

Leading organisations without boundaries: ‘quantum’ organisation and the work of making meaning

Abstract

Digitalisation and the internet lead every client to expect more dynamic interaction with their situation, context and timing. Familiar examples from the perspective of the client are healthcare, financial services, air travel, mobile apps and the home delivery of food. An organisation that is interacting dynamically in different ways with each of its clients is best understood as being without boundaries. This paper uses a ‘quantum’ metaphor to think about this, considering each client interaction as a ‘quantum’. This leads to an understanding of the role of governance that can be ‘horizontal’ in its effects.

Emery and Trist argued that while open-systems models enabled material exchange processes to be dealt with between the organisation and elements in its environment, “they did not deal with those processes in the environment itself which were the determining conditions of the exchanges... which were themselves often incommensurate with the organisation’s internal and exchange processes”. This led Emery and Trist to restrict the term “socio-technical” to ‘operative’ organisations, distinguishing them from ‘regulative’ or ‘referent’ organisations, which were instead focussed on inter-organisational behaviours within an ecosystem of organisations with differing interests.

Accepting this difference means losing a direct identification between a physical system and the system of meaning that it reifies, forcing us to abandon the direct identification of boundary with container. In its place, the paper argues that the regulative or referent work of ‘quantum’ organisation has to be understood as one of making meaning within a larger ecosystem. The paper uses examples from healthcare to elaborate on this use of the ‘quantum’ metaphor, and draws conclusions about the leadership needed by these organisations without boundaries.

Key words: boundary, socio-technical, referent, quantum, meaning

Introduction.....	2
The limitations of the ‘open system’ perspective on primary task and the socio-technical workgroup.....	3
The ‘equifinality’ of open systems	3
Predictable environments	3
Limitations on predictability in environments of the second kind	4
So how then are we to think about organisations without boundaries?	6
Defining open systems in terms of non-deterministic orders of closure	6
Managing primary risk	7
Competing within turbulent ecosystems.....	8
‘Multi-sided’ business platforms	9
Balancing direct and indirect value.....	9
‘Quantum’ organisation.....	10
What does this do to the way we understand ‘leadership’?.....	11
Working with ‘existential anxiety’	12
The task of leadership within turbulent environments	13
Conclusion	14
References	16
Glossary	19

Introduction

Jack Welch of General Electric took the view, "the most restrictive organisational boundaries are in the minds of those within an organisation." (Ashkenas, Ulrich et al. 2002) In order that his organisation could better thrive, he called for a 'boundaryless organisation'. General Electric (GE) did not get rid of its boundaries, but it did rearrange them vertically, horizontally, by industry and by geography so that they were more permeable. GE used this approach to "transform itself over and over again to keep up with – and ahead of – the global Internet economy. GE was able to acquire and integrate dozens of organisations and become a world leader in the process of acquisition integration, and to streamline its work and reduce costs by millions of dollars. At the same time, GE was shifting many of its businesses more towards services and toward the development of global markets." (Ashkenas, Ulrich et al. 2002) Nevertheless, General Electric as an organisation still took a 'one-sided' approach to the way it targeted its chosen markets. Its relationships to its customers were defined by the products and services it had planned to provide.

The Rt Hon Jeremy Hunt MP, the Health Secretary responsible for the UK's National Health Service (NHS), recently gave a speech entitled: "Will we rise to the challenge of an ageing society?" (Hunt 2013) He argued that if the social and healthcare systems were to help people with long term conditions, then more would need to be done across both systems. He pointed out, "unlike when the NHS was founded 65 years ago, now half of General Practitioner (GP) appointments and two thirds of outpatient or Accident & Emergency visits are for people with long term conditions. Indeed this group of people, many of whom are older people, are now responsible for 70% of the total health and care budget."

GE is a hugely complicated organisation, containing many different component organisations, but all of which are ultimately answerable vertically to its Board for their economic performance in terms of 'one-sided' definitions of their businesses. The 'healthcare system' of which Jeremy Hunt spoke is different, however, even though it is also made up of many different component organisations. Central government may be the source both of funding for the NHS and of the regulations governing its performance. In demanding of this system, however, that it "treat the person not the condition", the Health Secretary is saying that it should be ultimately accountable 'horizontally' to the citizen-with-the-condition¹, and not 'vertically' to central government. From the point of view of any one provider within the social and healthcare systems, this makes the relationship to the patient's demand 'multi-sided'. As with GE, the service demanded from the provider may require many different component organisations to work together. Unlike GE, however, the service has to be defined in terms of how it interacts with other services within the context of the patient's life to affect the patient's long-term health, making the demand 'multi-sided'. The role of central government's governance should be to make this possible, but this is not the same challenge as that faced by GE.

To meet this challenge, we must consider what happens when an organisation has to respond to the 'multi-sided' nature of its clients' demands one-by-one, being many different things *at the same time* as it takes up a 'multi-sided' relationship to each of its clients differently. In a sense, it becomes a different organisation for each client. Increasing digitalisation and internet use

¹ The use of 'citizen' here emphasises the individual client's particularity and the change this implies in the psychoanalytic object of interest to a supplying organisation. Boxer, P. J. (2013b). THE environment does not ex-sist: engendering 'boundary' as the object of psychoanalytic study. Re-Working Lacan at Work. G. Arnaud and B. Vidaillet. Paris.

lead every client to expect more dynamic interaction between suppliers and their personal situation with its context and timing. As clients, we are all familiar with examples from healthcare, financial services, air travel, using mobile apps on our smartphones or speedy home delivery of online shopping (Dahlstrom and Edelman 2013).

This paper argues that these organisations, which are interacting dynamically in different ways with the ‘multi-sided’ nature of each of their clients’ demands, whether public or private, are ‘organisations without boundaries’. In order to meet the challenges of being ‘without boundaries’ in which a different primary task is faced for each client, an organisation must revise its assumptions about hierarchy and its ‘vertical’ forms of accountability that once defined its ‘primary task’.

The limitations of the ‘open system’ perspective on primary task and the socio-technical workgroup

Primary task has always been associated with that of the supervisor managing the immediate boundary conditions of the worker-task relation within a larger organisational structure (Emery 1993). Whether or not such a worker-task relation constituted a workgroup that was capable of responsible autonomy depended on whether its work could be performed within definable boundaries of technology, territory and/or time (Miller 1959). These boundaries constituted an essentially socio-technical definition of a workgroup which enabled those responsible for it easily to identify what was ‘theirs’ and who belonged in it (Rice 1958). They also proved to be of vital importance in managing the performance of the workgroup effectively (Miller 1975). For example, the boundaries of an organisation providing a blood-testing service would be set by the technology and science of testing. Two assumptions were built into this concept of primary task.

The ‘equifinality’ of open systems

The first assumption was that such workgroups were ‘open systems’. An open system is one for which there is import and export across its boundary and, therefore, change of its components (Bertalanffy 1950). An open system can, at some level of definition, admit varying degrees of internal differentiation of task while maintaining a continuous throughput despite external change (Emery 1993), a property known as ‘equifinality’. ‘Equifinality’ is a key property in Bertalanffy’s account of living systems (Bertalanffy 1950). It also became identified as the workgroup’s primary task: the essential relationship that the workgroup needed to sustain between itself as an open system and its environment if it were to survive (Miller and Rice 1967). Thus, as the number and variety of blood tests provided increased, so too would there need to be increasing differentiation in the testing protocols and associated apparatus, the task of the supervisor-managers of the blood-testing service being to ensure that the quality and variety of testing protocols were good enough to satisfy its clients’ needs.

Predictable environments

The second assumption distinguished two kinds of organisational environment based on their causal structure. Environments of the first kind were predictable enough to make it possible for an organisation to select where it wished to be at some future time, ‘equifinality’ becoming a “strategic objective” at the level of the organisation as a whole. These were ‘placid’ environments (we’re the only service in our area), ‘placid-clustered’ environments (we’re the only blood tester in our area) or even ‘disturbed-reactive’ environments (we’re competing with other testers who want to take our

business in our area). This predictability enabled the organisation to plan a series of actions that could realize its strategic objective even when competing with other organisations. It also enabled the organisation to sustain ‘one-sided’ relationships to its markets. Customers had to take what the organisation had planned to supply.

In these ‘predictable’ environments, the cybernetic thinking of Ashby (Ashby 1956) was used to account for the way the supervisor-manager was able to achieve a strategic objective through appropriately designed processes of control and feedback. The organisation providing a blood-testing service had its plan for maintaining its dominance of the market for blood-testing within its area. This plan included entering other kinds of testing service in order to inhibit potential competitors. The progressive internal differentiation by the organisation of testing protocols in response to its environment was driven by Ashby’s law of requisite variety (Ashby 1956). This task differentiation was held together through processes of integration of the component workgroup tasks undertaken by supervisor-managers who were ‘vertically’ accountable in sustaining an overall strategic objective (Lawrence and Lorsch 1969).

Limitations on predictability in environments of the second kind

The causal structure of ‘predictable’ environments made it possible to plan, enabling there to be a ‘design time’ within which management could decide how it would operate subsequently in ‘run-time’. Thus, the senior management of the blood-testing organisation could have a strategy retreat, do a market and competitor analysis, and develop its plan for maintaining its dominance of the market for blood-testing within their area.

In contrast, the causal structure of an environment was deemed to be ‘turbulent’ when the dynamic nature of the interactions both between the organisation and its environment and within the environment itself made no such separation of ‘design-time’ from ‘run-time’ possible. These relationships were ‘multi-sided’. In open-systems terms, environments too were living systems, making planning impossible because of the circular nature of the causal relations between an organisation and its environments (Rittel and Webber 1973). This circularity was an essential characteristic of these ‘multi-sided’ relationships – the service supplied affected the context that affected the service needed.

For example, the diagnosis of some complex conditions demanded that the results of some tests affect the way other tests were applied. The relationship between the blood-testing business and doctors facing these more complex kinds of diagnostic challenge, therefore, had to be managed differently, the diagnostic situation having to determine the organisation of the workgroup tasks. This was not a problem when the number of these kinds of relationship was small, but when it grew to being a large proportion of the organisation’s testing, it changed the nature of the business.

Emery and Trist understood this, arguing that open-systems models could deal with the equifinality of material exchange processes between an organisation and elements in its environment but not “at all with those processes in the environment itself which were the determining conditions of the exchanges” (Emery and Trist 1965). Furthermore, the laws connecting parts of the environment to each other were themselves “often incommensurate with those laws connecting parts of the organisation to each other, or even with those which govern the exchanges” (Emery and Trist 1965). Following this, Emery proposed restricting the term “socio-technical” to ‘operative’ organisations engaged in material exchange processes (Emery 1993), distinguishing them from ‘regulative’ organisations. In the blood-testing case, the laws governing

Leading organisations without boundaries: ‘quantum’ organisation and the work of making meaning v3
By Philip Boxer

testing were incommensurate with those governing the diagnosis of (for example) immune-system disorders.

Trist further proposed that regulative organisations be described as being “concerned directly with the psychosocial ends of their members and instilling and maintaining or changing cultural values and norms, the power and the position of interest groups, or the social structure itself” (Trist 1981). Trist called these regulative organisations ‘referent’ because they were defined by particular inter-organisational relations and boundary conditions within a larger ecosystem, functioning as a ‘reference group’ for the operative organisation supplying them. Whereas the focus of ‘operative’ organisations was on exchange processes across their boundaries, the ‘regulative’ or ‘referent’ organisations focussed on the way their own interests were served within the context of the larger ecosystem (Trist 1983). A supplier in a turbulent environment had, therefore, to establish a different relationship to demand as shown in blue in the figure below, in which responses were organised dynamically around the ‘multi-sided’ nature of the referent organisation’s need, the referent organisation becoming an active participant in the process of defining the supplier’s response. This ‘client’ relationship is contrasted with the ‘consumer’ relationship between an operative organisation and the passive recipients of its products or services (Boxer 2006), the ‘customer’ relationship in which the active choice is from a menu of pre-defined alternatives, and the ‘patient’ relationship, in which the referent organisation is dependent on an understanding of its situation defined by the supplier’s interests. An important difference between GE and the UK’s social and healthcare systems was therefore that while the latter was expected to be able to operate in the blue quadrant, GE was not.

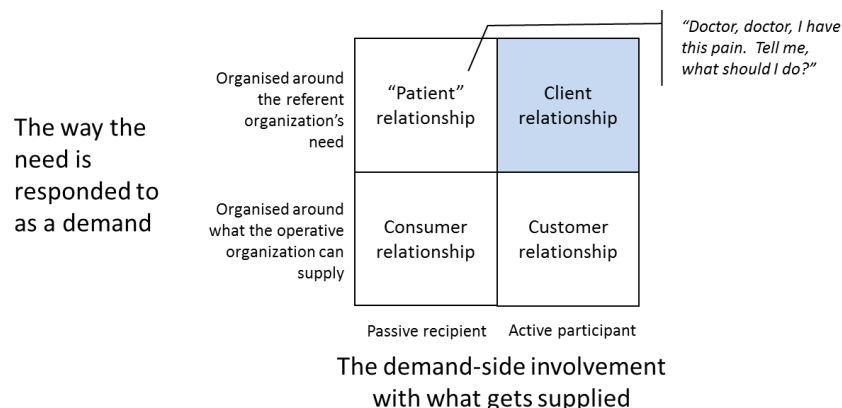


Figure 1: The relation of operative and referent organisations to demand

The material exchange of the blood-testing business was in the performance of blood tests. To the extent that it offered a battery of alternative tests, it was, therefore, establishing a ‘customer’ relationship with the doctors ordering its tests. The growth in the proportion of its business supporting referent organisations concerned with the diagnosis of (for example) complex immune-system disorders, however, meant that this material exchange had to be subordinated to its supporting role – these referent organisations corresponding, for example, to different teams of doctors working with different patients. In this support role to referent organisations, “the field of these interwoven indirect relations constituted the contextual, as distinct from transactional, environment”(Trist 1977). Put another way, the blood-testing business in its turbulent environment had to become ‘horizontally’ accountable to the indirect demands of referent organisations, arising from, the ‘multi-sided’ nature of their ‘client’ relationships.

The limitations of the ‘open system’ perspective on primary task and the socio-technical workgroup was therefore that it could not give an adequate account of the complexity involved in interacting with the ‘multi-sided’ nature of the demands arising on the ‘other’ side of its vertically-defined boundary.

So how then are we to think about organisations without boundaries?

An organisation’s relationship with an environment that is experienced as predictable is therefore ‘one-sided’, defined exclusively by how its technological components convert inputs to outputs. These components are ultimately determined by the unilaterally chosen outputs of the system, determining the self-regulating properties of the organisation (Ryan September 2006). In effect, the materials, machines and territory that make up the technological component define the ‘internal’ environment of the system. This ‘one-sided’ relation to the environment defines the conditions under which it must achieve a steady state as an open system, which in turn defines the boundary conditions that mediate between the strategic objective of the organisation and its environment. The open system concept, as applied to ‘operative’ organisations, must therefore refer to the socio-technical system, not simply to the social system (Emery 1993). How, then, is the open system concept to be extended to take account of the relation to the environment when it becomes ‘multi-sided’?

Referent organisations place ‘multi-sided’ demands on the ‘operative’ organisation in the sense that each one represents a different contextual environment into which to deliver products or services (Silverthorne 2006). From the perspective of an ‘operative’ organisation engaged in some form of material exchange with a turbulent environment, there are many referent organisations within its larger ecosystem, each concerned with aligning behaviours to the interests of its members in its own way, and each setting different boundary conditions on its relationship with its suppliers. Consider the team of doctors interacting around the management of a patient’s chronic condition. The resultant multi-episode care pathway will organise the way it makes demands on the blood-testing service. The ‘multi-sidedness’ of these demands refer to the ways in which the material exchange must relate to the context-of-use defined by the referent organisation. This contrasts with the ‘one-sided’ relationship made possible by predictable environments, in which, for example, the blood-testing organisation might say “we only do these standard tests.”

Defining open systems in terms of non-deterministic orders of closure

In order to apply Ashby’s ‘cybernetic thinking’ to an organisation as a socio-technical system, one must have access to the organisation’s model of the environment within which it plans to realise its strategic objective. This requirement restricts its application to those socio-technical systems that engage in a ‘one-sided’ material exchange with environments experienced as predictable, thereby equating the concept of equifinality with primary task.

Ashby’s work has been criticised more recently for failing to account for the adaptability of living systems within turbulent environments. It has also been criticised for being unable to account for the emergent nature of an organisation’s models (Froese and Stewart 2010), these models being implicit in the interactions among an organisation’s components (Argyris and Schon 1974). A development of the original concept of autopoiesis (Maturana and Varela 1998), which responds to these criticisms, distinguishes openness to material causation (i.e. the material exchange across a

boundary) from closure to efficient causation (i.e. by social agency) (Bich and Arnellos 2012). In the place of hierarchical decomposition, this approach implies circular causation between different orders of behavioural closure.

The technological components of a socio-technical system derived from their causal relation to chosen outputs define a technological system that has a (first-order) 'behavioural closure', comprising all the sequences of behaviour of which those components are capable, as a result of how they interact with each other and their environment. The system is open if some of its interactions are with its environment and its behavioural closure is non-deterministic if, for any given set of input conditions, there are behavioural paths leading to more than one outcome. It is this non-determinism that requires a manager-supervisor to impose constraints on the behaviour of its technological components through the social components of the socio-technical system, referred to by Miller and Rice as a sentient system, inducing a second-order closure. In these terms, Ashby's open systems associated with 'operative' organisations are first-order non-deterministic but assumed to be second-order deterministic.

A sentient system with its associated boundary is a system defined by relations between its members of shared feeling and sensation, which demands and receives loyalty from its members (Miller and Rice 1967). There is no reason to assume that the constraints imposed by the sentient system on the technological components of a socio-technical system will themselves result in a deterministic second-order closure. Indeed the presence of basic assumption behaviour makes this very unlikely (Armstrong 2005). There must, therefore, be a source of constraint on the behaviour of the sentient system itself, a governance system that regulates the relations between technological and sentient systems with respect to task (Miller and Rice 1967). It is this governance system in its vertical or hierarchical form that exercises sovereignty over the way management-supervision processes align component workgroup tasks to an overall strategic objective. This 'sovereignty' is the source of the manager-supervisor's authority, enabling a deterministic third-order closure to be created (Boxer and Kenny 1992). This third-order closure derives from the power of the owner to exercise sufficient authority to constrain the organisation's second-order non-deterministic closure to being deterministic. The owner requires obedience to his or her deterministic third-order closure.

Managing primary risk

The owner of an operative organisation within a predictable environment can exercise sovereignty because his or her organisation can be defined by planned 'one-sided' relationships. In turbulent environments, in which 'multi-sided' relationships to demand are subject to dynamic interactions with referent organisations, there must be some surrendering of sovereignty with a corresponding diffusion of power across other organisations within the larger ecosystem (Trist 1983). The relative dominance of these horizontal relations over the vertical relations results in an ecosystem exhibiting complex adaptive behaviour (Kurtz and Snowden 2003; Rouse 2008). For example, the blood-testing organisation must continually adapt its testing protocols to the demands of the teams of doctors it is supporting. In these turbulent ecosystems, there will be no overall boss, even though there will be order emergent from the mutual adjustment of relations between its constituent organisations through horizontal relations of governance.

Within predictable environments, a workgroup might define its boundaries bottom-up to some extent, depending on the nature of the technology it is using, but its vertical accountability through its manager-supervisor will ultimately make it subject to top-down authority. Within

Leading organisations without boundaries: 'quantum' organisation and the work of making meaning v3 By Philip Boxer

turbulent environments, however, some part of this top-down sovereignty will have to be surrendered if the 'multi-sided' demands of referent organisations arising within their contexts-of-use are to be able to determine primary task. This surrender of sovereignty in turbulent environments exposes the organisation to 'primary risk': that its primary task relations have not been defined in a way that satisfies the 'multi-sided' demands of its referent groups (Hirschhorn 1999). In the figure below, the primary task and primary risk axes represent the relationship between either side of the 'cut':

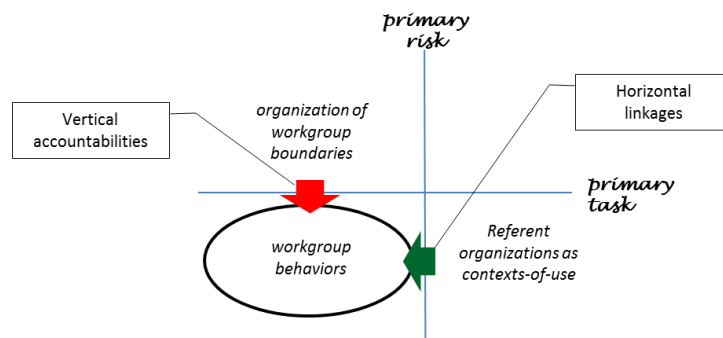


Figure 2: Primary risk and primary task

An organisation 'without boundaries' within a turbulent environment must, therefore, be approached not as a hierarchical entity but as a composite of technological and sentient systems between which it must collectively sustain horizontal as well as vertical relations, managing both primary task and primary risk in relation to the different referent organisations with which it is interacting. This tension between the horizontal and the vertical presents its leadership with a new challenge: the continuing re-definition of its workgroups' boundaries become as important as the way each workgroup works within its boundaries (Boxer 1994; Armstrong 2007). This creates a new kind of governance challenge.

Competing within turbulent ecosystems

When an environment becomes turbulent, the focus of competition moves from the individual organisation and its direct competitors to include the influence of referent organisations within the larger ecosystem and the governance of their associated networks. These referent organisations form networks (Goold and Campbell 2002; Provan and Kenis 2007) in response to the need to address value creation at the level of the ecosystem (Trist 1977; Porter and Kramer 2011). This shift is apparent in manufacturing (Iansiti and Levien 2004), but is affecting every industry (Zuboff and Maxmin 2002; Hagel III, Seely Brown et al. 2010), none more so than healthcare (Porter and Teisberg 2006). This is not to say, however, that organisations like GE are not able to ignore turbulence. They will do so to the extent that it is in their interests, but turbulence is also an opportunity.

Organisations that take up this opportunity and interact with these referent organisations are presented with 'multi-sided' demands, in the sense that the dynamic context of the demand becomes at least as important as the direct demand itself (Evans 2003; Silverthorne 2006). For example, it may be clear that a person needs a heart transplant, but an organisation supporting their healthcare has to be at least as concerned with the context of the person's body and lifestyle if the transplant is to be effective.

Leading organisations without boundaries: ‘quantum’ organisation and the work of making meaning v3 By Philip Boxer

A blood-testing organisation that seeks to create and sustain value in order to compete in these environments faces a much more complex task. It must still capture the direct value of material exchanges by recovering the cost of the blood test, but it must also capture indirect value through reducing the cost to the referent organisation of aligning products and services to its contexts-of-use. It is the ability to capture indirect value that creates the opportunity. To capture indirect value from the ‘multi-sided’ demands of patients within a healthcare ecosystem, it must support the way a healthcare clinic aligns a unique care pathway to manage the chronic symptoms of each of its patients. To do this, it must have a business platform that is able to support ‘multi-sidedness’(Boxer 2012).

‘Multi-sided’ business platforms

The smartphone with its apps provides us with a useful metaphor for a ‘multi-sided’ business platform. Suppliers of either smartphone or apps may have a ‘one-sided’ relationship with their clients, but the deployed platform enables the client endlessly to reconfigure its use to fit the different contexts-of-use in which he or she is working. For example, mobile devices can be used by a doctor to track a medical condition as part of how that patient’s condition is managed (Wayner 2012).

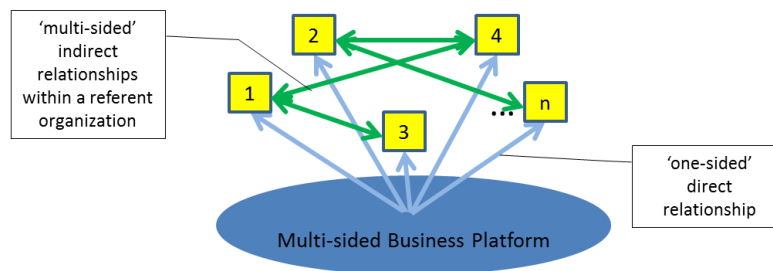


Figure 3: A ‘multi-sided’ business platform

‘Multi-sided’ platforms depend on software for their effectiveness. They impact any industry which is being digitised, whether directly, as with computing, communications and media (Gawer and Cusumano 2002; Evans, Hagiu et al. 2006), or indirectly, as in healthcare (Porter and Teisberg 2006). They are distinguished by their ability to support the ‘multi-sided’ indirect relationships between the different products or services supporting the referent organisations that are its clients. In turbulent environments, the indirect value of these relationships becomes at least as important as the direct value of ‘one-sided’ direct relationships. In effect, the primary task becomes specific to the individual referent organisation’s context-of-use. For example, the blood-testing business has to be able to recognise the diagnostic situation facing the doctors who are teaming around a patient’s condition. It has to capture indirect value from this situation by managing the interactions and relationships between different tests while also capturing direct value by performing individual tests as appropriate. Its testing platform has to be able to manage and account for these indirect interactions.

Balancing direct and indirect value

The blood-testing business may be facing many such diagnostic situations alongside its business of doing tests. If it is to remain competitive, it must manage the tension between the two kinds of value and how they are captured. In the figure below, the rows of the matrix represent client relationships, and its columns represent the individual services offered.

Leading organisations without boundaries: ‘quantum’ organisation and the work of making meaning v3
By Philip Boxer

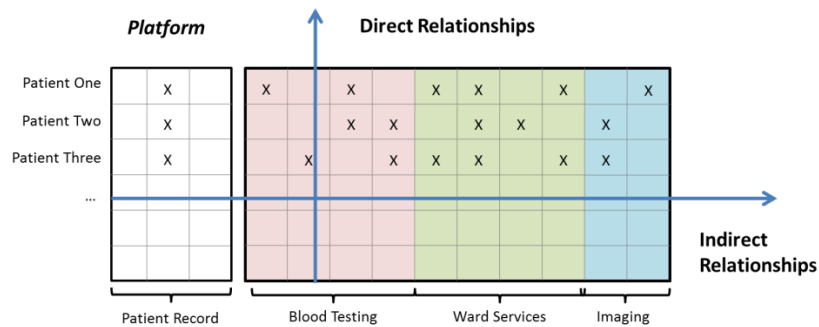


Figure 4: The ‘multi-sided’ matrix

The economics of the individual services in the columns, which determine their direct value, will depend on the number and variety of ‘row’ contexts creating demand on each service ‘column’ and will derive from the familiar supply-side economies of scale and scope that the supplying organisation is able to generate (Evans 2011). The costs of aligning combinations of these services along the rows in response to different diagnostic situations, supported by its ‘multi-sided’ business platform, will determine the indirect value that the organisation can capture from its clients through the economies of alignment (or demand-side economies (Evans 2011)) that it can create for its clients (Boxer 2012). To manage the tension between direct and indirect value, the organisation must balance the value of supply-side economies (of scale and scope) against demand-side economies (of alignment).

The role of the ‘multi-sided’ platform is to make this balancing possible, varieties of patterns of x’s horizontally representing varieties of ways in which the organisation needs to support indirect relationships. The greater this variety, the more the blood-testing business is responding individually to its clients. Each pattern also represents know-how about the nature of the collaboration between services needed to satisfy the client situation. This horizontal use of know-how has to be managed in the interests of the overall business, while also ensuring that each collaboration is aligned appropriately.

‘Quantum’ organisation

A ‘classical’ view of reality assumes that it is independent of the observer. This ‘classical’ view is implicit in the assumption that the workgroup’s boundaries are rooted in the nature of the technological components it is using (Rice 1958; Miller 1959; Miller 1975), and that the relationships between workgroups can, therefore, be defined hierarchically in relation to an overall strategic objective within an assumed predictable environment (Emery 1993). Within a turbulent environment, however, although a ‘classical’ view may be able to track the use of services in the ‘columns’ of the ‘multi-sided’ matrix in Figure 4, a significant variety of collaborations represented by the rows will violate the presumptions of boundary and unifying primary task.

The alternative approach proposed here is to adopt a ‘quantum’ metaphor. This considers each collaboration with a client to be a ‘quantum’ state of the organisation, the presence of any one such state at any time being discernible ‘from a distance’ in terms of its relative probability with respect to other potential states. In this view of reality, the coherence of any one ‘quantum’ state defines a particular alignment of services to a client situation, and has to be an effect of the interaction between a client-observer and the supplying observed-organisation (Atmanspacher, Romer et al. 2002; Rosenblum and Kuttner 2006). For a workgroup, this coherence is an emergent

Leading organisations without boundaries: ‘quantum’ organisation and the work of making meaning v3
By Philip Boxer

effect of the interactions within and between technological, sentient and governance systems, and the equivalent systems within a referent organisation.

The ‘quantum’ reality thus arises to the extent that an organisation is interacting with a turbulent environment in which patterns of interaction within and between workgroups and their environment are driven by the nature of their relationship to a context-of-use, and the forms of know-how that make it possible to support the resultant patterns of interaction. Within a ‘quantum’ reality, coherence cannot be defined for the organisation as a whole. It can only be defined with respect to its interactions with its clients one-by-one. It is this that makes the organisation ‘without boundaries’ in the ‘classical’ sense. The great attraction of the ‘classical’ view is that it assumes the organisation will decohere its relationships to referent organisations in order to take up a ‘one-sided’ relationship to its environment. This makes the organisation much simpler, but does not address the needs of referent organisations to reduce their costs of alignment. This concept of coherence/decoherence can be applied to the different kinds of demand-side relationship in Figure 1 as follows:

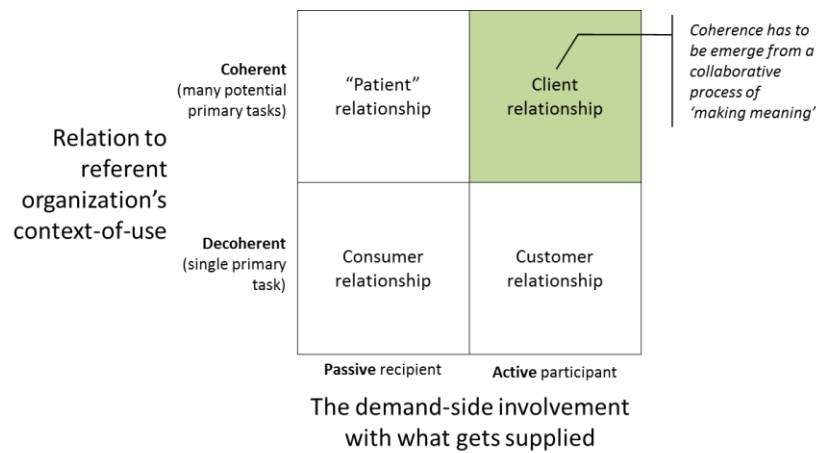


Figure 5: Coherence and decoherence

In turbulent environments, the ‘classical’ view is faced with an overwhelming complexity corresponding to the variety of simultaneous patterns of indirect relationship represented by the ‘multi-sided’ matrix (Figure 4). In its place, the ‘quantum’ view expects there to be an emergent theory-of-use implicit in the way know-how shapes the collaboration with each context-of-use. This emergent theory-in-use is the result of the way the organisation makes meaning in each situation. It reflects the way the tension is held between direct and indirect value, and between vertical accountabilities and horizontal linkages. This emergence characterises the nature of this ‘new kind of challenge to governance’ presented by these turbulent environments, but what kind of challenge does it present to leadership?

What does this do to the way we understand ‘leadership’?

‘Classical’ approaches to leadership attach great importance to the establishment of boundaries and their role in containing anxiety (Boxer 1999; Palmer 2002). The importance of boundary is that it supports identification through which it is possible for the individual to know what is expected of him or her (Rice 1958; Miller 1959; Miller 1975). This understanding of containment assumes an implicit matrix of thought – a mental model within which what-is-going-on may be contained. Within

turbulent environments, however, not only is ‘boundary’ no longer a useful concept to the organisation as a whole, because it varies situation by situation, but so also is the single model implied by ‘open systems’ thinking.

Working with ‘existential anxiety’

Something of the challenge facing leadership in these turbulent environments is caught by the following quote. Its importance is in clearly relating the existential anxiety experienced, not to any personal characteristics of the individuals involved, but rather to the nature of the situation (my emphasis added in italics):

“Further insights into the properties of systems of organisational ecology were obtained at about this same time from another Tavistock project in the aerospace industry, in which the government of the day had caused the merger of two large engine makers into a vast new complex (Emery 1976). No sooner had this event taken place than technological developments in the worldwide context, especially in the U.S., undermined the logic of the fusion. In the ensuing situation the joint management seemed unable to develop new strategies because, it was alleged, yesterday's protagonists were unable to collaborate. The problem was brought to us as one of interpersonal conflict within a top management group. However, when Emery and I went away with the eleven people principally concerned to a residential lab, under social island conditions, we found that what they needed most was time in a supporting environment to share their common anxieties, and through doing this intensively to become able to make a collective re-appreciation of their entire situation. There were no deep incompatibilities; nor was there stubborn adherence to previous loyalties. The group procedures intended to facilitate the disclosure of hidden agendas and eyeball to eyeball levelling became rather marginal. *The anxieties were existential rather than interpersonal. For the issue was survival. In a turbulent environment the issue is survival. The need is to stop the flight into personal paralysis and interpersonal discord and to replace these by participation in a process of group innovation.* In systems of organisational ecology the locus of innovation is in the set of the partners involved.” (Trist 1977)

These existential anxieties were associated with the loss of dependable boundaries within a ‘classical’ view of the organisation in its environment. The same existential anxieties are encountered by workgroups working with a “multi-agency, multi-disciplinary service for children, their families and carers, who were seen to have mental health needs.” Here again, the difficulty in taking up a horizontal authority came from the workgroups’ adherence to a ‘classical’ view of organisation as necessarily hierarchical (Armstrong 2007).

These situations parallel the challenges facing the blood-testing organisation in a healthcare industry increasingly oriented towards aligning care pathways to the interests of patients. The different nature of the turbulent environment means losing a direct identification between a physical system with its boundaries and the system of meaning within which it was designed, and of which it is a realisation. The result forces the member of a workgroup to re-examine the concept of containing, abandoning the expectation of being able to depend on a direct identification between boundary and container. This means moving closer to a psychoanalytic approach, in which meaning must be made for the individual in relation to each situation.

Bion understood the container-contained relation as a process of making meaning through which fears could be modified and internalised (Bion 1970). This container-contained relation took the form of linking through knowing (K-linking) as a making of meaning (Bion 1962). Thus to ‘contain’ a situation was to return meaning to the situation which was otherwise experienced as anxiety-inducing. This container-contained relation enabled unconscious processes to be given meaning in consciousness through a work of transformation, taking place within the context of a ‘vertex’ – a way of organising meaning (Bion 1965). Existential anxiety, therefore, could be understood as a

Leading organisations without boundaries: ‘quantum’ organisation and the work of making meaning v3 By Philip Boxer

failure to make meaning through a failure of vertex.² This changes the way the task of leadership can be understood from one of representing a way of making meaning to one of supporting the creation of new ways of making meaning by creating new vertices. Returning to the example of the UK’s NHS, Mr Stephen Dorrell MP, chair of the UK’s House of Commons’ Health Committee said the health and social care system “is a transaction-based system. What we actually need, and this is where the re-imagination process comes in, is a system that is designed for its core purpose. Its core purpose being to add value to extended life years”(Davies 2013). The need for “re-imagination” is the need to create new vertices.

It is in this sense that an organisation, interacting effectively within these turbulent environments by responding to its clients one-by-one, is ‘without boundaries’. There are as many definitions of its boundaries as there are client relationships, which is not to say that primary task cannot be identified for each client situation. An alternative approach is, therefore, to focus directly on the interactions themselves within each of these client environments (French and Simpson 2010). These interactions collectively define a domain of relevance defined in terms of the behaviours of the organisation, in relation to which theories-in-use will be emergent.

The task of leadership within turbulent environments

Within turbulent environments, therefore, the ‘quantum’ metaphor provides a way of approaching the task of making meaning across a domain of relevance defined by all the one-by-one interactions with clients. The work of ‘quantum’ organisation involves creating the conditions in which meaning can be made within each client’s situation, context and timing in such a way as to enable the organisation to act coherently and effectively in relation to that client’s situation. In the figure below, the domain of relevance is overlaid on the ‘cuts’ in Figure 2 to separate out four different ways in which interactions within the domain of relevance may be examined, depending on their relation to the two ‘cuts’ of primary task and primary risk. For ease of reference these are referred to in terms of the cardinal points of the compass:

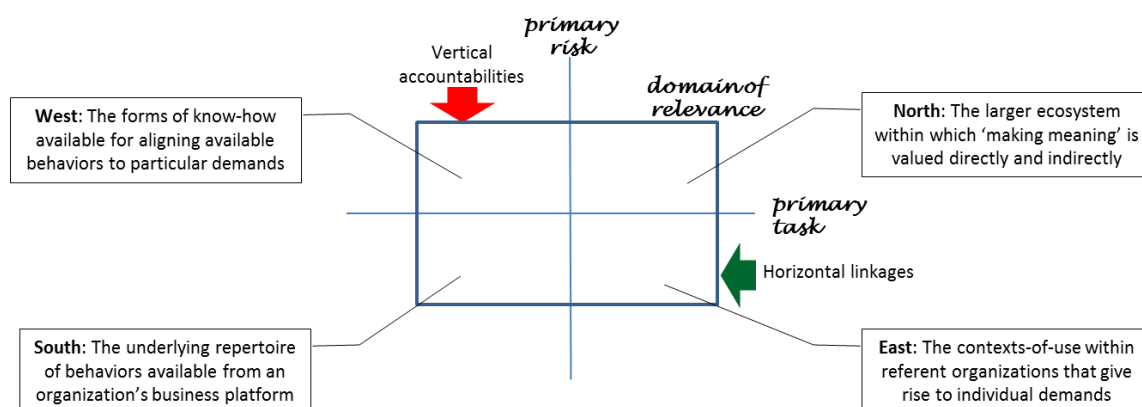


Figure 6: The domain of relevance

These four directions provide a way of distinguishing a horizontal approach to governance that contrasts with hierarchical and implicitly ‘top-down’ vertical approaches to governance. It is an

² The “interpersonal anxieties” in the quote were thus a defense against anxiety arising from the experience of ‘vertex failure’. ‘Vertex failure’ points, therefore, towards two different dimensions of anxiety, one a failure to contain an experience within a given vertex and the other a failure of the vertex itself. The corresponding difference in response is between an *acting out* and a *passage à l’acte*. See Harari, R. (2001). Lacan’s Seminar on “Anxiety”: An Introduction. New York, Other Press.

Leading organisations without boundaries: 'quantum' organisation and the work of making meaning v3

By Philip Boxer

approach aimed at creating the conditions in which meaning can be created at the level of individual relationships, although still within the constraints imposed by the organisation. In Bion's terms, the surrender of sovereignty within turbulent environments involves leadership being able to work with multiple vertices. In these environments, the constraints involve maintaining balance dynamically in four directions:

- **North:** The larger ecosystem within which 'making meaning' is valued directly and indirectly
- **East:** The contexts-of-use within referent organisations that give rise to individual demands
- **South:** The underlying repertoire of composite behaviors available from an organisation's business platform
- **West:** The forms of know-how available for composing and aligning available behaviors to demands

In these terms, the task of the leader who wishes to balance the demands of vertical and horizontal relations is to hold the domain of relevance open to these four directions of making meaning:

- **North:** holding the context in which meaning-making may take place.
- **East:** legitimising the questions and challenges that emerge from relating to new situations and contexts-of-use within referent organisations
- **South:** providing an appropriately agile support environment capable of supporting 'multi-sided' ways of responding to the (Easterly) questions and challenges (Boxer 2012)
- **West:** making it in workgroups' interests to develop the forms of know-how that can align (Southerly) capabilities to (Easterly) demands within the (Northerly) constraints of the organisation.

In doing so, leadership is constrained North-South by the ways in which the 'multi-sided' capabilities of the supporting platform enable the tension between direct and indirect value to be managed, and is dependent on the responsiveness East-West of the organisation's workgroups to new forms of 'multi-sided' demand.

Conclusion

From the perspective of an organisation as a whole, the relation of the workgroup to referent organisations within a turbulent environment makes it an organisation 'without boundaries' because of the necessity to respond to its clients one-by-one. The resultant complexity is better described in terms of 'quantum' organisation. This 'quantum' understanding is capable of holding a fundamental tension facing the workgroup between the axes of vertical accountability and horizontal linkages.

A 'classical' approach assumes that the boundaries of a workgroup can be directly identified. The 'quantum' view, necessary within turbulent environments, assumes that workgroups support referent organisations through a process of creating coherent interactions with the client. These coherent interactions involve making meaning. 'Boundary' is a side-effect of this way of making meaning. This work of 'quantum' organisation by workgroups involves developing container-contained relations that can return meaning to the client situation that would otherwise be experienced as anxiety-inducing. Two conditions of governance follow from this for such workgroups to be effective in responding to its clients, related below to healthcare:

1. The workgroup must have a supporting platform that is able *simultaneously* to support a wide variety of alignments of care services. In this sense, the supporting platform must be 'multi-

sided’ in the sense of being able to sustain many different ‘quantum’ states of alignment at the same time.

2. Leadership must make it in the interests of its workgroups to *contain* the experience of its clients within their local ‘multi-sided’ contexts, and must make it possible to form effective workgroup collaborations that can deliver local coherence in the way they align appropriate care pathways.

This horizontal approach to governance has implications for how ‘multi-sided’ platforms are engineered (Boxer 2012). It also involves further development of our understanding of what a ‘boundary’ is in psychoanalytic terms from defining an ‘outside’ to defining a particular relationship to the ‘otherness’ of the other (Boxer 2013b). Finally, it implies that the concept of anxiety and the ways of working with social defences against anxiety need to include ways of working with the effects of ‘existential anxiety’ through a third kind of ‘heretical’ response (Boxer 2013), in which new ways of containing are developed through innovation (Boxer 2013c). These implications are beyond the scope of this paper and will be taken up in subsequent papers.

References

- Argyris, C. and D. A. Schon (1974). Theory-in-Practice: increasing professional effectiveness. San Francisco, Jossey-Bass.
- Armstrong, D. (2005). The work group revisited: Reflections on the practice of group relations. Organization in the Mind: Psychoanalysis, Group Relations, and Organizational Consultancy - Occasional papers 1989-2003. R. French. London, Karnac: 139-150.
- Armstrong, D. (2007). "The Dynamics of Lateral Relations in Changing Organizations Worlds." Organizational and Social Dynamics 7(2): 193-210.
- Ashby, W. R. (1956). An Introduction to Cybernetics. London, Chapman & Hall.
- Ashkenas, R., D. Ulrich, et al. (2002). The Boundaryless Organization: Breaking the Chains of Organization Structure, Jossey-Bass.
- Atmanspacher, H., H. Romer, et al. (2002). "Weak Quantum Theory: Complementarity and Entanglement in Physics and Beyond." Foundations of Physics 32(3): 379-406.
- Bertalanffy, L. v. (1950). "The theory of open systems in physics and biology." Science 111: 23-29.
- Bich, L. and A. Arnellos (2012). "Autopoiesis, Autonomy, and Organizational Biology: Critical Remarks on "Life After Ashby"." Cybernetics and Human Knowing 19(4): 75-103.
- Bion, W. R. (1962). Learning from Experience. London, Heinemann.
- Bion, W. R. (1965). Transformations. London, Heinemann.
- Bion, W. R. (1970). Attention and Interpretation. London, Tavistock.
- Boxer, P. (1994). Intent and the future of Identity. Creating New Futures: A Manager's Guide to the Unknown. J. L. a. J. M. Richard Boot, McGraw-Hill.
- Boxer, P. J. (1999). The dilemmas of ignorance. What is a Group? A fresh look at theory in practice. C. Oakley. London, Rebus Press.
- Boxer, P. J. (2006). "Distinguishing active from passive users." Asymmetric Design <http://www.asymmetricdesign.com/2006/12/distinguishing-active-from-passive-users/> 2013.
- Boxer, P. J. (2012). The Architecture of Agility: Modeling the relation to Indirect Value within Ecosystems, Lambert Academic Publishing.
- Boxer, P. J. (2013). "Managing the Risks of Social Disruption; What Can We Learn from the Impact of Social Networking Software?" Socioanalysis 15: 32-44.
- Boxer, P. J. (2013b). THE environment does not ex-sist: engendering 'boundary' as the object of psychoanalytic study. Re-Working Lacan at Work. G. Arnaud and B. Vidaillet. Paris.
- Boxer, P. J. (2013c). Anxiety and innovation: working with the beyond of our double subjection. Colloquium on Revisiting 'Unconscious Defences against Anxiety', Oxford, UK.
- Boxer, P. J. and J. V. Kenny (1992). "Lacan and Maturana: Constructivist Origins for a 3rd order Cybernetics." Communication and Cognition 25(1): 73-100.
- Dahlstrom, P. and D. Edelman (2013). "The coming era of 'on-demand' marketing." McKinsey Quarterly(April).
- Davies, M. (2013). "GPs could become 'integrated care managers' in future NHS." Pulse Today <http://www.pulsetoday.co.uk/home/burnout/pulse-launches-major-survey-of-gp-burnout/20002805.article> 2013.
- Emery, F. E. (1976). Searching for New Directions. New Ways for New Times. M. Emery. Canberra, Australia, Centre for Continuing Education, Australian National University.
- Emery, F. E. (1993). Characteristics of Socio-Technical Systems. The Social Engagement of Social Science Volume II: The Socio-Technical Perspective. J. Fichtelberg, H. Murray and B. Trist, University of Pennsylvania Press.

Leading organisations without boundaries: 'quantum' organisation and the work of making meaning v3
By Philip Boxer

- Emery, F. E. and E. Trist (1965). "The Causal Texture of Organizational Environments." Human Relations **18**: 21-32.
- Evans, D. S. (2003). "Some Empirical Aspects of Multi-Sided Platform Industries." Review of Network Economics **2**(3).
- Evans, D. S. (2011). Platform Economics: Essays on Multi-Sided Businesses. Amazon, Competition Policy International.
- Evans, D. S., A. Hagiu, et al. (2006). Invisible Engines: How Software Platforms Drive Innovation and Transform Industries. Cambridge, MIT.
- French, R. B. and P. Simpson (2010). "The 'work group': Redressing the balance in Bion's *Experiences in Groups*." Human Relations **63**(12): 1859-1878.
- Froese, T. and J. Stewart (2010). "Life after Ashby: Ultrastability and the Autopoietic Foundations of Biological Autonomy." Cybernetics and Human Knowing **17**(4): 7-50.
- Gawer, A. and M. A. Cusumano (2002). Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation. Boston, Harvard Business School Press.
- Goold, M. and A. Campbell (2002). Designing Effective Organizations: How to Create Structured Networks. London, Jossey-Bass.
- Hagel III, J., J. Seely Brown, et al. (2010). The Power of Pull: How Small Moves, Smartly Made, Can Set Big Things in Motion. Philadelphia, Basic Books.
- Harari, R. (2001). Lacan's Seminar on "Anxiety": An Introduction. New York, Other Press.
- Hirschhorn, L. (1999). "The Primary Risk." Human Relations **52**(5): 5-23.
- Hunt, J. (2013). "Will we rise to the challenge of an ageing society?" Retrieved April 25, 2013, 2013, from <https://www.gov.uk/government/speeches/will-we-rise-to-the-challenge-of-an-ageing-society>.
- Iansiti, M. and R. Levien (2004). The Keystone Advantage: What the New Dynamics of Business Ecosystems Mean for Strategy, Innovation, and Sustainability. Boston, Harvard Business School Press.
- Kurtz, C. F. and D. J. Snowden (2003). "The new dynamics of strategy: Sense-making in a complex and complicated world." IBM Systems Journal Vol 42 No 3: <http://www.research.ibm.com/journal/sj/423/kurtz.html>.
- Lawrence, P. R. and J. W. Lorsch (1969). Developing Organizations: diagnosis and action, Addison-Wesley.
- Maturana, H. R. and F. J. Varela (1998). The Tree of Knowledge: The Biological Roots of Human Understanding, Shambhala.
- Miller, E. J. (1959). "Technology, Territory and Time: The Internal Differentiation of Complex Production Systems." Human Relations(12): 243-272.
- Miller, E. J. (1975). "Socio-Technical Systems in Weaving, 1953-1970: A Follow-up Study." Human Relations **4**(28): 349-386.
- Miller, E. J. and A. K. Rice (1967). Systems of Organization: The Control of Task and Sentient Boundaries. London, Tavistock.
- Palmer, B. (2002). The Tavistock paradigm: Inside, outside and beyond. Organisations, Anxieties and Defences: Towards a Psychoanalytic Social Psychology. R. D. Hinshelwood and M. Chiesa. London, Whurr: 158-182.
- Porter, M. E. and M. R. Kramer (2011). "Creating Shared Value: How to reinvent capitalism - and unleash a wave of innovation and growth." Harvard Business Review(January-February).
- Porter, M. E. and E. O. Teisberg (2006). Redefining Health Care: Creating Value-based Competition on Results. Boston, Harvard Business School Press.

Leading organisations without boundaries: 'quantum' organisation and the work of making meaning v3
By Philip Boxer

- Provan, K. G. and P. Kenis (2007). "Modes of Network Governance: Structure, Management, and Effectiveness." Journal of Public Administration Research and Theory **18**: 229-252.
- Rice, A. K. (1958). Productivity and social organization: the Ahmedabad experiment. London, Tavistock Publications.
- Rittel, H. and M. Webber (1973). "Dilemmas in the General Theory of Planning." Policy Sciences.
- Rosenblum, B. and F. Kuttner (2006). Quantum Enigma: physics encounters consciousness, Oxford University Press.
- Rouse, W. B. (2008). "Health Care as a Complex Adaptive System: Implications for Design and Management." The Bridge **38**(1): 17-25.
- Ryan, A. (September 2006). "Emergence is coupled to scope, not level." Complexity - Complex Systems Engineering **13**(2): 67-77.
- Silverthorne, S. (2006). New Research Explores Multi-Sided Markets: an interview with Andrei Hagiu. Harvard Business School Working Knowledge: <http://hbswk.hbs.edu/item/5237.html>.
- Trist, E. (1977). "A Concept of Organizational Ecology." Australian Journal of Management **2**(2): 161-176.
- Trist, E. (1983). "Referent Organizations and the Development of Inter-Organizational Domains." Human Relations **36**(3): 269-284.
- Trist, E. L. (1981). The Evolution of Socio-Technical Systems. Perspectives on Organizational Design and Behaviour. A. F. Van de Ven and W. F. Joyce. New York, John Wiley.
- Wayner, P. (2012). Monitoring your Health with Mobile Devices. The New York Times.
- Zuboff, S. and J. Maxmin (2002). The Support Economy: Why Corporations are Failing Individuals and the Next Episode of Capitalism. New York, Viking.

Glossary

'quantum' metaphor

- 'classical' view of reality** – a view of reality that assumes reality exists independently of the observer. 10
- 'quantum' view of reality** – the appearance of any one 'quantum' state is understood to be an effect of the interaction between its observer and the system observed. 10
- coherence** – the way a collaboration delivers behaviours in practice, when referring to a collaboration between a number of individual services and a client situation. 10
- decohere** – to remove the coherence in a relationship to a client referent organisation's context-of-use in the interests of maintaining a one-sided relationship to the environment. 11

behaviour

- 1st-order closure** – the behavioural closure of the interactions between the technological components of a socio-technical system. 7
- 2nd-order closure** – the behavioural closure of a socio-technical system in which the interactions between its social components constrain the system's first-order closure. 7
- 3rd-order closure** – the behavioural closure of a socio-technical system in which its governance system constrains the system's second-order closure. 7
- closure** – the behavioural closure of a system is all the possible sequences of behaviour of which that system's components are capable as a result of how they interact with each other and their environment. 7
- non-deterministic** – the behavioural closure of a system for which there is more than one outcome for any given set of input conditions..... 7

demands

- context-of-use** – the contextual environment defined by a referent organisation determining the use of an operative system's outputs..... 6
- multi-sided** – demands for material exchange that must relate to the particular context-of-use defined by a referent organisation. 6
- one-sided** – a relationship to demand defined by the unilaterally chosen output of an operative system made possible by predictable environments..... 6

environment

predictable

- an environment predictable enough to make it possible for an organisation to select where it wishes to be at some future time, 'equifinality' becoming a strategic objective at the level of the organisation as a whole. In these environments it is possible to plan in 'design-time' before entering a 'run-time' in which the plan governs what is done operationally..... 4
- disturbed-reactive** - we're competing with other testers who want to take our business in our area 3
- placid** – we're the only service in our area. 3
- placid-clustered** - we're the only blood tester in our area..... 3

time

- design time** – a time within which management could decide how it would subsequently operate in 'run-time'. 4
- run-time** – a time in which to operate in relation to an environment. 4
- turbulent** – an environment in which it is no longer possible to separate design-time from run-time because of the dynamic interactions not only between an organisation and its environment, but also within the environment itself..... 4

governance

- governance system** – a system that regulates the relations between technological and sentient systems through the exercise of sovereignty. 7
- horizontal accountability** – the accountability of an organisation to the indirect demands of referent organisations in a turbulent environment. 5
- sentient system** - a system defined by relations between its members of shared feeling and sensation, which demands and receives loyalty from its members..... 7
- sovereignty** - the power of the owners of an organisation to exercise unilateral authority over the relations between its component parts and itself as a whole 7
- technological system** – the technological components of a socio-technical system defined by their relation to a chosen output..... 7

Leading organisations without boundaries: ‘quantum’ organisation and the work of making meaning v3
By Philip Boxer

vertical accountability – accountability for the way a component workgroup task relates to an overall strategic objective..... 4

open system
 - a system for which there is import and export across its boundary and, therefore, change of its components 3

domain of relevance – the behaviours associated with the interactions an organisation has within each of its client environments, in relation to which theories-in-use will be emergent. 13

equifinality – a key property of living systems of maintaining a continuous throughput despite external change..... 3

primary risk – the risk that the primary task relation for a workgroup has not been defined in a way that satisfies the multi-sided demands of its referent groups. 8

organisation
internal environment – The technological components of an organisation defined by its chosen outputs, and in terms of which its boundaries may be defined..... 6

operative– an organisation engaged in material exchange processes within its environment. 4

referent– an organisation defined by particular inter-organisational relations and boundary conditions within a larger ecosystem. 5

without boundaries – an organisation, whether public or private, which is interacting dynamically in different ways with each of its clients in such a way as to respond to its client one-by-one..... 3

value
direct – the value of a material exchange across the boundary of an operative organisation, created by the way the product or service is put together..... 9

indirect – the value created by a product or service as a result of the way it reduces the costs of a referent organisation through better aligning products and services to its context-of-use..... 9