&R)

“probably everyone has the wrong idea about a lot of things, we all need these kinds of discussions” (FN-ALP-110, TL Design)

“training’d be no good, people go to sleep in training ... this kind of discussion would be good, it has been” (FN-ALP-110, TL Programming)

“it’d cut down a lot of mess and confusion” (FN-ALP-110, TL Design)

These were experienced staff who had held roles in other IS functions; the designer had programmed, the analyst had designed. They all had degrees in information systems and had many years’ experience in CBAA. Yet they were confused about other groups’ processes and expectations. Similar confusions abounded in the work-system, fuelling criticism, inter-group conflict and anxiety.

8.1.2 Softening Hard Boundaries

8.1.2.1 Motivation for this ALP

Attention to boundaries in work-systems is important because it is through the boundary that the differentiation of ‘this group’ and ‘not this group’ is made. The boundary between groups or functions can be regulated: it is an area over which members have direct control. It is similar to the boundary drawn in psychoanalytic theory between self and other, where the clarity of this distinction determines the effective functioning of the individual (Bowlby, 1969). The management of boundaries are important, it allows the enterprise the means to establish and maintain conditions that best support its success.

In section 5.6.1.3 data about boundaries was introduced, revealing how they had become rigidly managed. The metaphor of a wall as barrier, over which things were thrown, was used. This notion of a boundary is overly simple in contrast to the functional needs of IS work. A boundary can support or disrupt the task-based relations between the work-group and other work-groups—between ‘us and them’. The boundary differentiates (1) who is responsible for the quality of
the deliverable of a work-task from those who are not. It also regulates (2) who from outside the work-group provides input to the work being done for that task and (3) who from outside the work-group has access to the deliverable and at what stages in the work-product’s development.

These three relations or forms of involvement in the work-product are distinct and can be managed quite independently. In CBAA, they were managed together as a block, with only the work-group ever having access to the work-product until it was complete. Other groups had legitimate interest in the work of the group: they could be sponsors paying for the work, custodians of an earlier phase’s representation of the BI, or subsequent users of this work-group’s work-products.

Because of input dependencies or changes from up-stream work-groups, deliverables were often delayed. As discussed, some delays were so extreme and BIs so late, they were dropped from releases, impacting the business case and future revenue. The anxiety and fear around incomplete work-products to be used by the next work-group in the ISD process was intense. This action learning project was conceived from the need to separate out the three distinct boundary relations described above into separate, open and transparent relations; with the anticipation that this would improve workflow between work-groups. It was recognised that this would likely be contingent on providing a new process for managing boundary relations and the anxiety and fear work-groups and their members had about scrutiny, review and the subsequent associated criticisms and aggression that were evident in the work-system.

8.1.2.2 Project Background

The opportunity that became available to conduct this ALP was for a project undertaking a Strategic IS Plan (SISP) for the future IS support needs of a wholesale business department within the Wholesale Business Unit of TPT. The researcher became a participant researcher for the duration of the project, 

98 see sections 5.6.1.3, 5.6.1.7, 5.6.1.15, 6.2.1, 6.2.3, 6.2.5

99 domestic wholesale (DW)
involved in the work-task as well as collaboratively developing, with other team members, ways to manage the anxieties associated with an open and porous work-group boundary with its environment and stakeholders.

This BU generated revenue of over $4 billion per annum providing telecommunications products to other companies, of whom many were retail competitors of TPT. This was required in TPT’s licence and monitored by the industry regulator. The BU had three business departments: domestic wholesale, international wholesale and international retail. All three departments were to conduct in parallel their own SISP process, each using a similar information engineering methodology (Finkelstein, 1989). The research’s project was in domestic wholesale; they had tried twice to develop a SISP, abandoning efforts on both occasions.

Using the methods adopted in this project to manage and work with systemic-anxieties, this project successfully delivered a SISP for domestic wholesale; their previous two attempts having failed. The other two concurrent SISP projects for the other two Wholesale departments, using a similar technical methodology but without the systems psychodynamics component, both failed, and were abandoned. Furthermore, the domestic wholesale SISP was used to secure approval for $100 m in new IS investment for the department. Within three months of the completion of the SISP, work had begun on four of the six IS projects identified in the SISP. This was credited to the extensive participation in this enhanced SISP process of (1) business executives, who, having more SISP knowledge made the IS investment decisions in a shorter timeframe; (2) IS development staff, already having detailed understanding of the SISP and its recommendations, more easily taking up their project's work-tasks.

8.1.2.3 System Psychodynamic Component Enhancing the SISP

An open boundary approach was taken by the SISP work-group with respect to the SISP task. This approach encouraged any interested role-holder in the

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100 both previous attempts had only used a technical methodology, without any engagement process such as a systems psychodynamics component
Domestic Wholesale work-system to attend any working meeting of the SISP-project, observe the meeting and say their piece about what they saw as wrong or missing. The only rule these visitors were asked to respect was ‘if they had an issue or problem with something the work-group was doing, they would first discuss it with the work-group and its manager and give the group time to consider the issue and respond to them’. If the visitor still remained dissatisfied after the response, they could then escalate the concern beyond the SISP work-group.

In the early weeks of the project, many ‘visitors’ attended the working-meetings and many views were collected. They ranged from very satisfied to very concerned about the aspects of the SISP’s work of interest to them. Concerned comments:

“we don’t like what you’re doing making billing so much more complicated, it’s unnecessary” (FN-ALP-157, SM, Wholesale IS)

“you are not taking reporting from these existing systems into account, explain” (FN-ALP-156, SM, Domestic Wholesale)

“I’m not happy about the impact on customers in ordering services online” (FN-ALP-161, SM, Domestic Wholesale)

“we’re just watching ... to make sure our concerns are addressed” (FN-ALP-158, TL, Wholesale IS)

These were very civil expressions of the aggressive attacks some members of the Domestic Wholesale IS group was renowned for.

“that bunch of ‘boys’ have attacked every initiative my teams have tried to progress ... they obstruct and destroy” (I-63, SM, Wholesale IS)

“we lose people to the petty and spiteful attacks that go on here” (I-64, TL, Wholesale IS)

“yes, well as you (researcher) say, there is a reputation for rough play ... but they still keep the business ticking over” (I-60, executive, P&IS)

Historically, the latter would have signalled the tone of the attacks going on behind the backs of the SISP-team, but they appeared to the researcher and to other SISP-team members to not be happening outside of the working-meetings.
There were many aggressive outbursts in SISP working-meetings from invited participants and visitors. These were worked through in and after the meetings and exacted a draining emotional toll on SISP-team members. The attacks usually appeared to be another team or manager criticising or trying to discred the SISP-team in an attempt to shore-up their existing areas of control and influence.

The domestic wholesale BU was described as being highly political.

“managers here (DW) are more likely to pursue what is right for them and their allies rather than what is right for the department ... it won’t be against the department, just what is best for them and theirs first” (I-71, SM, P&IS)

“a lot of turf wars here, they play pretty hard and nasty ... we (team members) try to stay out of it” (FN-ALP-121, analyst)

It took many weeks for parties interested in the SISP and its outcome to recognise that the SISP-team had a single agenda, to complete its work-task; rather than a political one. The SISP-team did not try to secure more power and resources for the senior manager controlling the SISP-project. The work-task was the work-group’s grounding reference point. The work-task was the orientation for their decisions, actions and behaviour. This was eventually recognised by others as the SISP-team worked respectfully on the concerns brought to them about the SISP. Over the months, a number of their findings also implied shifts in resources away from the senior manager overseeing the SISP; shifts appropriate to the needs of domestic wholesale. Progressively the SISP-team became regarded as honest brokers. For many managers in that highly political and envious work-system, having managers and a team putting their work-task ahead of their own interests was confusing.

“I don’t get them at all ... other teams you know what they are after, but nothing they do makes sense” (FN-ALP-123, PM, DW-IS)

“well I suppose they’re doing their job, but they’re doing themselves out of a job too” (FN-ALP-127, SM, DW-IS)

“we trade-off stuff with most people ... you get to know how far you can push, how much they will give and for what. But these folks, I’ve got no idea” (FN-ALP-124, manager1, DW-IS)
“one of them said to me ‘if I really believed the SISP was the wrong thing to do, we should discuss cancelling it with the Wholesale MD’. I can’t do that, I don’t want it but going against the business isn’t smart. It’s a clever approach ... yet they’re not smug about it” (FN-ALP-121, manager2, DW-IS)

In the early stages, the SISP-team and members were very exposed to criticism. In their typical (non-system psychodynamically informed\textsuperscript{101}) frame of working, the pressures and tensions were on the other roles and work-groups with the responsible work-group withholding access. They would have been anxious about the findings of the SISP and any threats those recommendations may pose to their areas of control. The SISP-team would have felt safe behind its boundary wall. However, in this action research intervention—this work-system experiment—the SISP-team’s boundaries were transparent and open rather than a walled fortress: differentiating various forms of interaction with other work-groups and roles rather than the typically CBAA unitary relation.

This differentiation of relations aimed to 1) locate delivery responsibility with the SISP-team, whilst 2) ensuring open access to and contributions from parties that felt threatened by the SISP process and recommendations, 3) providing open access to the thinking forums of the SISP to subsequent work-groups who would build from this work-product, and 4) open access to business and IS roles and groups that had some of the information needed in the SISP to make it an effective representation of the high level IS requirements of the Domestic Wholesale department.

Members of the SISP-team were very anxious about being so highly exposed, visible and scrutinised. They felt vulnerable and exposed to being misunderstood and unfairly criticised by other work-groups or their representatives.

“they (DW-IS project team) have a crack every day, as you come in, leave your desk, in meetings, over coffee ... it’s exhausting, depressing ... not getting aggressive and angry back is the hardest thing” (FN-ALP-126, analyst1)

\textsuperscript{101} as seen in work-group vignettes in Chapter 6
“they hang shit on me, and others ... they lie about us, they lie about what their projects have done, they just lie ... I'm pretty sure they're worried their crap work and deceit will get discovered” (FN-ALP-125, analyst3)

“she was crying because what they said, three of them cornered her and said awful things ... about her, the team, our managers, our work ... they have execs for friends, they're safe – bastards” " (FN-ALP-122, TL)

“I get really fed-up with it, the criticisms, the aggression, the pointlessness of it. I think they want to wear us down so we’ll fail or go away” (FN-ALP-122, analyst2)

“we're a good team, technically good at what we do, they're political, they think anything is fair game” (FN-ALP-126, manager)

The work of managing this new process of engagement with stakeholders of the SISP-project required intense efforts to have ‘visitors’ work in accord with the new process. This entailed many extra meetings to hear ‘visitors’ issues and complaints and to work through those with them as had been undertaken at the project’s beginning. This was done by the SISP manager and the SM he reported to. Containing the broader DW anxieties about the SISP initially took many tens of hours each week.

There were meetings to assist visitors and stakeholders to appreciate the new approach and to be patient with it; to contain their propensity for criticism or to discard this new process they did not yet understand, trust, or appreciate.

Regular twice-weekly meetings\(^{102}\) were in place to help members of the SISP-team reflect on, reality-test and formulate coping behaviours to the perceived attacks on them by visitors. SISP-team members could reflect on and explore their work experiences in this new mode of working; working within a systemic framework rather than the usual, highly personalised interpersonal framework, exemplified by such comments as: ‘she doesn’t like me’, ‘he is a waste of space in that job’, ‘I don’t get on with them’, ‘Fred will not get along with Joan in that setting’. The systemic framework of systems psychodynamics allowed them to think beyond the interpersonal criticisms and blame that were hurtful and emotive.

\(^{102}\) a reflective meeting could be called by any SISP-member if they thought it necessary
The systemic framework of work-groups, work-tasks and roles allowed team-members to locate their experiences of work, and their thoughts and feelings about it and other participants, within the work-system rather than just as interpersonal difficulties. This enabled an understanding that the tensions and problems arose from the dynamics of the work-system, often amplified by work-groups, which provoked irrational reactive behaviours that disrupted work-task performance. It was through such mechanisms that CBAA and DW-IS propagated blame and criticism as defences against systemic-anxiety. Countering this in this project took i. extensive management of work-group boundary and engagement with environmental stakeholders, and ii. intense intra-group work and reflection to cope with the emergent anxieties. Both approaches ameliorated anxiety.

8.2 Minor Action Research Impacts

8.2.1 Reflecting on Work

“I’ve never thought about what it is like to work here before … in its totality, it’s been really helpful” (FN-1-20, analyst, A&R)

Nine of the interviewees offered this type of sentiment at the end of the interview. It speaks to how hard it was for CBAA personnel to find time and mental-space to reflect on their work. In the time pressured, complex setting, they were focused on what was in front of them, be it challenging or painful. To realise they could perceive and consider more about their work and that it be meaningful to them, was a new notion. The action research appears to have refreshed this for some participants.

8.2.2 From Persecution, to Thinking, to Holding

“Nobody listens to us, perhaps what you are doing will make them think about it and change how releases go” (FN-1-40, manager, Testing)

This speaks to the hopelessness felt about the compression of system testing for a release and the impacts this had on testing staff. Whilst the action research did offer a new channel for information about their situation and the bottleneck in
the ISDP to reach CBAA senior managers (through the reference-group), it showed that other paths of communication may be available.

“someone to witness what is going down here ... perhaps we can’t change it but it’s being seen ... the crap is easier to take thinking something about it will get back to management” (FN-I-13, architect, A&R)

This meant that management could come to know something about the pressures on staff and their impacts, something new that management had not known to that time, perhaps things that historically had not been able to be known through the existing management structures and orientation.

“what I’ve learned is that thinking is very important ... thinking before acting, before we make mistakes ... not too much, but enough. We’ve placed more emphasis on acting in the past ... I insist on it (thinking) from my team leaders now, and also with peers ... we move off to our work with better clarity. Work seems to go more smoothly too ... perhaps we’re more effective, how could you ever know with all that goes on here. But I think we are” (FN-A-134, manager, A&R)

The capacity to think rationally, for action, in the face of all the unsettling aspects of the experience of work was recognised by this manager as important to their capacity to engage realistically with the work-system and the challenges of their tasks. The quote recognises something about thinking that has been learned-from-experience. It recognised that in role, or for work-groups, or for management, thinking and remaining engaged in the thinking process, despite experiencing confronting feelings and anxiety, was an important capability for the individual and the larger human system. Klein (1946, 1997) described this state of mind as the depressive position, the place where people can engage with the reality and the possibility of their situation, a place where inner world and external realities can be considered in relation to each other and learnings made. When feelings and anxiety are able to be contained by the human system rather than fragmenting it (Bion, 1970), thinking for action\textsuperscript{103} rather than emotionally re-acting becomes possible. The thinking processes can hold in check the reactive impulses born of the work-system’s dynamics, pressures and anxieties.

\textsuperscript{103} thinking for task
From a thinking state of mind, staff can assist their work-group to think rather than react. Such actions are likely to improve work performance.

“having him (the researcher) watching, do you think it makes us more thoughtful, I do. Being observed, is this what I want to be known about me professionally ... it reminds me to do better” (FN-O-82, analyst, A&R)

“yeah, it does I suppose, it’s like someone is actually taking an interest in what we do ... he sees our efforts and our troubles with all this stuff” (FN-O-82, TL, A&R)

On occasions when the workplace-observations moved into the awareness of those being observed, paranoia was never overtly evident\(^{104}\). In this case, the observees were experiencing a positive transference from the observing presence of the observing researcher. It seemed to be experienced as a benevolent, even caring presence; being held in mind with positive regard, having their work-life witnessed. Linked to this was their realisation that it reminded them of that part of their professional self that wanted to be its best.

This has resonance with the 1920s Hawthorne Experiment, which emphasised the socio-psychological aspects of human behaviour in groups and enterprises (Mayo, 1933, Parsons, 1974). When workers knew they were being studied, when someone was taking an interest in their situation, it had a positive impact on their work performance and output. This is a form of psychological holding (Winnicott, 2005), where the observer symbolises to the observed, that part of themself better able to cope with the anxieties of the work-system.

“some things we have to work through as a group, they can’t just be delegated and approved” (FN-A-132, SM, Production)

8.2.3 Reflecting on Managing

The CBAA-Council’s principal way of working was that nearly all solutions were formulated outside of the management group’s meetings, through a series of bilateral relations between managers. These solutions were then endorsed (or not) by the council. They rarely engaged in the robust discussions necessary to

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\(^{104}\) paranoid response had been anticipated as a possible response by some staff to extended periods of observation, but there were no signs of paranoid, angry, persecuted responses to the observations
formulate solutions in the council meetings. For such a meeting of managers working together to find solutions to organisational problems and to choose one to act on, required the capacity and willingness to tolerate a range of ideas, some of which may have seemed wrong or been confronting to one or more of them; as was the case to those involved in the reference-group. But such behaviour, when reactive basic assumption behaviours could be contained, allowed learning in the group and of the group to occur, increasing the group’s capacity to cope with and survive discord and conflicts.

“as a manager, I have to push back on the ridiculous demands, things that can never be achieved, it is possible” (FN-A-135, manager, A&R)

This manager, through reflections on the working-note, had come to recognise that their and their work-group’s reality, experience of work, mattered and needed to be expressed and to be available to the IS work-system’s decision making forums. Blindly accepting direction that was incongruous to the situation the group was in, supported the existing distorted views of work progress and would likely create further discord between work-groups and disruption to the ISDP.

“I’ve been working with my teams differently since the working note, it makes a difference knowing what kinds of stuff is in the background ready to push teams over the edge ... I have no real evidence, but I think they are working more steadily, getting more done” (FN-A-136, SM, Testing)

Recognising that information from the working-note was useful in managing the pressures work-groups were facing; that reflexive data, interpretations and working-hypotheses could make a positive contribution to managing work-groups, increasing their performance and reducing disruption and anxiety.

“working like this has real possibilities ... most people expected the SISP to be abandoned, but it has succeeded. Other managers just haven’t been able to obstruct it like they usually would. I don’t really understand how ... but I want to” (FN-A-209, SM, Wholesale IS)

This senior manager and one of her direct reports enrolled the following year in a masters degree in applied systems psychodynamics. Post graduate study was not something either of them had planned to undertake prior to the SISP project.
8.3 Action Research Variations

As discussed in Chapter 4, action research (AR) is an adaptive method. It is reflexive, within each cycle re-evaluating the correctness or relevance of the research question, purpose or goal in the light of the data and findings to date. This research began with an enquiry into the effects that group dynamics had on information system quality. What was evident in the first AR cycle were the effects that group dynamics had on the process of IS development, the process responsible for high or low information system quality. It became clear that what occurred in the ISDP was a critical determinant of IS quality. Whilst this was a clear decision, it was arrived at gradually through the micro adjustments within a cycle that interpretivist (Burrell and Morgan, 1979), clinical research (Berg and Smith, 1985), in an action research framework, enables. Thematic questions and threads of questions were refined. No questions were dropped, but their emphasis changed in light of the growing knowledge about the work-system.

The decision to move predominantly into observations in the second stage of the research, rather than more interviews, was a re-evaluation of the AR with the reference-group. It seemed that the research plan’s extra cycle of interviews was over-engineered. It also recognised the changing circumstances of the research-host. At the end of the first year, it was clear that CBAA and P&IS were being radically reshaped. The reference-group faced the very real prospect that the research-host in the form it was known, would disappear. This proved to be the case. Being able to adjust the research design as part of the research methodology was vital to adapting to the changing circumstances of the host and continuing to enquire, understand and conduct interventions to address some of the challenges posed by the IS work-systems dynamics.

8.4 Summation

The action research was a secondary, temporary structure in the work-system. It had a task to enquire, interpret and inform the primary structures of the work-
system, then to disappear. It provided ‘new’ information to the work-system about itself, it modelled alternative ways to engage with information, work-groups and roles, and it showed new interventions to mediate disruptive work-system dynamics.

The work-system could in the future re-activate a similar temporary structure; to again enquire, interpret and inform about realities not obvious or visible to management in the heat of realising the IS development’s primary-task and performance goals. The action research provided reflexive capability to the work-system and a capacity to identify interventions to ‘improve’ the psycho-social dynamics disrupting the work-system. The idea of ‘temporary’ was and remains important: any such structures as permanent features could overwhelm or exhaust a work-system with reflexivity.
Chapter 9  Conclusion

This thesis has explored the connection between IS performance and the dynamics of work-groups participating in the IS development process (ISDP). It has looked at conscious and unconscious dynamics of this process, and sought to understand the group dynamics of very large, complex enterprises. The research has shown significant evidence for the presence of systemic-anxieties in the IS work-system and that systemic-anxieties negatively disrupt, for periods of time, work-groups’ task performance as they react to threats perceived to challenge their immediate survival. Basic assumption mode behaviours (Bion, 1961) temporarily reduce the scope of the thinking and work-task performance of the IS work-groups. Individuals and work-groups become distracted in their thinking and engagement with reality when confronted by strong emotions and anxiety in their experiences of work.

Shifting a group’s mentality or state from unconscious, defensive re-action to thinking for considered action, with its evenly considered attention, is critical to returning work-groups to productive participation in work-tasks. Thinking with attention on the work-task is the antithesis of the distracted thinking common to a state of uncontained anxiety.

There is a keen interest in identifying the factors that characterise problems in the IS development process and IS project failure and in finding generalisable solutions to them. This seemingly reasonable hope is naïve. It is consistent with rationalist views that everything can be known and solved; also with the research finding that not-knowing causes anxiety. Most work-groups involved in the ISDP struggled at times with the group dynamics and systemic-anxiety in CBAA. What was disrupting work at one time would not be the same thing that disrupted work at another time. These psycho-social factors appear not to be generalisable at the object-level. This object-level is represented by the symptom—the dysfunctional group behaviour, the presenting problem and the cause. But what was common across symptoms was that they were reactions to experiences of strong emotions by work-groups and the associated intense
anxiety. At this meta-level, the presence of uncontained systemic-anxiety was the generalisable psycho-social factor that could be attributed to IS development failure.

Had these dynamics been conscious and available for thought by management and work-groups, it is likely they would have been fixed. These dynamics were either unobserved or management was unconsciously, collusively caught up in them. Solutions to known problems can generally be found, trialled and deployed. Awareness of these unconscious dynamics, and the problems they caused, was unavailable to the work-system, management and work-groups to think about or to formulate solutions. The unconscious aspects of work have to be made available to the rational thinking processes of the work-system. This is what systems psychodynamics seeks to explore and do in work-systems (Armstrong, 2005) such as CBAA.

What this research has identified was that:

1) emotion and anxiety are inevitable by-products of the experience of IS work, which cannot be stopped from emerging but neither should they be feared

2) emotion and anxiety do affect the attention and engagement of IS work-groups on their work-tasks

3) when the anxiety-load is too high, work-groups protect themselves from those threatening experiences. They stop doing their work-tasks and do things that support their distressed state; defensive, non-task things to manage the anxiety, distress and survival

4) in this state, they are unproductive and not performing their work-tasks or building their deliverables

5) they will stay in this disrupted, underperforming state until the anxiety load in their work-system lessens or until their resilience increases.

The research questions sought to explore such dynamics. The answers found are drawn together from the discussions in earlier data chapters.
9.1 Answering the Research Questions

9.1.1 Primary Research Question

This research question underpins all other questions.

Do the unconscious dynamics of work-groups affect the process of information system development?

Chapters 5 to 8 presented dynamics within and between work-groups that disrupted the IS development process. Chapters 6 and 7 demonstrate these dynamics are likely to be below the level of conscious awareness of group members or the work-group. The conflicts, blame and disruption that work-groups often caused were rarely done so intentionally. Generally, they were the consequences of reactions to the threatening feelings and anxieties groups experienced in the IS work-system and from their work-tasks. In Chapter 8, the second action learning project showed that such defensive, reactive behaviours of IS work-groups can be contained and moderated, allowing work on the task to be re-established.

9.1.2 Second Research Question

Are there unconscious dynamics that affect work-groups involved in IS development and are these work-groups affected by anxiety, leading them to exhibit defensive behaviours in their work setting?

Chapters 6 and 7 described some of the many examples in the data of defensive behaviours that were commonplace in CBAA. Examples broadly consistent with basic assumption mode of group defences (Bion, 1961) and social defences (Menzies, 1970) were highlighted. The systemic-anxieties and the pressures and tensions that provoked them were discussed across the four data chapters. The next four sections: joining with the enterprise’s purpose and narratives; the intensity of anxiety in IS development; the unsettling state of not-knowing; and the link between anxiety and thinking, endeavour to bring together many of the research findings.
9.1.2.1  *Narratives and Joining*

The stories work-groups tell to themselves explain their experiences of work, they are central to how narratives and identity are built up in a work-system. They are part of how meaning is formed and communicated through the work-system. Meanings were contested and negotiated between work-groups. Eventually certain narratives and meanings came to dominate. How inclusive they were of the whole system depended on whether they were not just accepted publically, but also accepted privately, outside of the ‘public view’. Dominant narratives form and carry the collective identity; as with CBAA’s "we deliver". This had implied values of on-time, within-budget, and to-scope. The dominant narrative pushed out lesser narratives, important only to sub-groups.

Narratives played an important part in representing and transposing meaning across the work-system. This dissertation has considered the negotiating of meaning across the complex and diverse landscape of IS development with its varied work-groups. In its most primitive form, how a business idea is developed into information systems depends on the exchanges between the work-groups as it was passed from one group to the next, each with their different technical interests, expectations and needs. Strained inter-group relations could adversely affect the clarity of what was exchanged. In this way original meanings went awry, with the built system not meeting the original business idea. This was one of the problems that occurred when work-groups’ thinking, ideas, and meanings were disrupted by systemic-anxiety.

Narratives contribute to the process of joining, where people join an enterprise and identify with it to varying degrees. Once joined, the enterprise usually pays them an income, contributes to their status and purpose, and provides them with opportunities for realising their potential. This identification complements their individual identity. But things happen that challenge the identification with the enterprise: a reorganisation, a manager changing their focus from quality to profit or a trusted peer leaves. Such events challenge the ongoing process of re-joining; where the often unconsidered choice of remaining affiliated with and a member of the enterprise or group is made.
These are psychological testing points, which are largely unconscious, around events that challenge identification with the enterprise and its purpose, such as when a staff member is not sure they agree with a particular direction the enterprise is taking. This was seen in the dissonance between the CBAA “we deliver” narrative and the experience of system-testing staff. As other IS teams failed to deliver code on time, system-testing were expected to work nights and weekends to catch up for these earlier failures of other work-groups, in order to deliver the release on time. This sorely strained their identification with CBAA. Re-joining is not guaranteed. Often members withdraw, in mind or body.

The narratives are important, but if they are not inclusive enough, tensions emerge. Purpose was important for many staff. Where the work-system’s purpose did not fit with individual identity or values, physical or mental withdrawal from work-tasks eventuate. Joining is more specific and nuanced than the idea of the psychological contract (Chapman, 1999) in employment. Joining, and remaining joined, involves unconscious as well as conscious meanings: it engages the symbolic, with narratives and their symbols propagating the unconscious motivators for remaining joined.

When a person joins an enterprise they delegate their authority-to-act to the enterprise for the time of their employment; e.g. 9am to 5pm, five days a week. The enterprise, through the role it assigns them, re-delegates that authority-to-act at work back to them: e.g. a manager, leading certain groups, staff and functions; or a cleaner, in charge of keeping areas clean. They exchange their authority to act for a given period of time to the enterprise and it reallocates a quantum of authority to act in its name back to them (Chattopadhyah and Malhotra, 1991). Such authority can be misunderstood, misused or unconsciously corrupted by reactive defensive behaviour.

9.1.2.2 IS Development as a Hyper-Anxious Setting

CBAA can be conceptualised as a hyper-anxious setting. It regularly had intractable tensions between work-groups. There formed an over-sensitivity to
disappointment and to blame amongst the IS and business groups. The turmoil of delays mobilised aggression, and to counter this, a cascade of passive or aggressive actions ensued. Over extended periods of time, many groups became highly vigilant and guarded, expecting criticism, blame and attacks from others. This heightened vigilance and sensitivity contributed to CBAA’s over-anxious disposition and cautiousness that resulted in checks on performance.

Three other factors contributed to the intensity of emotion and anxiety in the work-system: ambiguity, task and technology complexity, and huge development costs. Each created their own set of realistic worries and anxieties, but when they peaked together, they amplified the intensity of emotions and anxiety, creating a hyper-anxious work-system.

IS development is often considered a purely engineering process, that it can be defined clearly and ‘known’ (Hirschheim et al., 1995); this view was active in CBAA. In reality, IS development is messy, unclear and ambiguous. The meanings of an initiating business idea invariably mean different things to different participants: product-manager, user, business executive, requirements analyst, designer, coder, tester. These meanings sat on the shifting sands of volatile market conditions. Such ambiguity applies to other objects in the software development process such as concepts, plans and progress. Distortions and variances in meaning must be resolved if IS work is to meet business expectations. Ambiguity consumes time, produces strong emotions, and generates high levels of systemic-anxiety.

In this case study, IS work occurred in a very complex work-system of work-groups, roles and technical tasks. The work produced complex sets of documents describing the system changes for a software release; including changes to the already complex interrelationships between systems, business initiative, and business units. This affected 130 information systems in a myriad of ways, with thousands of data interfaces between this agglomeration of application systems and technology platforms. It was an extraordinary, complex setting.
The cost of IS development is very high. In this case, around $1 billion was spent each year on new software development for 100-150 business initiatives. There were further costs associated with maintaining and upgrading computer hardware.

Separately, each roused significant worries and anxiety for the groups trying to control and co-ordinate IS development. Combined, they made for extreme flash points in emotional distress in IS work-groups and the inevitable effects of increased anxiety, group defensive behaviour and dysfunction, negatively affecting IS performance. Its inability over extended periods of time to bring these situations under control suggest that CBAA was operating beyond its capacity to manage complexity and client expectations; possibly trying to operate beyond the edge of human capacity to organise complexity.

9.1.2.3 Knowing, Not-Knowing and Coming to Know

There was a strong disposition in CBAA towards knowing: having solutions, answers, and ways forward. CBAA worked from a rationalist and engineering framework. IS development was considered certain and knowable. This was an illusion created using methodology and other tools as a form of social defence (Wastell, 1996). IS professionals are in the business of technical solutions.

Answers require knowing: why did that happen? What to do now? How to do it? They and their business clients expect them to have answers. Not-knowing was disturbing. It caused anxiety which in turn disrupted processes of ‘coming to know’; a ‘negative capability’ (French, 2001) that requires being able to sit with uncomfortable feelings and remain focused on the work-task. Demanding that “we must know”, in the face of not knowing, is a product of a paranoid-schizoid state of mind, anxiety and defensive grasping for certainty. The view “we don’t know, but perhaps we can come to know” in the face of not-knowing, comes from a depressive state (Klein, 1975) of mind, where anxiety is contained and the work-group is able to attend to the work-task, think and tolerate competing ideas.
History—an enterprise's past—is important (Bolas, 1987) because it fuels many of the unconscious dynamics of the work-system. People and groups become stuck (in their inner-world) in the past through long formed defensive routines (Argyris, 1990) and nostalgic distraction; the consequence of uncontained anxiety in the present. Understanding current dynamics, with their progenitors, presents opportunities for staff and work-groups to come to know new things and to shape new actions that transcend their past.

9.1.2.4 Thinking and Anxiety

A work-group gripped by systemic-anxiety and having shifted into a basic assumption mentality, in its extreme is analogous to the paranoid schizoid state of mind in an individual. In this state, processes of attention and rational thinking are severely impaired. The group becomes rigid and fixed in its views, unable to compare, contrast or amend its views on task matters whilst in that state. Thinking is critical to engaging with the shared reality of work situations. Attending to the emotional experience of group and work-life, whilst not being overwhelmed by it, enables more realistic engagement with shared reality; the possibility to solve the problems presented by the organisational terrain.

9.1.3 Third Research Question

Are rationalist engineering processes by themselves sufficient to control and manage large complex IS developments to successful conclusions?

The chronic nature of IS project failure, that it has continued at very high levels over many decades and that it has occurred across all industries (Yardley, 2002), is a clear indication that the rationalist approach (as it exists currently) alone is insufficient. Even with the automated tools and methods, these disasters continue (Dwivedi et al., 2015a). IS research tends to look myopically at the problem element by element, from a single area of expertise (Eliot and Mark, 2012). As reasonable as these views are, they miss out on something fundamental. There are limits to what can be done about improving parts of a whole. Holistic
sense making and solutions that include the whole IS social-system are missing from that fragmented view addressing individual technical parts. There are notable exceptions in case analysis (Janssen et al., 2015) and theory (Lyttinen and Newman, 2008).

This study provides such a holistic view of dynamics and dysfunctions in an IS department. It demonstrates the constructive impact such holistic solutions can have. Despite the inability of rationalist approaches to reduce the level of IS project failures, the control and co-ordination of IS development without these tools and work practices is inconceivable. They are insufficient but also critical to order. To improve effectiveness, they require augmentation with other approaches such as systems psychodynamics.

9.1.4 Fourth Research Question

*With an understanding of the unconscious dynamics affecting the work-groups of an IS work-system, can this understanding be applied to mitigate these dynamics and improve the information system development process?*

The insights into the CBAA work-system developed using the systems psychodynamic perspective were shown in the research’s second action learning project (Chapter 8), to provide sufficient understanding of the dynamics and the underlying causes in the structures of the IS work-system to successfully change project conditions and work design, to contain anxiety and mitigate many of the causes. When the dynamics were understood, they could be addressed, improving IS performance and deliverable outcomes. The action learning project interventions were substantial, yet being limited by the scope of the research, they did not address all identified intergroup problems.

9.2 Thesis Contributions

This section considers the contributions made by the research discussed in this dissertation.
9.2.1 Thesis Contribution to Systems Psychodynamic Theory

1. Recognising the significance of depressive anxiety (guilt and reparation, what we have done to others) on the anxiety-load in a work-system and its contribution to defensive behaviours of groups. Differentiating it from persecutory anxiety (what has/is done to us). Not conflating the two is important in understanding the nature of a work-systems’ unconscious dynamics. The feelings associated with the experiences of being the persecutor\textsuperscript{105} or of being persecuted both contribute to the anxiety-load of work-groups.

2. Knowing what work-group members are feeling is of limited benefit in itself. It may cause a focus on humanistic emancipation and freeing staff from distressing experiences at work, rather than clearing obstacles to work-task performance. Understanding what provokes the anxiety (systemic cause to the symptom) that overwhelms members’ and groups’ capacity to concentrate, think on task, and do their work-task is critical to crafting interventions that clear disruptive, defensive behaviours and move work-groups back to task focused action.

3. The capacity of the work-group to think on the task rather than follow distractions or mindlessly familiar patterns, is central to ongoing work-group performance.

With respect to the psychodynamics of groups, since the data was collected for this study, there has been much written on anxiety and defences in enterprises and work-groups. The principal focus has been exploring case studies (Boxer, 2015, Fotaki and Hyde, 2015). There has been some development of group and social defence theory (Armstrong and Rustin, 2015a). Most notable is the work of French and Simpson (2015) which reorients Bion’s theory of groups to be less focused on dysfunctional group behaviour and more on the factors present when

\textsuperscript{105} these are often somewhat delayed from the persecuting action
groups work well. There has also been development in enquiry and intervention methods (Long, 2013).

4. Knowledge-workers (most managers and staff in this case) are not factory workers: they are engaged cognitively and psychically quite differently in their work. Socio-technical systems (STS) theory originated in the industrial era before that of knowledge-work. Pava (1983) began a process of reinterpreting STS for the emerging information economy, but this work has had limited application. STS would benefit from further enrichment, perhaps recognising the importance of purpose in enterprise design and in motivating staff to joining with and engaging in the enterprise and its goals.

5. Purpose was important to staff in the case study. The primary task of the enterprise (what it must do in order to survive) is central to STS theory. It facilitates the understanding of structures and their fracture points. But purpose appears to be very important also. There can be a sense of tyranny from the primary task; having little choice as it must be done in order to survive. From the case data, survival is a poor motivator for task involvement. A sense of purpose, the enterprise’s purpose (its raison d’être), offers the possibility of engaging and motivating staff, and mobilising their ongoing rejoining (strengthening their affiliation) with the enterprise around meaning and identity: ‘what we are here for’ rather than simply ‘what we do’. A new concept of purpose may be called for: primary purpose, what the enterprise stands for or is here for in practice and in the minds of its members, rather than just what it must do.

Various practitioners and researchers have used STS in IS research (Griffith and Dougherty, 2001) and other areas, including organisational design and change. But for the most part, there appears little in the literature that uses or expands STS theory: it appears to be in stasis. It still provides a powerful framework for analysing and designing work organisation. As group psychodynamics papers further emphasise identifying problems in groups and providing psychological solutions to them, the organisation design strengths of STS theory seem to fall
into disuse. STS theory and group dynamics (basic assumption and social
defence) theory have never been adequately integrated. STS theory could be
falling from the system-psychodynamic cannon, replaced by a minimalist view of
systems theory. If this shift is taking place, systems psychodynamic’s connection
with the technical dimension of work and the interplay between task and
sentience is lessened.

Actor Network Theory has its roots in STS design (Walsham, 1997). It is
concerned with the social construction of technology (Howcroft and Wilson,
2004). STS writings still endeavour to bridge the inherent tensions of technical
work design with human agency to resolve this fundamental split in the nature of
modern work. Stacey (2010), a proponent of complexity theory in organisation
and human agency, considers systems based theories problematic because for
every system there is a super-ordinate system that defines the system’s
characteristics and limits. He theorises about the dynamics of individual and
group interactions and reactions using complex responsive processes (CRP). It is
useful for sense-making, but lacks structural links back to the enterprise’s actual
organisation necessary for making actual interventions.

Despite this imperfection, STS theory has provided this research with a robust
framework from which to understand the complexity, interdependency and
human agency in technology dependent enterprises. The STS perspective
enabled the structural tensions in the IS department and the disruptions they
caused in the ISDP, to be better understood.

9.2.2 Thesis Contribution to the IS discipline

Wastell (1999) identified the need for research into the psychodynamics of
groups in IS organisation and projects. This research has progressed that cause,
describing the impacts of anxiety and showing that it can be managed. What has
been identified is:
1. Systemic-anxiety does exist in IS work-systems and is a by-product of IS work.
2. The dynamics of the IS work-system does increase the anxiety-load of IS work-groups.
4. Things can be done to reduce the anxiety-load and to ameliorate anxiety in the IS work-system. This can improve performance and output.
5. Things can be done to increase the anxiety tolerance of IS work-groups.
6. The health and quality of intra- and inter-group dynamics and interactions are clear indicators of near term work-product quality and task performance.

Beyond this, findings about the IS discipline have coalesced into three areas: co-creation of information systems, temporary enquiry structures, and IS research approaches. These are discussed below.

9.2.2.1 Co-Creation of Information Systems

Adopting co-creative partnering, with shared Business-IS accountability for major IS developments would be likely to improve IS delivery success. This idea of co-creating of information systems, draws on Benjamin's conception of intersubjectivity as “a relationship of mutual recognition ... in which each person experiences the other as a ‘like subject’, another mind ... yet has a distinct, separate center of feeling and perception” (Benjamin, 2004, p5). It recognises that the object of our actions, needs, feelings, and thoughts is another subject; another equivalent centre of being. It transforms the interactions between subject and object, between the doer and the done to. Instead, subject-to-subject relations, requires people or work-groups to actively recognise the whole of the other’s subjectivity, rather than split it into good and bad part-objects and relate to the other in defended ways; as if it was only that part-object.

The notion of submission is found in what Benjamin calls complementary structures (2004, 1988). It occurs when conflicts between groups are not processed. This was common between IS groups and IS-business relations in the study, the conflict emerging as unresolved opposition (tit-for-tat). The struggle is to get the other to submit to one's views or wishes. In complementarity, the
parties fail to accept their own contribution to the situation, resist taking responsibility, and blame the other for the situation. Business units regularly sought to enforce IS’s submission on delivery issues through the BU’s power dominance, or by IS seeking to enforce the business’ submission through its technical dominance. Business units off-loaded responsibility for realising information systems onto the IS department. Whilst IS did have the technical expertise, they were dependent on the business for so many critical elements that were often withheld or ignored by the business. This contributed to many IS failures.

These submission-dominance dynamics obstruct engagement with reality and finding realistic solution to the problems of delivering information systems. From the intersubjective frame, where both subjectivities are equivalent, complementarity disappears. Whilst idealistic, intersubjectivity offers a different perspective or state of mind from which to engage in co-operative actions.

The challenge is to move the protagonists from the unresolved conflicted relations of complementarity to those of intersubjective, co-creating partnerships. It is from this state of mind and relatedness that group representatives can collaboratively contribute to and shape a co-created reality (information system) and take joint responsibility for it. The patterns of complementarity are replaced by the simultaneous patterns of ‘create’ and ‘surrender to’. This is a process of improvisation. Negotiation and renegotiation of interactions and expectations are an accepted part of the mutuality of intersubjective relations (Benjamin, 2004) and are needed for IS development to regularly succeed.

9.2.2.2 Temporary Enquiry Structures

The various stages of this research were examples of temporary enquiry structures. They exist with task and purpose for a limited period of time, then they are gone. They are not part of the permanent organisation structure of an enterprise. They are temporary learning institutions: once what is sought is
learned, the structure and its elements disperse. The research case study was a temporary embedded structure. It had a finite purpose and time-span, and did not physically impose itself into the ongoing organisation structure.

Temporary enquiry structures can be used to assess the dynamics and work-health of work-groups and feedback these learnings. They can address work issues needing specialisation and skills transfer, and provide education about a work-system’s dynamics. They would be deployed as ad hoc responses to crises or intermittent work-group health-checks.

9.2.2.3 IS Research Approaches

Concern and anxiety about the IS field, the scope, and the purpose of research (Walsham, 2012) emerged in the IS literature over the past fifteen years. IS research has been dominated by rationalist views (Orlikowski and Baroudi, 1991). As access to information systems becomes more pervasive with small, smart terminals everywhere, it affects more things and involves more stakeholders with diverse concerns and interests. These pressures have the potential to confound or enrich IS research. Orlikowski and Iacono (2001) suggested the IT artefact\textsuperscript{106} was not defined clearly enough. Benbasat and Zmud (2003) proposed a quite narrow and controlled perspective of IS research and its target, prescribing a strong engineering, rationalist orientation to IS research. Other researchers like Robey (2003) were concerned such an inflexible stance risked limiting the field’s ability to respond to emergent themes and possibilities. Diversifying research approaches to IS problems would broaden the modes of sense-making available (Walsham, 2005), such as critical theory and interpretive research. Rowe (2010) argues for IS research to be more critical and open to insights possible through crossovers with other domains (Mingers, 2001, Agerfalk, 2013). Avgourel (2010) also supports multiple theoretical approaches, from the instrumental to the critical. Walsham (2012) encourages this open view and Dwivedi et al. identified the need to study information system failures from

\textsuperscript{106} IT artefact: bundles of meaning packaged into recognisable hardware and/or software form
multiple perspectives (2015b). This case study illustrates that new threads of knowledge about IS underperformance are accessible through less traditional, non-instrumental research methods.

IS disasters continue to occur (Dwivedi et al., 2015a) despite the introduction of automated tools and methods. There is a systemic problem with IS development performance and IS research tends to look at the problem element by element, from a single sub-area of expertise. Much research still addresses these elements and sub-areas (Laumer and Eckhardt, 2012, Al-Ahmad et al., 2009). There are limits to what can be done about improving single elements. Many problems exist more broadly, with patterns that go beyond single functional areas. Often such holistic views and solutions are missed in the fragmented view that only addresses parts. There are notable exceptions in case analysis with Janssen et al. (2015) describing failure as nuanced, how it is perceived influencing adaptive behaviour in cycles of project dynamics causing disruption and uncertainty, causing fresh dynamics; and in theory (Lyytinen and Newman, 2008), where IS change has multi-levels and is punctuated or episodic rather than the normative view of sequential and incremental (Bergman et al., 2002). This study took a holistic view and has shown the constructive impacts such holistic solutions can have.

9.2.3 Thesis Contribution to Research Methodology

1. When interview data is used to inform the location of workplace observations, the observation data can greatly enrich the information in the interview data. Without the validation of observational data, interview data is often coarse and unnuanced. Without the contextualising overview available from interview data, observation data can be ambiguous. Observation data validates or refutes the claims made in interviewees’ narratives. It corrects errors and misconceptions. It shows unintended deceptions of the interviewees. It engages with the actual reality of the lived work situation. They make an excellent pairing to get to the ‘truth’ of a situation.
2. In action research, small actions or interventions can create large impacts on roles and work-groups. If only large interventions are seen as action research, many small yet transformative actions and learnings go unnoticed or unvalued, contrary to their impact in the work-system.

9.3 Limitations of the Research

The research enquiry involved a single enterprise and one IS department. The research-host was a very large IS department and enterprise. These constraints may limit the generalisability of the research findings. However, the patterns of work are similar across most IS departments and IS services providers. They follow similar types of methodologies and use similar tools and models. It is argued that these similar patterns allow some generalisation of findings across different IS organisations, albeit with caution.

9.3.1 Implications for Further Research

With the current thinking from systems psychodynamics and information systems literature in mind, there are numerous questions that come out of this research and which may lead to further research inquiry. The most significant are:

- Do similar dynamics with respect to IS development occur in small to medium enterprises?
- Further research into the vertical integration of in-house IS services with their IS outsource providers is important.
- Do similar dynamics exist in other highly technical and complex organisation structures other than IS settings?
- Develop guidelines for ameliorating systemic-anxiety and its impacts in IS settings.
- Senior IS managers often showed resistance towards psycho-social understandings of IS work. These were addressed through dialogues with the
managers. As IS senior managers are often gatekeepers, further understanding of the nature of their resistances is important.

- If it is possible to make managers and staff aware of these dynamics and their impacts, what more can be done to ameliorate situations of disruptive dynamics in IS development?
- Many types of system-psychodynamically informed interventions could have been used in understanding or ameliorating systemic-anxieties in CBAA. In this research, the methods of psycho-social analysis\textsuperscript{107}, across role dialogue, establishing new containment structures, and work-group development were used in the course of the action research and action learning projects. Other system-psychodynamically informed interventions could have included role analysis (Newton et al., 2006), listening post (Mersky, 2015), psychodynamic simulations, and social dreaming (Lawrence, 1991). All use associative processes to access and understand unconscious, symbolic meaning along side literal meaning.

9.3.2 Implications for Practice

Work that engages with the anxieties in the IS development setting is not simply a human resource intervention. It should be seen as a new dimension to IS development and project management methodologies. It is about improving IS performance and the success of IS projects. Data about systemic-anxiety and its impacts can be as important to project success as cost and time expenditure data; it should be used.

There are several constructive implications for IS development practice detailed below:

- Use temporary enquiry structures to develop psycho-social insights into the current and emerging tensions disrupting work-task performance in

\textsuperscript{107} in incorporating the use of interviewing, workplace observation and reference-groups
struggling projects and as ad hoc health checks for adequately performing settings.

- Establish co-creation partnering responsibilities in major information systems developments.
- Strengthen IS departmental communications, both those reporting output up the line and those presenting policies, practices, plans and goals down the line. Communicate actual performance outcomes rather than the speculative optimistic, anxiety driven estimates, or simple misrepresentations.
- Provide reflective processes and spaces for work-groups to attend to and think about the pressures and tensions they are facing, how these do or may affect them, and what actions they could take to mitigate or engage with them constructively.
- In parallel with the sharp focused attention familiar to participants in most enterprises, develop in managers and staff the capability and willingness to utilise a second form of attention, a broad non-judgemental attention that takes in the whole setting.
- Recognise that defensive, non-task behaviours are initiated by the unconscious motivations of the actor (group or individual). They are not readily available for thinking or reflection without some external assistance. It is often necessary to engage enquirers from outside the work-system, who are not captured by its psychodynamics, and thus able to see, hear and interpret the dynamics that natives to the work-system are consciously unable or unwilling to access.
- Less time reporting on planned progress and more time with IS development work-groups assisting them to understand what is happening empirically to them in their work. Part of a process of education for staff and managers to learn how to identify and use systems psychodynamic information.
- Adopt more empirically based work plans that use reflexive capability rather than predefined approaches (rationalist) to work planning.
- Embed into IS project management methodologies for IS development, activities and work-products aimed at identifying the sources of systemic-anxiety in IS work-systems; identified concerns can be worked with to contain them and disrupt negative impacts.
9.4 Final Reflection

The research has shown that the pressures and tensions experienced by work-
groups and their members involved in the IS development process, generated
systemic-anxiety (largely unconscious to group members) which built up in the
mental life of groups and at times overwhelmed them. When this occurred, to
protect themselves from the threatening undigested experiences (feelings,
thoughts and anxieties), groups engaged in defensive behaviours. Generally,
groups were not conscious of their motivations for these defensive behaviours.
This happened to IS groups across the spectrum of CBAA, including management
groups, and also to many business groups, nearly always having negative effects
on IS delivery and performance.

ISD performance failures cost the enterprise enormous amounts of money
(directly and indirectly), jeopardising revenues and wasted enterprise time,
attention and goodwill. Monies are invested in IS to further grow value, in this
case money. IS work carries much ambiguity. In this huge and complex social
and technical enterprise, the factors of money, ambiguity, scale and complexity
set a volatile backdrop of primitive emotion to the IS work.

Reflective spaces and processes were critical to enable a different type of
awareness and thinking in these groups. Attention and thinking that can tolerate
current uncertainties and anxieties, rather than just grasping for the first
solution. With such a group mentality it is possible to identify problematic,
unconscious dynamics and chart a realistic path to address them and their root
causes, thus improving IS work-group and department performance and
delivery. The systemic pressures and tensions, the feelings and emotions they
evoke and the anxieties these produce negatively affect IS work-groups and
performance. The amelioration of such systemic-anxieties on IS work-groups
offers a significant opportunity to improve IS performance and software delivery
to the enterprise.
Post Script

The narratives of the IS department often present, quite unwittingly, windows into the courage many individuals and groups exhibited in undertaking their work. They came in to work to face the uncertain onslaught of angry, disappointed, frustrated and selfish clients from the business, the broader enterprise they so positively identified with. They absorbed the criticisms, blame, ridicule and endless demands. The criticisms, blame and betrayals of other groups against them were similarly just as random but an assured part of their organisational terrain. They did this day after day, often foregoing private interests to accommodate the long windows of extended work hours necessary to compensate for the demands of the business, the failures of other IS teams and the flawed nature of planning and contingency management in their department. They did this largely with good grace amidst the defensive retreats their groups made in the face of the waves of unabsorbable anxiety that periodically washed across the human landscape of CBAA.

It did not seem heroic or specifically brave, but it did seem to take courage—to work in the face of these onslaughts. In working with the data, a long time after its collection, the transference across the distance of time and communications media was the feeling of their stoic courage. In reviewing and analysing their data, and in writing, I have been confronted by the question of courage; to face, and in a small way experience, the magnitude of the pain and distress that was embedded in their narratives and the observations of the IS work. The courage, to, like them, stump up to it each day until the work was done, and to represent it as best one could, whilst accepting the inadequate and imperfectness of such a representation.

They were not perfect by any means, but they attended and did the best they could within the pressures and tensions that the dynamics of the work-system confronted them with, both individually and as groups. This is not to suggest they were alone in such travails in contemporary enterprise life, but neither does it detract from their courage.
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110 reference altered to maintain Research-Host's anonymity

111 reference altered to maintain Research-Host's anonymity


Appendices

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Appendix 1  Glossary

A&R  Architecture and Requirements group of CBAA
AR   Action Research
ARC  Australian Research Council
ba   Basic Assumption
BI   Business Initiative
BU   Business Unit
BUIG Business Unit Interface Group
C&C  Consumer and Customer
C&G  Corporate and Government BU
CA   Communications Authority
CBAA Customer Billing, Activation and Assurance
CC   CBAA Council
CEO  Chief Executive Officer
CIO  Chief Information Officer
CR   Change request
CRO  Change Request Office
Deliverable Work-product
DM   Domain Manager
EAI  Enterprise Application Interface
FAD  Functional Application Design
FTE  Full Time Employee or Full Time Equivalent
GMD  General Managing Director
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>IGS</td>
<td>IBM Global Services</td>
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<tr>
<td>IS</td>
<td>Information System</td>
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<td>ISD</td>
<td>Information System Development</td>
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<tr>
<td>ISDP</td>
<td>Information System Development Process</td>
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<td>ISOP</td>
<td>IS Outsource Provider</td>
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<tr>
<td>MD</td>
<td>Managing Director</td>
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<tr>
<td>Output</td>
<td>Work-product</td>
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<tr>
<td>P&amp;IS</td>
<td>Process and Information Systems</td>
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<tr>
<td>PDOM</td>
<td>Product Development and Operations Model</td>
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<tr>
<td>PM</td>
<td>Project Manager</td>
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<tr>
<td>PPS</td>
<td>An information system</td>
</tr>
<tr>
<td>RD</td>
<td>Requirements Document</td>
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<tr>
<td>REPS</td>
<td>An information system</td>
</tr>
<tr>
<td>RM</td>
<td>Release Manager</td>
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<tr>
<td>SAS</td>
<td>Systems Architecture Solution</td>
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<tr>
<td>SDLC</td>
<td>Systems Development Life-Cycle</td>
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<tr>
<td>SISP</td>
<td>Strategic Information Systems Plan</td>
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<tr>
<td>SM</td>
<td>Senior Manager</td>
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<tr>
<td>System</td>
<td>Information System</td>
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<tr>
<td>TAD</td>
<td>Technical Application Design</td>
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<tr>
<td>Telco</td>
<td>Telecommunications enterprise</td>
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<tr>
<td>TL</td>
<td>Team Leader</td>
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<tr>
<td>TPT</td>
<td>Trans Pacific Telecommunications Corporation</td>
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Appendix 2  Research Plan Activities

The research in the organisation will proceed through the following stages:

- **Stage One**: An initial setting up stage involving: the establishment of the reference-group; initial development of an interview plan; selection of stage two interviewees.

- **Stage Two**: An exploratory stage of interviews across the whole CBAA domain and associated business areas. The stage involves interviews and observations by the researcher; collation of results into a report; feedback of results to the reference-group; initial interpretation of these results within the CBAA organisation; reference-group to identify Detailed Areas of Study for more detailed enquiry and establish authorisation to proceed. It will involve approximately 30 interviews and associated observations.

- **Stage Three**: A detailed stage of interviews and observations across the Detailed Area of Study. It will involve: interviews and observations by the researcher; collation of results into a report; feedback of results to the steering group and the areas interviewed. It will involve approximately 30 interviews and associated observations. Understanding is sought into the ongoing dynamics of the work-groups and the relationship of these dynamics to the work-groups’ tasks, outcomes and dilemmas.

- **Stage Four**: An implementation stage where action learning activities are pursued by the work-groups in their own way.

- **Stage Five**: A second stage of interviews across the whole CBAA domain and associated business areas.

- **Stage Six**: A second stage of interviews across the Detailed Area of Study. It will review the progress made in the Action learning activities, from the working sessions and the understanding and awareness developed through working with the interview data and interpretations.

- **Stage Seven**: A final feedback and evaluation process with the organisation on the findings and conclusions to date of the research. Also an evaluation of the research process with the organisation.
Appendix 3 Ethics Approval

The research objective, methods and plan were submitted to the ethics committee of Swinburne University of Technology\textsuperscript{112}. It was approved after minor clarifications about the ongoing storage of recorded data. All the processes and procedures required by the ethics committee and by ethical research practice were fulfilled. On transferring the research to Deakin University, the research documentation was submitted to the Deakin ethics committee where it was passed.

\textsuperscript{112} where the research was originally commenced
Swinburne University of Technology
Human Research Ethics Committee  Certificate of Approval

ID: 104  HRREC Register No: 99/30

Project Title: The effects of group dynamics on information system quality.

Chief Investigator: Prof. S. Leng
Other Investigator: J. Deligeiris

Meeting No: 3/99  Circulated: 5/12/99

Number of participants/male: 40
Number of participants/female: 40

This approval is granted subject to the following amendments and conditions:

Questions and schedules should be forwarded to HRREC when available.

Chair of HRREC signature:

Approval is granted on the condition that:

1. Any proposed changes in protocol and the reasons for the change, along with an indication of ethical implications of any, must be submitted to the committee for approval.
2. A progress report must be submitted annually.
3. A final report must be submitted at the conclusion of the project.
Appendix 4  Interview Question Framework

What is it like to work here?

What sort of things goes well? What things go poorly?

What are you meant to do in your work?
What is your group meant to do?

What other groups do you interact with?
What other groups does your group interact with?
What is the nature of those interactions?
Are there any tensions in those interactions?

How many groups are you part of?
What are work relations like with members of you group?
What are work relations like with customer of business groups?

Describe your role?
How would others describe your role?
What issues or dilemmas occur in your role?
What issues or dilemmas occur in your relations with others?

What relationships do you form with people at work? Those you like, those you dislike.
Who do you socialise with?

Who do you seek out for support?

Are they part of you direct work-groups?

What is the primary task of your group?

What is the primary task of your functional area?

What is the primary task of CBAA?

What is the primary task of TPT?

How is performance and output assessed for your group?

How is performance and output assessed for CBAA?

How is quality assessed for your group?

How is quality assessed for CBAA?

How do you determine the quality of your work and what you deliver?

Is your group’s work effective?

Is there wastage? What is the cause? What form does it take?

What are the costs of wastage?

What are the costs of IS failure?

What are the main tensions in CBAA?
Appendix 5  Overview of CBAA and P&IS Financials

CBAA Financials

2500 staff

220 work days/staff member/year

550,000 work days per year

4  125,000 work day Releases/year

4  5,000 work day Fix-Releases/year

30,000 work days Pre-Release activities

260 paid days/staff member/year = 220 work days + 20 days annual leave + 10
days sick leave + 10 days public holidays

650,000 paid days per year

$1100/paid day

$715m staff costs

P&IS Financials

$715m/year CBAA (2500 staff)

$285m/year other IS Departments\(^{113}\) (1000 staff)

$1000m P&IS

7200 P&IS staff

3500 IS Department staff funded

\(^{113}\) the other three IS departments were: Networks, Enterprise Services, DBoR (Data Base of Record)
3700 other P&IS staff unfunded

Each IS Department contributes 50% of its budgets to P&IS to cover overhead costs

Remaining budget for each IS department pays its staff salaries and on-costs
Appendix 6  Research Host Biography

A6.1  Introduction

This section discusses the enterprise in which the research project was conducted. It starts with an overview of the whole organisation and the pressures and tensions on it from its environment at the commencement of the research. These pressures and tensions are important to consider because they have broad impacts that flow throughout the entire enterprise; into its divisions and work-groups and affecting their work and working relations with other groups. Secondly, the IS department (CBAA) that was the site for the detailed study is described along with its organisation and the tools and methodologies its staff used in their work in developing software and information systems.

Neither the enterprise nor the IS department remained static during the three year period of data collection in the research project. The most critical of these organisation changes are described here, as they give important insights into the complexity of the setting and the dynamics, pressures and tension that are created with these fundamental changes in purpose and organisation. Three stages in the ongoing timeline of the enterprise are briefly looked at, specifically for their impacts on the organisational relations between the IS department (CBAA) and the business units. Five distinct stages in the IS organisation are looked at each corresponding to a complex reworking of the IS organisation and the associated impacts into work life of the IS work-groups as they endeavour to deliver the required information systems support for the business units of the enterprise.

Whilst knowing something about the enterprise and specifically the research host – the IS department, CBAA – is important, understanding aspects of their history and evolution in relation to IS is also critical because as these historic changes, tensions and dynamics have established certain patterns of behaviour and mindsets in the business and IS workgroups and their relations. From this, they contribute in significant ways to the complexity, turbulence, stress and disturbance of the process of building information systems in this setting.

A6.2  Biography of Trans-Pacific Telecommunications

At the time the research commenced, Trans-Pacific Telecommunications (TPT) was a corporation of approximately 50,000 staff with revenues of around 23 billion dollars. It was a full service telecommunications company selling retail and wholesale telecommunications products. It owned fixed voice and data, mobile (cell) voice and data networks across one country and had many similar assets across many other countries across the pacific. Outside of its country of origin its presence was less pervasive and dominant, often being a minor participant in those markets.
The figure below identifies the key stakeholder groups interacting with TPT. Each of the various stakeholders will be discussed in subsequent sections.

![Stakeholder Diagram for TPT](image)

Many stakeholders take up more than one role in relation to the TPT. For example, a staff member will almost certainly be a customer, a community member and possibly also a shareholder.

### A6.2.1 Historical Genesis

#### A6.2.1.1 Structure – Government Department to Corporation

The corporation was listed on the stock exchange with a market capitalisation of approximately 50 Billion dollars. The corporation had begun life as a new part to the national postal service – a bureaucracy with a bureaucratic culture. Eventually it became a government instrumentality separate from the postal service concentrating on telecommunications, which 60 years ago meant putting a phone in every home and business that wanted one. It was a ‘nation building’ institution, funded by government and its own revenues to construct the national telecommunications infrastructure for a modernising nation. It became a national symbol of progress and prosperity to the people of the country.
As financial markets opened up and as telecommunications technologies became more complex offering new high value services, the enterprise needed greater access to capital than the government could provide given its other diverse demand. It became a government owned corporation about 30 years ago, able to borrow in its own right from capital markets to meet its expansion needs. It retained a public service type of organisation with departments and branches with a parallel union membership structure. In the mid 1990’s it was listed on the stock exchange with a first tranche of 25% of its capital value offered to investors.

A6.2.1.2  Monopoly to Free Market

Up to 25 years ago it was the monopoly provider of telecommunications domestically and interfaced with another government authority for telecommunications service to and from overseas countries. In the late 1980’s, the government began the country’s journey to an open telecommunications market. It commenced by selling a new telecommunications licence to an international operator, creating a duopoly in the market. This resulted in a new telco investing in physical networks, using the incumbent’s networks, competition for retail customers, new legislation, new regulatory bodies, new industry bodies, and new wholesale, legal and industry services functions being created within TPT.

Within 5 years there were many more telecommunications licences offered by the government for purchase by other prospective and existing telecommunications providers. This resulted in many new smaller telecommunications companies entering the market, some investing in their own network infrastructures, all in some way purchasing telecommunications network capacity from the existing two network owners. It had moved from monopoly to duopoly to an open market in the provision of telecommunications services.

A6.2.2  Current Pressures

A6.2.2.1  Ownership

The national government had owned TPT and received large dividend payments from it into the national budget. It was the largest privatisation of a state owned asset by the government to private investors. It was to be sold in three tranches with some years between each offering. The first tranche had been sold in the year preceding the research’s commencement. An emphasis was placed on selling the asset to citizen shareholders, although large numbers were sold to institutional investors. For many citizens this would be their first ownership of shares. To many in the community, it seemed incongruous to buy shares in a corporation already owned by all citizens; as it was already a state owned enterprise.
There was great concern about the ongoing provision of state-of-the-art telecommunication services to regional, country and remote areas of the country. These concerns were addressed in legislation linked to TPT's telecommunications licence terms that dictated a Country Service Guarantee. There were also serious community concerns about a privatised TPT removing unprofitable products and services (such as payphones) or making basic products too expensive for under-privileged sectors of the community (Jeanes, 2005, Richardson, 1997). This was addressed by another legislated caveat to their licence terms. It was called the Universal Service Obligation and set out minimum service levels for these products and services.

The enterprise was also seen as a national icon, there was positive social identification with it. TPT, from its earliest origins held a strong place in the public mind. There was a sense of ‘ownership’ of it by the community, historically it had been fully owned by the commonwealth, by government.

A6.2.2.2 Regulatory environment

A regulatory body was established to oversee the telecommunications market and the companies providing telecommunications services just prior to the issuing of the second licence. The Communications Authority’s (CA) role was to look at wholesale pricing between network providers, retail customer disputes, management and planning of wireless spectrum, and number allocation and management. Another regulator, the Competition and Consumer Commission also regulates wholesale and retail pricing complaints.

In the main domestic market, nearly all telecommunications services are charged to the party that originated the connection (call). Whenever a customer from one telco originates a call that terminates at a customer on another telco’s network, there are charges for ‘interconnecting’ and using the resources of the terminating network. The settlement of these wholesale charges occurs in bilateral reconciliations between pairs of network providers. Regulators provide some oversight of this.

With the introduction of many new communications licences in the mid to late 1990s, some of these telcos abandoned establishing their own network assets, which would largely have duplicated what already existed, instead choosing to purchase access to and capacity in the existing networks to deliver communications services to their retail customers. Such sharing agreements were mandated under the terms of licences. Typically, TPT and the second telco determined the wholesale price for their telecommunication services, but often these prices resulted in uncompetitive retail offerings from the new providers. This resulted in many complex disputes about the wholesale prices and rulings by regulators, and ultimately courts, against TPT. These were long and expensive struggles, often showing that TPT, which had never had to divest costs against specific network products, did not have a clear appreciation of what its products’ lifecycle costs were.
A6.2.2.3  Financial markets

With the floating of TPT on the domestic stock-market, many parties brought pressure to bear on the company to reduce costs. This involved reducing staff through more efficient processes and systems and through the sell-off of non-core functions; such as advertising, network construction, information technology. Only the former was sold as an ongoing business. From the time of privatisation to that of the research’s commencement, it had gone from an enterprise of 120,000 to 45,000 staff. During the three years of the research, it fell further to around 30,000 – this included around 5,000 IS jobs outsourced to IT services companies that took over the employment contracts of TPT’s existing IS staff.

In the telecommunications industry, access to capital from the many arms of the financial market is critical to growth. New network technologies on the scale to service a large geographic country are very expensive. In a typical year, three billion dollars was spent on new network technology or upgrades, one billion on new IS software development, and a further one billion on computer technology to run the software (TPT Board, 2002). Despite the company’s large revenues, large tracts of these capital costs were funded through borrowings, often because the technology vendors insisted on the guarantee of funds prior to the provision of the technology – technology that would take months or years to deploy.

So good relations were necessary with the financial markets to ensure access to large amounts of capital at competitive rates; and maintaining a healthy share price, through satisfied shareholders, to ensure the financial vibrancy of the company and its attractiveness to lenders.

A6.2.2.4  Product Development and Operation Methodology

All new products and processes or changes to existing products and processes went though an enterprise process called the Product Development and Operations Methodology (PDOM). Early on in the methodology, it involved marketing, network engineering and finance teams to establish the parameters of the new product, its estimated costs and expected returns. More than halfway through this process, IS teams were briefed on the proposed product and asked to scope the IS work required to support the product in its proposed form and to provide an estimate of cost and timeframe for the work.

Separately from product authorising forums in the business, large IS investments were assessed for approval by the IS Gating Committee. Where an IS investment was up to ten million dollars, the business unit would approve the expenditure of their budget. Where it was greater than ten million dollars, the IS Gating Committee would assess and approve that investment in information systems. The IS Gating Committee was made up of senior executives from the business units. Representatives from CBAA would make the case for the IS investment for such business initiatives.
The PDOM was a substantial activity and information system development was just one aspect of it; a wheel within the larger wheel. Other elements that fitted into the PDOM process were network platform development, business process definition, marketing, and internal product training.

A6.2.3 Fundamental Changes

A6.2.3.1 History of Employment in CBAA

The enterprise had its roots as a government authority bureaucracy, with the inherent constraints and safety this offered staff (Chattopadhyah and Malhotra, 1991). TPT needed its IS departments to be more responsive, innovative, and to have more flexible application of its work force to different systems. In-sourcing had been used successfully in the past as a way to informally mentor TPT IS staff through co-locating them with in-sourced staff from professional services companies. Both groups worked together on IS projects. This offered TPT IS staff the possibility to learn new ways of working and seeing the IS world building on the experience and perspective of their professional services colleagues and for TPT IS staff to move out of the dependency state of mind that characterises bureaucracies (Chattopadhyah and Malhotra, 1991, de Board, 1978). These shifts in professional practice asked of staff where significant and not all had made the transition to a more responsive, collaborative, and proactive participation in work tasks. CBAA management was still pursuing these aspirations.

A6.2.3.2 Separation of IS Departments from the Network Engineering Division

The IS function in the enterprise was historically an outgrowth of the network technology that delivered telecommunications services to subscribers. Over time, the IS function grew to support the network platforms in a variety of ways and to support the automation of other business functions within the enterprise. The IS function was organised within the group responsible for network and associated technology. Eighteen months before the commencement of the research, the IS function of the enterprise was reorganised into a coherent set of IS departments that serviced certain functional aspect of the business. CBAA was formed to attend to the information services needs of all billing, service activation and service assurance aspects of the business. Similarly, new IS departments for network services, enterprise services and management information were also formed from the grouping of systems that supported these areas of the business (see figure A6.2). This created greater cohesion and focus in the delivery of IS services across the enterprise. Throughout this, the Mobiles enterprise remained outside and unaffected by this reorganisation.
Eight months prior to the commencement of the research, the IS function of the enterprise was again reorganised into a separate division. It was removed from its historic point of origin in the network technology group into a new structure called Process and Information Systems (P&IS) (see figure A6.3). The then MD of CBAA was promoted to the role of GMD of P&IS and new manager\textsuperscript{114} was brought into the enterprise to lead CBAA.

\textsuperscript{114} this new manager became the sponsor of this research project
They were 'free' to decouple from shared systems where the cost could be justified by the revenue expected growth from a business units innovative autonomous action. This will be discussed further in the next chapter.

**A6.3 Biography of CBAA**

This section shows how CBAA links into the larger IS department, the 7200 staff Process and Information Systems (P&IS). It then looks at the near past organisation changes in CBAA and the rational for these as learned during the 'entry' process that put in place the relationship for the research project. This theme of organisational change is followed here through the other fundamental changes to CBAA's organisation structure that occurred during the time of the research project; changes the research had to adapt to and which the action research approach comfortably accommodated. Finally, it briefly discusses other
programs of improvement CBAA was undertaking at the commencement of the research.

A6.3.1 CBAA’s place in P&IS

CBAA existed within a larger IS division, P&IS. It was the largest group and had the largest budget. Similarly P&IT existed within the context of the business enterprise that is TPT. As a service division, it provided timely, cost efficient process and IS support to the enterprise. Figure A6.4 show the functions within P&IS and its connection to the broader enterprise; connections that all carried expectation of IS delivery and high performance, and that flowed through to CBAA. Figure A6.5 shows the organisation of the primary functions that P&IS performed for the enterprise.

![Diagram of P&IS and CBAA](image)

*BURG – Business Unit Relationship Group

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Key interactions

Figure A6.4 PI&T and business units at the commencement of the research.
A6.3.2 The Continuing Re-organisations

A6.3.2.1 Pre Study

Four months into his tenure of CBAA, the MD reorganised it. Up to this point, CBAA was organised around each individual information system. Each information system group had staff that worked across all phases of the system development lifecycle and liaised with the business. Managers from the key systems in CBAA reported to the MD. This amounted to 34 direct reports. It would have been difficult for such a management group to function effectively.

Of the 130 systems CBAA supported, 75 directly supported billing processes, 45 supported service activation, and ten supported service assurance processes. In the horizontal model of IS organisation, this number also represented the number of discrete development teams involved.

“I was forever bogged down in operational problems ... there was no clear air for formulating strategy for the department ... no time for new ways of engaging with our business colleagues or to focus on the performance improvements we needed to make” (FN-E-1, MD, CBAA)

“I was always fighting fires in this structure ... and would remain so. I had to change things around if I was to meet my responsibilities” (FN-E-1, MD, CBAA)

The change the MD implemented was to shift the whole department from a horizontal alignment (figure A6.6) to a vertical alignment (figure A6.7) of IS functions and staff. In a horizontal alignment, one development team worked on a single system that serviced a set of products for billing, activation or assurance. Staff within these large groups would potentially work on all phases of the SDLC for that system. Workload balancing could be done within the team to meet the specific needs of each release. However, staff were rarely shared across teams other than through occasional permanent reassignments.
In a vertical alignment, teams worked in broad IS development functional groupings for any or all systems\(^ {115} \). Staff were reorganised into groups of architecture, analysis\(^ {116} \), design, construction, system testing, integration-testing and production support. Much of the design and all the construction and system testing remained grouped around individual systems, but all other IS functions were grouped together, with staff specialising in certain domains - billing, activation, assurance. Other groups were established to stitch it all together into a functional department; program management and release management. This left him with 6 direct reports (see figure A6.8) rather than 34, each with delegated authority to make their function in the IS department work well and efficiently.

![Diagram: System designs and architectures](image)

**Figure A6.6**  Horizontal alignment – system specific organisation

![Diagram: Vertical alignment – IS function specific organisation](image)

**Figure A6.7**  Vertical alignment – IS function specific organisation

\(^ {115} \) as much as was possible given the skills, knowledge and experience of staff and how well they could move to work on other systems

\(^ {116} \) Responsible for requirement definition.
Whilst discussing the historic reorganisations that affected CBAA, the reader is asked to bear up to a continuation of this theme as the next section discusses the reorganisations that occurred and affected CBAA during the course of the research. It is hoped this will show the progression in the transformation and demise of the IS function in TPT.

![Organisation Chart for CBAA with vertical alignment](image)

**A6.3.2.2 During Interviews and Half Observations**

In this re-organisation of P&IS and all its sub-organisations like CBAA was announced after all the interviews had been done but before the findings of their data analysis were discussed by the research reference-group. It was many months before its shape was more than an aspiration and was articulated in detail (see figure A6.9). It involved the dissolution of CBAA and the other IS departments of P&IS into an architecture group and a delivery group for core systems, with the former analysing and planning the software and release changes and the latter designing, coding and testing the software changes. It was envisioned to enable a simple offloading of the delivery component to outsource vendors.
A6.3.2.3 During remaining Observations and commencement of ALPs

This re-organisation pared back the functions of P&IS even further, removing the notion of an overarching IS department (P&IS) from TPT (see figure A6.10). All the services of P&IT were dissolved, just as they had earlier been in its sub-departments like CBAA. They were taken up directly by the business units, as was responsibility for some of the information systems that primarily served a specific business unit. In this way each BU got its own IS function that looked after the information services needs of the BU, its scoping and planning, and liaising with the Core Systems group on shared system changes. The core systems group consisted of architecture, delivery and program management functions.

This was meant to have a short lifespan whilst outsourcing arrangements were put in place for all these functions, including the business units’ own IS functions. This outsourcing process did not take a couple of months as planned, but rather nearly a year because the scale and complexity of the situation of outsourcing over 200 information systems117, with outsource vendors taking on the responsibility and liability for all incumbent TPT IS staff, and ensuring it would run smoothly and cost effectively was enormous, requiring significant planning and contracting.

117 CBAA’s 130 information systems plus those of the other IS departments within the old P&IS
All IS work done during this time was the last remnants of work that had been planned during the past CBAA and P&IS era.

Figure A6.10 Reorganisation of TPT' IS development services (including CBAA) 21 months after the commencement of the research

A6.3.2.4 During Extended ALP

During the closing stages of the research the outsourcing was enacted. All software design, construction and testing was done by external vendors, in-country or in India. Each BU had its own scoping, feasibility and planning function for IS services. There was no enterprise-wide IS investment prioritisation and no robust mechanism for cooperation between BU's on changes to shared systems. By informal accounts, this was a chaotic, wasteful and unproductive time for the enterprise with respect to IS delivery.
A6.3.3 Continuous Improvement Programs

During the three meetings to negotiate entry for the research into the CBAA work-system, there was an emphasis put on the work they were doing or considering doing to improve their performance of software delivery. The three initiatives they mentioned in those meetings are briefly introduced here.

A6.3.3.1 Lifecycle Reduction

In these preliminary discussions exploring the possibility for the research project, both the MD and the Manager of Architecture described the length of time it took for systems to build and deploy software changes as the most critical problem CBAA had. Business perception apparently was that they were too slow. The research data would indicate this to be the case about the general business perception of CBAA.

The MD described having engaged advisors and consultants on several occasions to look at the long lifecycle systems and to recommend and implement improvements in these settings that would shorten the lifecycle duration. He described these initiatives as having significant impact in reducing timeframes by 15%. But they had not improved the dissatisfaction of the business that still saw CBAA as slow, underperforming and negatively affecting business performance. They expected such initiatives to continue into the future.
A6.3.3.2 ISO 9001

At the point of negotiating entry to the CBAA work-system, little was known or discovered by the researcher about the CBAA’s progress or aspirations in relation to ISO 9001 (ISO/TC-176/SC2, 2008) accreditation or the benefits this may have brought to it.

A6.3.3.3 Capability Maturity Model (CMM)

Similarly, little was known about the work-systems engagement with CMM (Paulk et al., 1994). During the entry process it was discussed as something they were pursuing in the realm of improving the performance of the work-system in developing software.