EXPLORING CONTINUOUS ORGANISATIONAL TRANSFORMATION AS A FORM OF NETWORK INTERDEPENDENCE

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ABSTRACT

In this paper we examine the problematic area of continuous transformation. We conduct our analysis from three theoretical perspectives: the resource based view, social network theory, and stakeholder theory. We found that the continuous transformation can be explained through the concept of Network Interdependence. This paper describes Network Interdependence and develops theoretical propositions from a synthesis of the three theories. Our contribution of Network Interdependence offers fresh insights into managing complex change and offers new ways of looking at organisational transformation.

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INTRODUCTION

Processes of 'changing organisations' continue to be challenged as traditional models of managing change are becoming unsuitable in an Information Age characterised by hyper-competition (Marshak, 2004). Change itself is seen as a high-risk strategy for many organisations, and this is reinforced by a consistently poor track record of change management success (Beer, Eisenstat, & Spector, 1990; Beer & Nohria, 2000). This poor success rate is accompanied by an emerging view that the pace of change is increasing, and that traditional processual models of change are no longer adequate for 21st century problems (Marshak, 2004).

According to Brown and Eisenhardt, "…in high velocity industries with short product lifecycles and rapidly shifting competitive landscapes, the ability to engage in rapid and relentless continual change is a crucial capability for survival" (Brown & Eisenhardt, 1997: p414). However, organisations continue to be designed to achieve stability of operations in an environment of increasing instability (Lawler & Worley, 2006).

In order to change, organisations invoke significant change programmes to mobilise the resource base, resetting alignment in form and function. Such changes are typically characterised by periodic states of equilibrium (Romanelli & Tushman, 1994). However, when the next perceived threat or opportunity emerges, organisations enter a cycle of planned unfreeze-reconfigure-refreeze activity which barely has time to settle before the need to alter the form and function is invoked again.

The derivation of competitive advantage through business process under these circumstances is a challenge because budgets and resources are frequently written off to implementation programmes associated with punctuated change. These "start-stop" models of change thus become insufficient to address the requirement for continual change and adaptation, and the concept of continuous transformation or 'morphing' emerges as a mechanism to explain evolutionary organisational development.

The ideas in this paper unfold across five sections. The next section identifies the key terms from literature which identify processes of changing organisations. We then review the literature to discuss key characteristics in relation to the three theoretical perspectives: the resource based view, social network theory, and stakeholder theory. We discuss the implications of these theoretical frames of reference on continuous transformation, and develop a series of propositions. Finally we summarise the paper and identify contributions to research.

REVIEW OF KEY CONCEPTS

There are few, if any, definitive examples of organisations which lend themselves to immediate identification as "morphing organisations". We therefore propose to develop a theoretical view based on emerging definitions from literature which describe key characteristics associated with continuous transformation and evolution of form and function within organisations. We summarise these characteristics in Table 1:

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These characteristics are associated with the resource base, its configuration and adjustment mechanisms. These configurations take the form of a network of relationships. These networks generate patterns which can describe partial or whole systems of resources which act within the organisation. The theoretical problem continuous transformation poses is how we describe and measure these relationship patterns, and what the evolution of these patterns looks like.

As the extant literature fails to provide theoretical frameworks and methods to describe, measure and model continuous transformation, this paper fills this gap in the literature. In order to develop a framework for continuous transformation, we take resource based theory (RBT) as our starting point for understanding the nature of the resource configurations. We use RBT theory to examine patterns of resource relationships. Social network theory is not only well developed theory but also provides a source of methods for describing relationships. We describe and measure relationships using SNT techniques as the premise for understanding relationships through tie strength and connectivity. SNT provides us with a means to denote the resources themselves in a pattern, and describe the nature of that pattern. Continuous transformation affects stakeholders within and without organisations. We consider the influence of stakeholders who govern resource availability, placement and consumption within that resource pattern as well as the emergent patterns which are generated by reconfiguration activity.

DEVELOPING A FRAME OF REFERENCE – LITERATURE REVIEW

We begin with the resource base in developing the frame of reference for continuous transformation. Peteraf (1993) asserts that resources are assets and capabilities situated within the organisation. Resources may also be asset-specific and may be subject to particular relationships within the business environment. This means resources do not necessarily have to remain within the firm (Srivastava et al. 1998), and the resource base is thus extended to include extra-organisational resources.

Earlier developments of the resource based view (Penrose, 1959; Barney, 2001) suggest that transient advantage (based on VRIN principles) stems from managing the resource stock effectively. The provision of and access to resources is controlled by resource owners. The control of resource types available, acquired, created or generated is therefore a critical factor in developing transient advantage (Pfeffer & Salancik, 1978).

Rindova and Kotha (2001) introduce the term “morphing” to describe the continuous (re)configuration and exploitation of this resource stock to create transient capability advantage. This process of continuous transformation notes that fixed patterns of resource commitments can become inhibitors to strategic re-orientation. They suggest that where firms operate in economic conditions of hyper-competitiveness, firms should focus on renewing rather than protecting their sources of advantage because the source of any advantage is transitory and applies only to a limited time frame. They also suggest that “morphing” requires a shift from control over resources through structure and process towards opportunistic evolution and experimentation.

This continuous refinement through systemic adjustments of form and function in organisations leads us to develop the view that multi-layer, multi-resource type

configurations are necessary to enable continuous adaptation, which in turn may facilitate the development of transient advantage. The configurations may well extend beyond the assumed boundaries of the firm. Morphing organisations are adaptive systems which are capable of generating resource patterns through anticipatory mechanisms which trigger resource reconfigurations. The reconfigurations can occur through combinative and dynamic capability (Kogut & Zander, 1992), and at sub-system or whole system level (Marshak, 2004).

This leads us to enquire how these systemic adjustments are made to resource configurations. As the start point, we therefore need to describe or "map" existing configurations of resources and relationships which exist between those resources. We examine these resource relationships using the concepts described within social network theory to provide a means for understanding resource relationship strengths, networked patterns of resource, and flexibility in network patterns. Social network theory therefore provides a solid base from which to develop the frame of reference for describing continuous transformation.

We draw three key constructs from social network theory: the node or agent, the relationship between nodes, and the strength of relationship as it exists between nodes (Granovetter, 1973; 1982). This notation provides us with the aspect of the "weak tie". However, Granovetter's classification of the network node agents limits the applicability of the "weak tie" to specific resource types – the human agent. We propose to extend the classification of the node agents to include processes or process sets and technology as node role holders – a multi-agent typology.

We conceptualise the network of resources as composed of a multi-type resource agent patterns. These can be described in accordance with the RBV in order to identify specific resource types or groups. The network of resources can then be examined to identify specific network relationships which can be described through their connectivity and their respective strengths.

Network adaptability stems from the ability to change relationships between node agents, and to influence the agents themselves (Granovetter, 1973; 1982). This is because weak ties can form crucial bridges between networks where node agents are members of more than one network. Nelson and Matthews (1991) note that high performing organisations (ones which generate advantage) have overall more weak ties between their constituent components. They also exhibit higher numbers of inter-group or sub-system strong ties, and more group or sub-system very strong ties than low performers. Network adaptability is therefore a factor in developing transient advantage.

Network adaptation also stems from the changeability of the constituent nodes themselves. McPherson, Popielarz and Drobnic (1992) suggest that network composition can change over time for social groups where the predominant relationship types between nodes are weak, and where relationship connections span more than the immediate sub-system or group. Arguably therefore network adaptability is influenced by its composition and the relationship strength which governs resource node connectivity. Inter-nodal relationships between people, process and technology define the network composition (and hence resource availability), and this influences the development of advantage. We therefore need to examine the influence over the

configuration of the network nodes and the respective relationships which together comprise the resource pattern.

Prior research shows that stakeholders have the power to influence resource configurations and resource relationships and that the role of stakeholders is critical in denying or providing resource or access to resource to enable the firm to function (Pfeffer & Salancik, 1978). Implicit and explicit relationships between stakeholders also govern resource positioning and availability (Hill & Jones, 1992). This means that stakeholders control the ability not only to use resource, but also to determine and influence the relationships between the resources (the dependencies), and therefore determine performance outcome (Frooman, 1999).

Freeman (1984: p46) defines stakeholders as "any group or individual who can affect or is affected by the achievement of the firm's objectives". Stakeholders positioned outside the traditional boundaries of the firm who can affect and influence organisational performance through specific asset or capability relationships are considered through the relational view of stakeholders. This explains how firms develop competitive advantage through inter-firm networking (Dyer & Singh, 1998). This relational view allows us to acknowledge the inter-dependent nature of stakeholder relationships which govern the resource network. It broadens the basis of stakeholder relationships to be considered beyond firm boundaries.

DISCUSSION: EXPLORING CONTINUOUS TRANSFORMATION

We begin by describing the nature of continuous transformation in light of the definitions cited in Table 1 and in consideration of the theoretical frames of reference discussed above.

Terms like "protean" and "agile" were used to describe organisations which exhibited alignment of resources to satisfy strategy. This alignment is evident where resource layering through reconfiguration is present, and where performance data of those resources were available in real time such that adjustments could be made to form and function in order to ensure continuous stakeholder satisfaction. This is because time delays impact the ability of the organisation to react, reconfigure and evolve to deliver the required performance. Without this need for continuity, models of change associated with punctuated equilibrium are dominant (Gersick, 1991; Romanelli & Tushman, 1994).

We define the resource base as all capabilities existing within the organisation (Peteraf, 1993) and included those resources available through specific relationships outside that firm which were capable of providing competitive advantage (Srivastava et al. 1998). Bearing in mind that the resource based view states that advantages through VRIN elements are only applicable for as long as it takes other firms to exploit their resource networks and erode that advantage, other means of developing advantage are therefore sought for exploitation.

Intra-firm collaboration and resource combination provide a relational view to explain how resource relationships (and how stakeholders governing those resource relationships) can develop network advantage through interdependency (Dyer & Singh, 1998). These networked resource structures can change through mutation, combination, or acquisition (Kogut & Zander, 1992).

Specifically, a number of network characteristics support this process of mutation, combination and acquisition of resource structures. These characteristics are: connectedness ("multiplicity"); tie strength variability and durability; and the points at which breaks and joins can be made either through removing the relationship tie between the resource nodes ("bridge") , or removing the resource node itself ("cut point").

There are also key network features which enable the development of adaptive capability through the ability to form or break critical connections. This is evident through the structure of the relationship configurations. Descriptors such as "core", "periphery" and "clique" are used to describe particular pattern configurations between nodes and ties. Gaps in configurations are denoted as "structural holes".

Existing research informs us of model-like constructs such as Thomson's (1967) typology for classifying interdependencies. However, Thompson did not actually provide any empirical evidence for demonstrating a model or its implications. Much later evidence from MacKenzie (2001) identifies process–based relationship modelling through understanding the connection of task-to-process (such as advertising jobs to recruitment) and process-to-process (such as recruitment to product development) relationships within resource networks as desired organisational characteristics which provide a basis for illustrating Thompson's original work.

Social network analysis (SNA) techniques stem from a sociological perspective and are frequently associated with the uncovering of informal relationships between agents within particular networks. These informal agent relationships explain the relational aspects of organisation structures and highlight the informal structures which are frequently the over-riding influences which determine performance from agents. Such limitations have been noted by Grandori and Soda (1998) and we summarise their findings on these as follows:

- SNA is descriptive more than prescriptive and does not explicitly identify particular configurations which deliver superior performance;
- the evaluation of network designs is based on co-relational analyses between network structures and organisational performance i.e. SNA has assessed the design of structures described and measured as networks but not the design of organisational structures using those networks;
- SNA by its nature has addressed people, ties are relational contacts and networks are social structures.

As a result, Grandori and Soda (1998) conclude that the variety of structures that can be conceived in using SNA as the descriptive mechanism is limited, and that the development of alternative models is constrained. They argue that we need to move beyond the classification of nodes from a purely sociological view, and consider nodes which are non-human. This would enable us to consider and links or ties which are not necessarily interpersonal relationships and informal contacts. We refer back our multi-agent taxonomy proposal which includes technology, process, and human agents as an extension to this concept.

Grandori and Soda (1998) also present a classification which allows us to describe the nature of the ties within the network to a greater level of detail. This explicitly identifies not only the tie itself, but also the conditions which affect or determine the nature of that tie between nodes. We propose to adopt this classification

as a means of defining the network interdependencies within the organisation. The relational ties are defined in terms of the temporal impact of the relationship between the input and outputs between nodes. This enables us to describe a time-criticality aspect to the relationship and whether the timely behaviour of one node has an immediate impact on another related node. This timeliness aspect further helps us to describe whether the provisioning of information from one node (or the output from one node where the node is a process) has a level of dependency which influences the behaviour of any related nodes. We summarise this classification in Table 2:

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This classification of relationship types between the resource network nodes supports the process of defining the resource network and its relationships. This provides us with a means to understand linkage dependency between resources occupying network node positions, and the importance of those nodes in delivering advantage. It is therefore possible to identify a specific resource network, its resource composition, and the criticality of its interdependencies.

These aspects and features of the resource network are measures which we can use to describe the resource patterns and their respective relationships. These measures are well defined and documented in social network theory, and support a method to "map out" the resource configurations and their respective relationships.

Ensign (1998: p8) notes that: "…as firms face a changing and competitive environment, organisation design is of critical importance. In the present dynamic environment, a firm cannot ignore the need to make adjustments/changes in organisation if it hopes to survive and grow. These changes generally mean a redesign of an existing organisation. As the environment changes, the organisation continues to need further adjustment and change". This leads to the development of structural alternatives and the mechanisms for denoting these alternatives. Ensign suggests that organisations need to consider managing existing interdependencies as well as developing potential interdependencies. This entails considering the structural mechanisms which need to be in place.

Structural co-ordination for delivering business process is essential for developing advantage because it supports the co-ordination of form and function through assignment and adjustment mechanisms. Whittington & Mayer (2002) offer this note of caution: "theorists of new organisational models have yet to discover a universal panacea. There is no magic bullet to organisational design" (Whittington and Mayer, 2002). They continue to note that "the one-off, once and for all solution in organisation models is a distraction from the complex task of adaptive reorganisation" (p11). Perhaps then what is required is the ability to flex form and function through relationship and resource modelling, recognising the link to the expectations of stakeholders as the parties most affected by resource configuration.

We know from literature that resource placement and availability is influenced by stakeholders. We provided the broad definition to encompass parties who can affect or be affected by achievement of the firm's objectives (Braganza & Lambert, 2000). This is a catch-all definition and we therefore need a means to explicitly identify the stakeholders engaged in relationships with specific resource configurations.

Mitchell, Agle & Wood (1997: p873) identify the "definitive stakeholder" as one who possesses power, legitimacy, and whose claims or demands call for immediate attention. This definition includes the concept of "urgency", and distinguishes the type of stakeholder who *necessarily and directly influences the resource configurations in an attention-focused manner* (our emphasis), as opposed to other stakeholders who may simply have an interest. These "definitive stakeholders" are most likely to feel the effects of time sensitivity of resource performance and the criticality of any particular resource configuration to the satisfaction of their expectations.

Within the organisational context, the "definitive stakeholder" is one who influences and directs strategic management and decision making, governing resource reconfiguration and whose expectations in performance satisfaction are critical. They are also engaged in the trade off between form, function and performance of resources to satisfy expectations, and typically are directly responsible for implementing form and function to deliver the required performance. Definitive stakeholders occupy roles which fulfil these criteria. These roles are typically identified as Executives (CxO), Departmental Heads/Directors, and Senior Management Team members.

The "urgency" factor (Mitchell et al. 1997) is a key differentiator in stakeholder theory and explains the criticality of the provision of information to these stakeholders. This criticality of timely information provision supports the stakeholders' ability to make informed decisions on the best available data and thus is a factor in determining the urgency of stakeholders' subsequent actions. However, this information provision process assumes that there reporting mechanisms defined and implemented across the resource base which provide a method of capturing, tracking and reporting resource performance in a meaningful fashion to support stakeholders in their decision making.

We note at this stage the importance of timely, accurate information provision to support stakeholder decision making. The inclusion of real time information architectures [RTIA] as an enabling process to support the stakeholders is not part of this research. We also exclude a review of any "performance management systems" [PMS] which may be in place to capture, track and publish performance of resources within networks. PMS are well documented and researched, and their links to RTIA are becoming increasingly popular as the Information Age matures. These aspects are out of scope at this time, but we recognise their importance as enablers to the transformation process. These aspects present significant future research opportunities and they will be considered at a later date.

We do however recognise that delay in the provision of resource configuration performance information to stakeholders will potentially result in stakeholder dissatisfaction. This is because delays impact the decision making processes which affect the resource configurations and dependencies. Whilst we do not include the information provision element, we do consider the time lag in resource reconfiguration and expectation management as important.

PROPOSITION DEVELOPMENT

Thus far, we have developed a theoretical view of continuous organisational transformation by considering the nature of interdependent resource network configurations which build and evolve over time to satisfy stakeholder expectations. We have drawn on the resource based view, social network theory, and stakeholder

theory to derive this concept of interdependent resource networks. We now propose to develop lines of inquiry to help us understand the mechanisms involved in how transformational change is manifested through resource networks and network inter-dependencies. As a continuous change process, the evolution of resource networks entails reforming, recasting and regenerating as stakeholder expectations also change. We use the term "network interdependence" (***NI***) to describe this transformation mechanism.

Social network theory tells us that bond strength between network nodes within one network can determine connectivity to other nodes in other networks. We know that "weak ties" between nodes enable access and connectivity to other nodes within other networks. This is because the tie of association is not limited to any single network context. By contrast, resource nodes embedded within one network which are closely connected or have strong ties within that network are not likely to be able to change the nature of the tie. They are also not likely to be able to change the dependency between themselves, nor are the actual nodes themselves likely to change or be changeable.

In multi-type agent networks, this helps to explain why individuals become single points of contact or points of failure. This is because their embedded position and dense network creates a "hub" effect. If we think of this at a technological level, we can explain dependencies on legacy systems. Even though there may be new technologies in place elsewhere within the resource network, relationships to the legacy systems may still exist because they have not "disconnected" from process or task. Where nodes and relationships become "set" as process-based dependencies, and this can lead to embedding of task and working practice even though the benefit may be a consistency of outcome.

When we consider this inflexibility at the resource network level, it inhibits the organisation from rearranging its resource structures and configurations because resources are occupying pre-set, defined positions with strong inflexible relationships. The implications of this inflexibility on network interdependence [NI] lead us to develop the first proposition:

P1: the stronger the bond between resources, the more difficult it is to adapt NI

To support or disprove this proposition, our lines of inquiry focus on determining the resource network composition, its configuration, relationship strengths and configuration flexibility. We therefore propose to ask the following questions:

- Eq1: What are the components in the network? (the network will be defined according to a specific research protocol)
- Eq2: What resource types are they (and can they be classified)?
- Eq3: Do relationships exist between these network components?
- Eq4: What strength/nature is the relationship between these network components?
- Eq5: How easy is it to change the relationship between network components?
- Eq6: How easy is it to change the network component itself?

Granovetter (1973) asserts that strong ties between individuals (as network nodes) leads to a coalescence of similar individuals around whom the information flows

are likely to be limited and significantly overlapping. If we follow this logic and extend this concept of coalescence on the basis of similarity, it is reasonable to propose that relatively stronger bonds in one network will attract similar resource i.e. pull similar resource into the existing network to form a new network configuration.

This coalescence of similar resource types can explain the "pooling effect" within organisations. For example, pooling technology into specialist functions such as data-centres is common place to achieve economies of scale. This "pooling" also applies to human resource, and we often see evidence of this in matrix organisations which second individuals to projects from practice groups such as project management. "Pooling" of resource types or specific resource networks may also explain why functions or processes are selected for outsourcing as discrete manageable entities. This is because they form their own discrete network which performs according to its own functional imperative to support a defined performance requirement such as the fulfilment of a settlement claim. This discrete network may then interact or provide service to other networks through a specific relationship and thus contribute to overall organisation performance.

If we follow the opposite argument and consider this resource migration from the aspect of the weak tie between resources in a networked configuration, then coalescence on the basis of similarity is much less likely. This implies that the ability of resources to join or leave any particular network is much greater (Nelson and Matthews, 1991). As a result, we propose that non-coalescing resource configurations are more flexible because the ability of the resources to belong to multiple networks is much greater. We summarise this in the following proposition:

> *P2: The weaker the bonds between resources in one network and those in another, the easier it is to adapt NI*

We believe that the weaker the bonds between the resources in the network, the easier it is to move the resource within the network. We are also assuming that it is easier to change the resource itself. Effectively we expect to uncover the opposite truths in P2 in comparison with P1 based on the same lines of inquiry.

One of the principles of continuous transformation identified by Marshak (2004) is the creation of limited organisational structures through fluidity in form to support rapid, organised action. When transformation is considered through networks of interdependent resource configurations, we begin to understand the development of quasi-stable structures which have a limited life span based on stakeholder expectations of performance. These quasi-stable resource network forms enable the organisation to flex resource and exploit opportunity through reformation, reconfiguration, and recombination (Kogut & Zander, 1992).

The greater the level of uncertainty or turbulence within that market context, the more likely the organisation is to develop these quasi-stable qualities. These environmental factors are described by Emery and Trist (1965) as environmental "turbulence" or noted as "high velocity" environments. However, where organisations have been designed with stability and equilibrium as the contextual drivers, change is unsuccessful when faced with increasing environmental complexity, and increasingly

shorter timescales over which rapidity of change is required within an industry (Brown & Eisenhardt, 1997).

If organisations are to develop competitive advantage through their ability to adapt rapidly, their resource structures need this fluidity (Marshak, 2004). We argue that this fluidity is based on the abilities of resource networks to form and reform their relationships, and the ability of those networks to alter their composite resource nodes through resource movement. These fluid structures last only as long as stakeholder expectations continue to be satisfied with resource network performance in delivering competitive advantage. Consequently, we would argue that NI needs to be greater under conditions of environmental uncertainty. There are two propositions which we present from this assertion:

> *P3 (a): The greater the level of environmental uncertainty, the greater the level of NI;*
>
> and
>
> *P3(b): Organisations which possess greater NI in conditions of environmental uncertainty are more successful than those which have less NI*

These propositions introduce the aspect of environmental uncertainty. We therefore need to establish the state of the environment in which the resource network is operating. We also need to establish how success is measured to correlate performance with environment. We extend our inquiry to include the following questions:

- Eq7: What measures are used to determine environmental uncertainty?
- Eq8: What measures of success exist to provide an indication of resource performance?

When we consider measures of success, we relate these to the expectations of definitive stakeholders. Stakeholder theory tells us that the resource allocation is subject to influences like the position and role of individuals who have the ability to control or determine availability or access to resources (Pfeffer & Salancik, 1978). We know that relationships between stakeholders – implicit or explicit – can form contracts which determine resource allocation (Eisenhardt, 1984; Hill and Jones, 1992). We also know that stakeholder networks can determine the performance outcome derived from any particular resource configuration before we have considered any operating environment factors (Rowley, 1997).

Where there are conflicts of interest between stakeholders, there is a tension which develops over the configuration of the resource base used to deliver performance. This could be due to differing views on performance outcome required, or changing sets of priorities for these stakeholders (for example: market expansion versus internal efficiency gains). There could also be a change in the composition of the stakeholder group itself. This can affect the relationship developments within resource networks, and the composition of resource networks through control over specific resource types.

Stakeholder expectations therefore influence resource network configuration. The creation of limited organisational structures through networked resource configurations permits quasi-stable patterns of resource to flex and respond to changes in stakeholder expectations. We also recognise that stakeholders' expectations change

as they are influenced by the organisation's operating environment. Fluidity in network form therefore supports rapid, organised reaction to deliver alternative performance outcome to satisfy stakeholders' expectations.

We assume that there are some consistencies in the stakeholder expectations for the organisation as a fundamental requirement for organisational survival. Principally, we assume that the stakeholders will support the development of VRIN from the resource base configuration to deliver ongoing survival through competitive advantage – as well as requirements to pursue alternative strategies.

We suggest that stakeholders are satisfied when their expectations continue to be met over time when their resource networks evolve to deliver performance which matches or exceeds their expectations. We therefore present our next proposition:

P4: The greater the level of NI, the greater the level of stakeholder satisfaction

This proposition introduces stakeholder satisfaction. We need to broaden the inquiry in order to establish which stakeholders affect or are affected by the performance of the resource network. We therefore need to consider what expectations they have in relation to resource network performance, and how success is measured against those expectations. Additional questions are noted as:

- Eq9: Who are the stakeholders associated with the network?
- Eq10: What are their expectations of performance as delivered by the network?
- Eq11: How is satisfaction achieved for those stakeholders?

It is possible to infer from P4 that the opposite is also true, i.e. that a lower level of NI will have a lower level of stakeholder satisfaction. This is because the resource network is not as fluid in form, and therefore its evolution to satisfy stakeholder expectations is less effective.

One the challenges organisations face is the time-lag between the detection of the requirement to change, and the actual enactment of response to that change stimulus. Stakeholders engaged in the planning process are often the first to detect this requirement to change because their own social networks facilitate information flows. They may also be informed through performance management mechanisms in place which provide the necessary management information about resource performance. We know from Rowley (1997) and Frooman (1999) that these stakeholders have the most influence over the resource network composition, and that this resource network becomes the target object to change when stakeholders address changes in requirements.

This means that the resource network configurations must keep pace with stakeholder expectations of performance. This is because if they do not, the resource networks will not adapt in a timely manner to address those changing expectations, and performance in the wider market context will potentially suffer. This assertion leads us to our next proposition:

P5: The greater the time-lag in NI reconfiguration, the greater the dissatisfaction of the stakeholders

The introduction of time as a factor in assessing the ability of resource networks to evolve continually means we need to ask a series of questions which detect the time lag between changes in the network composition. We also need to establish the lag between the time of change in the network and the point at which stakeholder expectations were identified. From this we can determine the potential lag in stakeholder satisfaction from reconfiguration activity. We capture this time delay aspect by asking:

- Eq12: What period of time (how long) exists between resource network configurations?
- Eq13: What period of time exists between the performance of the current configuration of resources being determined as unsatisfactory by stakeholders before a new configuration emerges?
- Eq14: How long does it take a new resource network configuration to be enacted?

Rapidity of response in evolution is critical to the development of competitive advantage. However, response for responses' sake does not necessarily lead to advantage, or to stakeholder satisfaction. This is why we have deliberately excluded self-organising networks because they develop new structures with or without stimuli to do so (Wheatley, 1994; Capra, 1996). Purposeful evolution through clear transition processes is another principle of morphing identified by Marshak (2004). Network interdependence may provide an insight into this process, and we offer our final proposition as follows:

> *P6: NI which is not linked to stakeholder expectations will lead to organisational decline.*

To support this proposition, we need to determine whether organisational decline is the result of dissatisfied stakeholders. To support this, we first need to understand whether the dissatisfaction is the result of the performance as delivered by resource networks. Secondly, we need to understand whether this dissatisfaction is the result of "un-purposeful evolution" within the resource network. We suggest that purposeful evolution of the resource network occurs in order to satisfy stakeholders' expectations. Without this link to stakeholder expectations, evolution of the resource network is not necessarily linked to advantage.

P4 can help us provide some insight to the level of stakeholder satisfaction. We then need to understand whether this is linked to NI, and whether decline results if no link exists. The questions which we propose to ask to support this proposition are noted as:

- From P4 Eq10: What are the stakeholders' expectations of performance as delivered by the resource network?
- From P4 Eq11: How is satisfaction achieved for those stakeholders?
- Eq15: Is the resource network reconfiguration activity linked to the expectations of the stakeholders?
- Eq16: Has "unlinked" resource network reconfiguration activity resulted in organisational success?

This set of propositions and empirical questions will form the basis of a research protocol which we propose to use to investigate a specific resource network as it builds to satisfy stakeholder expectations. However, we recognise that there are assumptions about the answers or data which will be collated inherent in these questions. The next section describes these assumptions and the implications for the interpretation of the data gathered.

LIMITATIONS

There are a number of assumptions about the behaviour of resource networks and associated measures which emerge from our interpretation of the literature reviewed. In order to make these clear, we note them here as a reference. This serves two purposes. Firstly, we have a record of assumptions about our use of the measures against which we can validate the research enquiry. Secondly, we can test the data against the assumptions to disprove or prove the assumption itself and thus validate our conclusions in exploring morphing through interdependent resource networks.

Specific assumptions are noted as follows:

- Assumption 1: where resource configurations exist as "tight knit" or densely populated networks, it is more likely that changing the organisation will be done through the "unfreeze, reconfigure, refreeze" change models associated with step change. This is because densely populated networks do not have the same fluidity in form. We assume from this that morphing through NI is less likely.
- Assumption 2: where resources are grouped by type, often existing as clusters in "core" and "clique" formations in network terms, then morphing is more likely to happen through cluster-movement. This makes it possible for entire networks to move, and relationships connecting discrete networks will change.
- Assumption 3: NI supports freedom of movement at cluster and resource unit level making morphing is "easy". Where clusters or discrete networks have less NI, morphing is more difficult, and step change models are most likely in evidence as the mechanism to effect changing the form of the resource model.
- Assumption 4: continuous change in open, adaptive systems is driven by environmental interaction. The ability to morph increases as the level of environmental uncertainty increases (a positive correlation).
- Assumption 5: if the environment is stable, the requirement to morph through network interdependence no longer exists. Changes to the resource model are still possible through traditional change models or through morphing, but the resultant resource network may not "fit" the environment and performance success and stakeholder satisfaction are less likely.
- Assumption 6: where success is derived from morphing through network interdependence, expectations of stakeholders are most likely to be satisfied. If this is not the case, then either morphing is not delivering the expected outcomes, or the performance requirement is not based on the expectations of the stakeholders
- Assumption 7: when we consider the time lag associated with reconfiguring resource networks and interdependencies, delay will defer success to stakeholders. Minimal time lag between reconfigurations will lead to less delay in performance outcomes which satisfy stakeholders. The longer the delay, the more dissatisfied the stakeholders.

- Assumption 8: the inability to reconfigure resource networks and interdependencies to generate performance networks to satisfy stakeholders will lead to organisational decline. Conversely: timely, effective morphing through NI to match (or exceed) stakeholder expectations will result in success

SUMMARY AND CONTRIBUTION

This research adopts an alternative approach to understanding change management theory by describing continuous transformation though the lenses of the resource based view, social network theory, and stakeholder theory. The synthesis of these three theories allows us to develop a view of morphing through interdependent networks of resources. We therefore view the morphing organisation as one whose interdependent resource network configuration (described in relationship terms) lasts only as long as it continues to satisfy definitive stakeholders' expectations.

We know from the literature that network interdependence can offer significant advantages through the ability to form and reform resource network configurations and relationships (Dyer & Singh, 1998; Ensign, 1998). This adaptive capability is evidenced through particular characteristics of the network which can be explained through the application of social network theory. Network features such as connectedness, tie strength variability and durability, bridges and cut points all contribute to this configuration flexibility and thus provide the foundation for developing transient competitive advantage. We know that development of competitive advantage is critical in the satisfaction of stakeholder expectations – especially the "definitive stakeholder" (Mitchell et al. 1997) upon whose intervention resource network reconfiguration activity may rest.

There are also key features of the network which support adaptive capability through the ability to form or break critical connections through the structure of the relationships between network configurations – the interdependencies. At one end of the scale there are basic network topologies described through actors or agents (human) and their respective relationships (see for example Bott, 1957; Granovetter, 1973). At the other, there are entire markets as networks through industrial connectedness (see for example: McLoughlin & Horan, 2000). What isn't evident is the intermediate stage of a firm building network interdependence.

Previous studies have focused on high tech industries such as the internet based companies which are described as "morphing" by Rindova and Kotha (2001) or mature secondary processing industries which exhibit agility and alignment of resources as cited by Wall (2005). What we don't see from these cases is how this morphing and continual adaptation is captured or noted through any specific methodological process to map the change in configurations or relationships between resources. We also don't know whether there is a specific NI configuration which supports morphing for specific firm types. It is this gap to which we propose to contribute.

The primary research question we seek to answer is how organisations build network interdependence. We propose to explore this question through identifying a specific resource network which builds to satisfy definitive stakeholders' expectations. To support this research process, we have defined a number of propositions which have supporting empirical questions which will contribute to the discussion.

This research is intended to contribute to theory by:

1. extending the use of social network analysis principles to model resource networks;
2. further informing and providing insightful contribution to the debate surrounding dynamic capabilities through reconfiguring networks of resources; and
3. engaging in the emergent debate on the nature and mechanisms of the morphing organisation.

The proposed contribution to managerial practice will be through an increased understanding of the nature of the morphing organisation and the mechanisms of change in resource networks.

Our contribution of Network Interdependence as a concept thus offers fresh insight into managing complex change. It also describes a mechanism for "morphing" as a means to denote continuous organisational transformation.

Word Count: 7003 excluding titles

TABLE 1:

Author	Key Descriptor/Concept	Components/Purpose
Smith (1904)	Networked Adaptive Systems	Network arrangements for bringing together the man-to-man, man-to-machine interfaces throughout all the subsystems of an organisation with those of the larger society
Kogut & Zander (1992)	Combinative Capabilities	Resource reconfiguration mechanisms
Waldrop (1994) Holland (1995)	Anticipatory Adaptive Systems	Deliberate reconfiguration reactivity to events in order to develop advantage through form and function (a dynamic network of elements or agents which act and react with their environment as well as themselves)
Wheatley (1994) Capra (1996)	Self-Organising Adaptive Systems	Development of form and function regardless of reactivity to external stimuli (self aware systems)
Teece et al. (1997)	Dynamic Capabilities	The capability to adapt, build, integrate or reconfigure other resources and capabilities
Rindova & Kotha (2001)	Morphing	Evolve-ability; Organic or decentralised forms; Flexibility of resource base; Organisational learning; Layering of resource base including IT/IS
Weill & Ross (2004)	Agility	Information architectures; Process capability; Governance; Business-IT alignment; Learning & Collaboration
Marshak (2004)	Continuous Operational Adaptation	sub-system reconfiguration
Marshak (2004)	Continuous Systemic Alignment	whole system reconfiguration
Wall (2005)	Protean	Organisational agility; Real time information architectures; Process capability;
McMillan (2006) (citing Ashkenas et al (1995) & Kauffman (1996))	Adaptive Systems	Non-linear, non-hierarchical, flexible, holistic, and networked resource structures and relationships

Table 1: Summary of Key Concepts updated from Stebbings & Braganza (2006)

TABLE 2:

		Information Specificities	
		NO	YES
Time Specificities	NO	**Disjointed Interdependence (Tie Type 1)** This is derived from situations in which one or more common resources are used to perform various activities, but in which action does not alter the state of the resource nor is so frequent as to call for a programmed use of the resource (as in the use of a common equipment or space). Alternatively, activities may be even linked sequentially but they can be performed without taking into account the timing and content of other activities.	**Reciprocal Interdependence (Tie Type 3)** An information feedback between activities for adjusting the operations on the basis of information on how other operations have been performed or need to be performed may be necessary; or between resource nodes on the modification occurred or foreseen in a resource used in common (e.g. enrichments of know-how, functioning problems in a machine). Therefore communication channels should be established between activity or resource nodes, either through direct communication ties, through liaison roles ***or through performance management systems which enable decision making regarding node performance adjustment requirements*** *(authors' additional notation)*
	YES	**Sequential Interdependence (Tie Type 2)** Time specificities and constraints represent a first type of possible complication. If the demand for using common resources piles up at certain times, programmed time sharing regime in using the resource is in order. If activities can be performed separately but the timing of one of them set limits on the timing of others (for example because the transformed items can decay) then programs (or routines) are expected to be necessary and sufficient mechanisms for coordinating behaviour need to be in place.	**Intensive Interdependence (Tie Type 4)** This is characterized by the need of real time adjustment between activities exchanging resources (as it may occur in process technologies) or between resources employed in a joint activity (as it may happen in complex construction activities). ***This implies a real-time information flow to support this level of adjustment through active, open feedback mechanisms which also link to performance management systems and thus decision making as for [3]*** *(authors' additional notation).* Task or resource aggregation in integrated units or teams is in order to govern those dense interdependencies.

Table 2: Social Network Analysis: A Classification Typology adapted from Grandori & Soda (1998)

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