The 'temporary knowledge organisation' as viewed from a complexity perspective. An enrichment of the traditional organisational project management paradigm.

Introduction: a reconceptualisation

The objectives of this paper are:

- to explore and develop a new concept for the disciplines of project management and knowledge management - the "temporary knowledge organisation" (TKO). The recasting of these disciplines will be achieved through the lens of complexity;

  A typology of dynamic knowledge types necessary for the fitness and ongoing evolution of the TKO will be introduced.

- to acknowledge that the primary tool of project management – the project team – is a network of complex responsive human connections and disconnections which coalesce around the attractor of sense-making. This human network is non-linear. Agent actions and responses may be more or less proportional to the stimulus; unexpected, emergent actions will arise; and emotions, uniformity and diversity are all played out within this human network.

  This paper will suggest that traditional, linear approaches to project management are no longer adequate for meeting the needs and emergent outcomes of project teams in contemporary organisations.

- It should be noted that in order to explore and develop the notion of the TKO from a complexity perspective, traditional project management concepts must be drawn on (and ultimately rejected).

The concept of the TKO is applicable to all organisations. As a new concept, the TKO will be offered as a means of understanding the complexities of project management and knowledge management as implemented in contemporary organisational settings.

In recognising that knowledge management and the knowledge economy has largely replaced industrial age organisational practices and thinking, this paper will call for a similar replacement of traditional project management thinking with an organisational form that acknowledges the paramount role of humans as co-constructors of knowledge and reality via sense-making processes within a complex adaptive system (ie the business environment).

Project management has been reconceptualised in the literature as the 'temporary organisation' (Lundin and Söderholm ,1995). This paper extends the notion of the temporary organisation to that of the TKO and, in the process, distinguishes between the two.

Project management and the temporary organisation view the individual and knowledge as objects *external* to the complex social practices inherent within project management. Both project management and the temporary organisation adopt a modernist, linear process towards problem solving which does not allow for multiple discourses or multiple knowledge paradigms. Leading practice or the best solution for projects is achieved through systematic, objective and rationalist management.

Order/structure/predictability is a given and, once these are discovered, knowledge and individuals can be applied to solve the project problem (Egan, 1998).

In contrast, the TKO recognises that linearity and predictability are not the realities of the world, project management or project teams. Projects occupy a messy, chaotic world and the best means of navigating through this terrain and the fitness landscape is by acknowledging the central role of the individual who constructs reality and meaning. Meaning creation allows the individual to make sense of the project, its possible outcomes and expectations.

The paper will take a post-structuralist perspective and suggest that a shift in emphasis needs to occur so that order and reality are recognised as something that is co-constructed by individuals as 'sense -makers' rather than externally imposed.

The paper concludes with a preliminary exploration of the typologies of knowledge specific to the TKO. The identified typologies extend mainstream knowledge management thinking, using a complexity perspective, and explore the implications for projects of the knowledge types.

From traditional project management to the knowledge organisation

Research suggests that the principle of management convention and practice is not just undesirable but no longer sustainable. The issues of focus were land, labour and capital; the Weberian concepts of hierarchy and bureaucracy; command and control; and the efficiency principles of Taylorism. Organisations that managed under this paradigm survived (Burns and Stalker, 1961).

The contemporary organisational struggle needs to overcome this techno-rational/reductionist model (Quinn, 1988) of organising and managing, and needs to address the creative and innovative capacity of human beings.

The current rate of change in society is driving organisations to engage in learning activities in order to create new knowledge to solve new and emergent

problems. This is due to intensified competition, globalisation and the growing public concern about issues concerning the environment, health, communications, privacy and protection.

A feature of modern management literature is the growing emphasis on 'leadership and change'. Across disciplines there is broad agreement that innovation emerges from collaborative work that has a project or 'problem' focus and where leadership is diffused and shifts around the project team (Nowotny, Scott and Gibbons, 2001; Stacey, 2001; Wenger, 1998).

Project management is increasingly adopted for the implementation of strategic change (Partington, 1996). The contention, however, is that the body of knowledge is rooted in orthodox management, in particular, the literature on project management holds that project management is a rational discipline (Hassard, 1993). The rational instinct is to make the project less vulnerable by reducing uncertainty. This results in a project being less efficient, conservative and, to a large degree, unable to deal with true change and innovation.

The traditional, professional model towards solving problems does not harness the full potential of "getting the job done". The project objectives are achieved but not necessarily at optimum level. The traditional linear approach to problem solving is rooted in a mechanistic view of the universe (Nowotny, Scott, and Gibbons, 2001). This view has served humans well for centuries but no longer allows us to meet the demands of the world as it is now – a rapidly changing and increasingly networked complex world, where the 'client' (society) is intolerant of poor performance by professionals.

With this in mind, projects, as an organisation, not only need to be re-conceptualised as a 'temporary organisation' (Packendorff, 1995; Lundin and Soderholm, 1995; Bryman et al, 1987) but should further be reconceptualised as a 'knowledge organisation' (Sveiby, 1994).

This represents a shift from projects as 'tools', applied to solving problems where people are outside the project, to the creation of a sense-making community of practice (Wenger, 1998). These communities continuously learn through experience and expect and seek out further learning (De Geus, 1997; Wenger, 1998).

Sveiby (1994) describes 'knowledge organisations' as those where the "service" emerges as an ongoing process of problem solving between the clients and teams of experts. The knowledge organisation cannot force its clients to adapt to it, so it must therefore adapt to clients. The rapport between the client and the team is important. The "production" of the knowledge organisation is solving problems that are hard to solve in a standardised manner. The agents (team members) tend to be very competent, highly educated and/or with long experience in a profession often involving information processing (Sveiby, 1994).

The Temporary Knowledge Organisation – a new concept

The theoretical proposition of this paper expands the notion of a "knowledge organisation" by reconceptualising the 'project' as a 'temporary knowledge organisation' (TKO). The TKO shares characteristics with the traditional project management organisation, namely:

- projects which are unique events and will not reoccur in *exactly* the same form
- finite life span
- a project is an organisational form which allows for change management since team members are able to rapidly and effectively mobilise to address organisational and environmental conditions

- conditions of the project need to be maintained in a state of disequilibrium for innovation, emergence and creativity to occur (whilst permanent organisations perpetually wish to maintain a state of equilibrium)
- transient resources
- projects need to be flexible and adaptive to engage with the high levels of risk and uncertainty which epitomise our competitive age
- projects have to be effective in contrast to permanent organisations which need to be efficient (Turner, 1993)
- significant knowledge needs and flows (Betts and Wood-Harper, 1994; Breuer and Fischer, 1994; Carty, 1995);
- projects force professionals to step out of their siloed knowledge-bases into a learning and sharing space which extends their knowledge domain (Murphy, 1988).

The distinction, however, between the TKO and traditional project management is that the former focuses on the generation of new knowledge to enable it to solve multi-causal problems within a complex and chaotic environment. Project problems have no clear or simple solutions, nor do they demonstrate a tolerance for nuance and ambiguity. The traditional view of a project is that it is a linear, modernist construct wherein projects can be managed by systematic, objective and rationalist approaches. The TKO takes issue with this perspective and recognises that linearity and predictability are not the realities of project management.

Expanding on this, it is useful to explore the distinct definitional differences between project management, the temporary organisation and the TKO as this will support the central argument of this paper viz that project management and the temporary organisation view the individual and knowledge as *an object external* to the complex social practices inherent within project management.

Project management belongs to a functionalist paradigm of organisational and job design, which focuses on planning and control, rooted in Tayloristic scientific management principles.

The temporary organisation, as a structuralist paradigm, recognises deeper complexity. Deep structures are assumed and these structures provide order. Within this context, both project management and the temporary organisation seek to discover the structure and order, almost as though there is a puzzle to be solved.

Once discovered, knowledge and individuals can be applied to solve the puzzle and complete the project. The worldview of project management and the temporary organisation is that symbols, language and meaning are assumed to be universal and constant, which feed into a meta-narrative of objective rationality (Lyotard, 1999).

In contrast, the TKO denies structure as a reality that can be discovered and understood. There is no puzzle to be found since individual members of a project team create and co-construct the puzzle itself. This post-structuralist perspective has its roots in semiotics (Lévi-Strauss, 1972) and the importance of this perspective to project management is critical as it represents a dramatic shift in emphasis from order/reality as given/external/predictable to order/reality as something which is co-constructed by individuals as 'sense -makers'. Sense-making is an interactive, dynamic process by which people, individually and collectively, co-create their environment and its context.

Individual discourse, which is woven through narratives, conversation and storytelling, are ascribed particular importance in the TKO. Unexpected events, failures and surprises within the project's life cycle are deemed to be triggers that facilitate sense making and hence meaning (Weick, 1995; Stacey, 2001; Choo, 1998). Individuals coalesce around a certain project (which is an attractor) over a

specific time period with the result being that sense-making is temporal and shifting.

Project management and the temporary organisation adopt a value-neutral position (objective rationality) that assumes people operate from formal logic, which is not influenced by subjectivity. This logic resides in the problem circumstances and its related context and therefore there is only one, logical way to project manage.

Implicit in this position is the intention of reducing complexity so that logical techniques and tools can be easily applied. This position states that all 'like' projects can be solved/managed by applying leading practice and solutions taken from one project to the other.

Traditional project management and the temporary organisation, as linear processes, result in silos of professionals coming together to solve a problem. They create a discourse, but it is not a shared one. The output of one silo becomes the input for the next silo and there is no cohesive, discursive conversation around solving the problem. The silo input/output model discourages sense-making since team members do not always know what they are doing or why they are doing a certain task or project as meaning is given to them rather than co-constructed.

On the other hand, the TKO celebrates subjectivity as a critical characteristic of humanity. Individual and collective discourse is subjective and embedded in social practices (Foucault, 1974). This value-rich, multi-voiced notion accepts that knowledge is co-constructed through an interactive, cumulative process (usually a narrative form). In this context, knowledge, particularly tacit knowledge that is so vital to problem solving, is not seen as objective, static, neutral or linear. There is no one, all-embracing body of knowledge from which to draw from.

In the TKO, knowledge is emergent patterns of experiences and processes of meaning making – patterns and processes which are continually refreshed, replaced, communicated, denied and accepted – but above all, co-constructed and co-evolved by project team members. The TKO accepts that different knowledge paradigms co-exist. Knowledge is created through an ideological filter that represents the prevailing social regime of truth (Ryan, 1970; Blackburn, 1972; Burrell and Morgan, 1979).

Boundaries, boundary workers and the TKO

The importance of boundaries must be addressed at this point. Within project management, team members define the boundaries of the problem so that control mechanisms, responsibilities and power issues are clearly defined for the problem and its deadlines. Boundaries are important since they are vital for survival. Sense-making is a bounding process which allows an individual to distinguish between different states, different meanings and concepts (Jackson and Carter, 2000).

Yet, project management and the temporary organisation are limited to discovering boundaries that pre-exist and which delineate between insider/outsider. A common, static, artificial boundary is erected and the resulting tendency is to make project management and the temporary organisation a closed system that may become isolated from its environment. The TKO on the other hand views boundaries from a cognitivist perspective.

Boundaries become human, not physical constructs. There are no common boundaries, rather there are multiple, dynamic, intersecting boundaries which are dependent on the individual perception and interests of individuals. TKO boundaries allow individuals to engage in discourse and represent their multiple boundaries. Through this diverse process, society and the environment, on

meeting a boundary, are not kept outside its 'walls' but allowed in to inform the multiple discourses.   In this sense, the project is an open system and the TKO recognises a new type of worker – the boundary worker. Knowledge workers (project team members) work the spaces in between and across the multiple boundaries and knowledge paradigms.

Typologies of knowledge in the TKO

The temporary organisation and the TKO share some basic concepts. Both exist to perform certain actions and achieve immediate goals. Lundin and Söderholm (1995) identify four interrelated concepts or features of the temporary organisation, which demarcate it from its environment. These concepts can be extrapolated to the TKO viz

- time is crucial. Projects have time horizons which inform the urgency of the task;
- the task is the temporary organisation's raison d'être. Resources and people are applied to the task that may be repetitive or unique. Unique tasks present greater problems for the application of knowledge since project team members are faced with a new situation and previous common knowledge may not be relevant.
- The temporary organisation coalesces around the team concept and participation is usually limited to the time horizon of the project. Individual team members may have differing or competing expectations around the assignment and its outcomes.
- The temporary organisation has a specific action or task to complete unlike more permanent organisations, which may survive for long periods and regularly change their goals and mission. This action-oriented perspective suggests that the temporary organisation is involved in change or transition – something is to be accomplished or something is to be changed.

These common features lead to the suggestion that we could begin to articulate typologies of knowledge that are specifically relevant to the TKO.

Table 1.1 below lays out the major types of knowledge, but is by no means an exhaustive list:

Knowledge type	TKO
Expectational knowledge	Previous projects had different outcomes or expectations and experiential learning for team members. Agents bring to the next project their knowledge around potential outcomes, tasks to be performed and what knowledge is expected to be applied to the project. The TKO specifically needs to co-construct shared expectations and potential scenarios with project members and have a clear understanding of the knowledge, particularly tacit, to be applied without necessarily committing to one intended outcome (ie accommodating emergence).
Immediate knowledge	The TKO has a limited time horizon. Immediacy is an issue. If the task is unique, rather than standardised/repetitive, there may be no immediate knowledge to hand on how to act. The TKO takes on a visionary, scenario-generating role – what knowledge needs to be anticipated (anticipatory knowledge)? In what other areas/disciplines could we find this knowledge?
Transformational knowledge	A project journeys through the fitness landscape. What knowledge is necessary for each phase transition and what knowledge will help the TKO reach a higher peak? The TKO progresses from a Before state to an After state (ie change/chaos/order) and usually encounters unpredictable occurrences. What knowledge is needed as the TKO moves through each phase and how can knowledge support it through disruption, failure and surprises?
Transdisciplinary knowledge	In more permanent organisations, teams usually come together by virtue of being a particular discipline or group of people eg HR, accounts. The TKO's focus is on achieving a specified task within a pre-determined time horizon, so trans-disciplinary, diverse teams are a feature of the TKO.

	Team members must ask: what knowledge do I need to know from other team members in order to achieve the task? What knowledge do they expect from me? The TKO features mutually connected and reliant relationships.

Table 1.1: The Temporary Knowledge Organisation's major knowledge types

Clearly, the TKO involves the notion of fractals - self-similar patterns or behaviour that "fractures" throughout the system and may be found at the edge of chaos. In the context of the TKO, fractals are the tacit knowledge of agents because they form part of the TKO's genetic memory that allows the system to make sense of itself (Stacey, 1996). Since the TKO suggests a rethinking of traditional project team composition, project teams are fractal in nature – diverse teams sharing common agendas, memes, learning, co-constructing shared understandings etc.

Time bracketing

Time bracketing has been identified as the means by which the temporary organisation "decouples" itself from its past and also from contemporary and future sequences of events and the general environmental landscape (Lundin and Söderholm, 1995) This is analogous to the temporary organisation setting boundaries in a temporal sense so it can achieve its specified task through concentrated effort. Recoupling takes place when the temporary organisation is terminated.

During the stage of time bracketing, the temporary organisation, but more specifically the TKO, should explore 'knowledge bracketing' viz if the temporary organisation/TKO is decoupling itself from its past, present and future in order to construct its own identity and history, then what is the role of knowledge within this? If retrospective knowledge is not paramount in order to achieve the project's activities, then does this place greater emphasis on the role of immediate knowledge outlined in Table 1.1 above?

Furthermore, this could mean that the TKO and its agents during the time bracketing phase are consciously autopoietic – a self-organising system creating its own boundaries and which is self-regenerating and self-perpetuating (Kelly and Allison, 1999).   In order to make sense of its environment and construct meaning, the TKO adapts and triggers major changes. Creative space is participatively occupied as the TKO explores and generates scenarios around possible project outcomes.

The fitness level of the TKO increases through feedback loops and the TKO learns as it evolves. Project agents are self-responsible and collectively responsible.

Project leadership and the TKO

This leads to the specific question of what is the nature of "leadership" within the TKO? The traditional project management notion designates a project manager who plans the scope and costs of the project according to what is expected and predictable. Through constant monitoring of the project and its agents, the project manager ensures that expected outcomes are delivered within an agreed time frame. The nature of the unknown and unpredictable is feared since this could cause the project to come in over budget or be significantly delayed.

Project leadership usually resides in one person who generates the context and the meaning to be associated with the project and its agents (Lundin and Söderholm ,1995).

Leadership in the TKO is a very different notion. A project leader may not be specifically designated. As agents coalesce around the project, leadership emerges from the spontaneous and complex responsive processes that are the essence of agent connections and disconnections (Stacey, 2001).

Leadership may shift around the project and the role of leadership in the TKO is to:

- guide, mentor, assist, coach, partner with agents
- co-create and co-evolve meaning and context
- keep an eye on the network horizon ie what connections are happening between agents and with the external environment?
- embrace possibility space
- assist the system to adapt behaviour to stimuli presented
- give feedback based on performance/execution of project tasks so system can learn/improve
- "We-centred" rather than "I-centred" participative leadership.

Conclusion

The new management paradigm, which the TKO represents, is a shift from technically determined mechanistic activities to socially organised learning, co-constructed knowledge creation and problem solving through sense-making processes within a complex adaptive system.

The notion of the temporary organisation has been well recognised in project management literature. What is yet to be recognised and articulated is the "temporary knowledge organisation", a new concept that this paper has introduced and briefly explored through the complexity lens.

The TKO is a new discourse which moves away from the reductionist paradigm of project management and the temporary organisation and embraces a post-structuralist perspective which celebrates the central role of individuals who co-create meaning and order, rather than having it imposed.

Knowledge creation in the TKO will address all stakeholder interests, not just the interests of individuals, as any form of knowledge production is ideological in the sense that it represents ideas and beliefs about what the social world is like and, therefore, how knowledge about it can be gained. Within a discourse, the acceptable issues surfaced by the stakeholders are all tested against the co-constructed ideological position. This is what the TKO facilitates through an understanding of complexity.

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