

# Understanding the Intelligent Organisation

Maurice Yolles

Liverpool John Moores University, 98 Mount Pleasant, Liverpool L3 5UZ, UK, m.yolles@ntlworld.com

The notion of organisational intelligence is a relatively new one that has come through from the area of management cybernetics, itself concerned with system viability. Intelligent organisations are connected to learning and knowledge organisations. While defining intelligent organisations outside a cybernetic framework is possible, this is not as comprehensive an approach as it might be. An illustration of this is provided by adopting one model of the intelligent organisation, and illustrating how it can succumb to inherent pathologies of the organisation.

**Key words:** Intelligent organisation, strategy, collective intelligence, management cybernetics.

## Razumevanje inteligentne organizacije

Pojem organizacijske inteligence je sorazmerno nov. Nastal je na področju upravljalke kibernetike, ki preučuje sposobnost sistemov za preživetje. Inteligentne organizacije so povezane z organizacijami znanja in učenja. Čeprav se da inteligentne organizacije opredeliti izven kibernetičnega okvira, pa to vseeno ni tako vsestranski pristop, kot bi lahko bil. Ponazoritev tega je razvidna iz prevzema enega modela inteligentne organizacije in predstavitve tega, kako ta lahko podleže notranjim patologijam organizacije.

**Ključne besede:** inteligentna organizacija, strategija, kolektivna inteligenca, upravljalna kibernetika

## 1 The Context of Intelligent Organisations

The notion of organisational Intelligence can be argued to most generally subsume many of the other partial paradigms that include organisational learning and knowledge management. The interest in this paper will be to explore the nature of intelligent organisations as discussed by Yolles (2005), but initially in terms of its relationship to both the learning and knowledge organisation, and then in respect of a model by Dealtry, which we shall explore shortly. In order to explore this model we shall need to establish a broader model capable of describing and explaining viable systems, those that have the capacity to survive despite the complexity around and within them.

Learning organisations are knowledge oriented and maintain a learning culture defined (Yolles, 1999) in terms of a system of: beliefs, attitudes, values, behavioural norms and meanings. They also maintain learning structures that facilitate behaviour, are responsive to learners, motivates the knowledge creation processes, and provides opportunities for new knowledge to be practically applied. The learning organisation is capable of responding to change by being adaptive and thus responding to a perception of a changing environment, or being proactive and respond to a perception of the need for organisational improvement. A knowledge oriented organisation should ideally be:

- both a *learning* and *knowledge* organisation
- able to see, evaluate and diagnoses its ills (or pathologies),
- able understand and make decisions about its own pathologies
- able to manage its own change processes
- able to maintain its viability.

To do this it needs to be conscious of its knowledge that has two possible forms: tacit (held in its employees) and explicit (held in its repositories like libraries), and engage in processes of knowledge intensification, in which identifiable knowledge is acquired and applied.

Intelligent organisations learn, are knowledge based, and are cybernetic in nature drawing on the notions of Viable Systems. As such they are interested in understanding and dealing with their own pathologies that defined their condition of ill-health. Intelligence is closely linked with the ability of an individual or group actor:

- To discern attributes of cultural knowledge,
- To efficiently and effectively discriminate, relate, manipulate and apply that knowledge in a variety of phenomenal environments
- To operate viably, maintaining sustainable operations

A summary of the distinction between these three types of organisation is given in table 1, and this is represented in figure 1 through an extended system schema known as the social viable systems model. We shall explain to the nature of this model shortly.

Table 1: Distinction between Learning, knowledge and intelligent organisations

Type Organisation	Nature of Organisation
Learning Organization	Learning (according to some strategic vision) through the creation of new knowledge for the benefit of individuals, groups, and the organization as a whole.
Knowledge Organization	Conscious awareness of the distribution and development of its tacit and explicit <i>knowledge</i> and <i>knowledge needs</i> , with the ability to match the two when required.
Intelligent Organization	Through its existing implicit processes it is aware of its own condition, and when it requires the use of existing or the development of new knowledge.

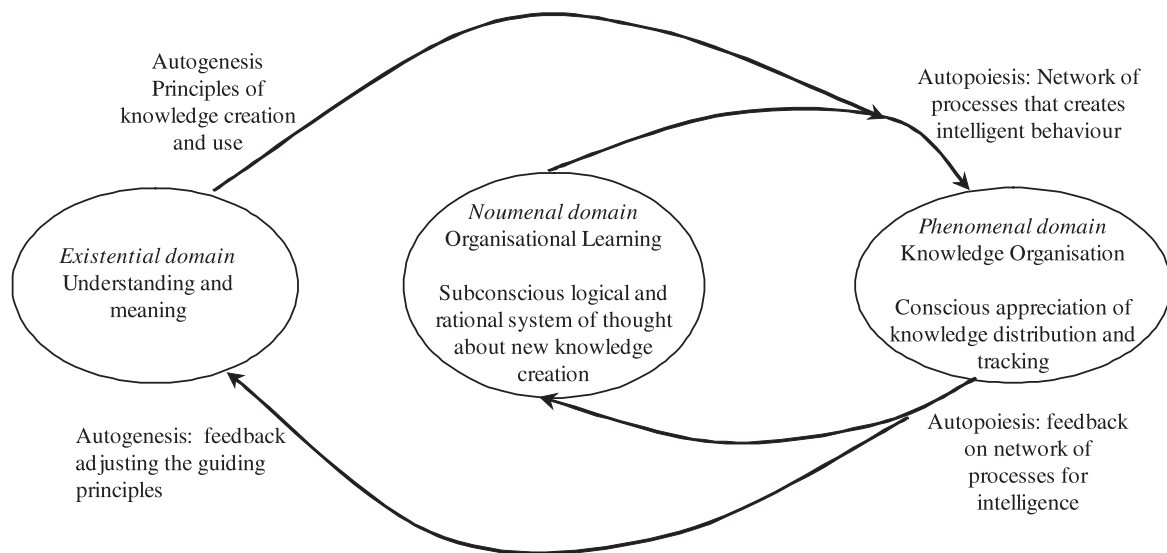


Figure 1: Relationship between Learning, Knowledge and Intelligent Organisations using Viable Systems Theory

Having distinguished between three types of knowledge related organisation, it may be noted that it is not possible simply to create learning, knowledge or intelligent organisations by simply imposing a new operational paradigm on an existing organisational structure. Structures are dependent on culture for meaning, this ultimately determining the behaviour that structures facilitate and constrain. Most organisations are despotic, operating a political regime that the old Soviet Union would have accepted as natural. The increasing failure rate of organisations in today's complex world provides some evidence that their management occurs more in the interests of executive perspectives than it does to ensure their viability and sustainability. Such despotic organisations are often seen in strategic terms, and while strategic organisations are able to direct themselves towards learning, knowledge management or intelligent behaviour, it is not natural to them. Such organisations tend to see things in terms of the competitive environment in which it exists, and their pre-occupation with this usually results in trying to condition the internal environment so that its can respond to strategic goals, its major failing. An alternative

political form for an organisation is to create flatter structures in which power is more evenly distributed (in line with the notions of empowerment). The distinction between these two types of organisation has been represented (Yolles, 2005) as the distinction between the strategic and knowledge management paradigms, as illustrated in table 2.

## 2 The Nature of Organisational Intelligence

There are many approaches in defining organisational intelligence. An interesting one from the perspective of its practical interests is one that has been developed by Dealtry (2004). One of his interests is in knowledge intensification within the context of corporate universities, and the notion of Intellectual Equity (or the effectiveness with which an organisation utilises the potential of its human capital). Often, it is implied, the potential and capabilities of an organisation operates within the confines of organisational paradigms and routines of mechanistic

Table 2: Seeing Management as a Political Process results in two Types of Management Paradigm

Attributes	Management Paradigm	
	Strategic	Knowledge
Organisational competency	Organisational discipline	Organisational learning or knowing
Individual competency	Individual direction	Individual learning or knowing
Strategic learning	Strategic points like the corporate apex	Widespread distributed capacities
Organisational processes	Vicious circles (e.g. search for profitability)	Virtuous circles (e.g., search for viability)
Organisational adaptability	Inflexible	Flexible
Communications	Distorted	Open but prone to chaos
Management	Administrators	Leaders
Individual power distribution	Strategic role centred with disempowered	Knowledge centring, with empowerment
Product development	Driven by strategic business units	Driven by core competencies
Assumption about trustfulness	Members mostly untrustworthy	Members mostly trustworthy
Value of individual tacit knowledge	Discipline is overarching	Important success factor
Creation of prerogative	Through managerial discipline	Through creativity

strategy and planning thinking. To break out of this the PPP model was proposed. This was used to explain how the organisation might become intelligent by re-defining itself and its people development activities in much clearer terms that can be communicated for the mutual benefit of all the internal and external stakeholders. The model derives from the idea that each situation promotes a unique conceptual perspective of the firm's intellectual promise and what it has to do to develop its people and thereby fully materialise top management's vision. The PPP model has three related conceptualisations that connect to this idea of the intelligent organisation. They are:

- Intellectual Purpose that is connected with organisational vision (P1)
- Intellectual Properties that enable visions to be known and specified (P2)
- Intellectual Practices that have phenomenal manifestations in development programmes that are timely and relevant (P3)

These three strands that constitute the PPP model are expressed in figure 2 as Purposes, Properties and Practice. For Dealtry it engages all the potential and capabilities of an organisation as a fully functioning business brain, and in so doing breaks out of the confines of organisational paradigms and mechanistic strategy and planning thinking routines. Each situation promotes a unique conceptual perspective of the firm's intellectual promise and what it has to do to develop its people and thereby fully materialise top management's vision.

The PPP model is sequential and cyclic. It is sequential in that each of the P phases is activated after its predecessor, and after all have been activated the cycle begins again. Hence phase P2 will only be activated after phase P1, and this is a pre-requisite for the activation of phase P3.

One must question, however, whether this neat sequential model is a realistic one, even in ideal conditions.

We shall explore this idea a little further, not by centring on the PPP model itself, but rather by generating our own metaphor for the intelligent organisation. To do this we shall need eventually to centre on cybernetic theory that is embedded in viable systems theory (Yolles, 2001).

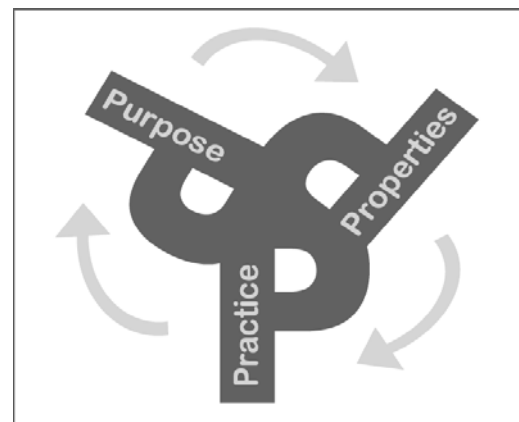


Figure 2: PPP Model for the Intelligent Company

### 3 Viable Systems Theory

The approach adopted here is through Viable Systems Theory as proposed originally by Eric Schwarz (1997). It is an ontological approach that proposes that adaptive autonomous systems have associated with them not only a phenomenal domain in which structures and behaviours occur, but also a virtual and existential domain. An example of the epistemological content of these domains is given in figure 3, and a more formal cybernetic interactive relationship in figure 4. The notion of operative manage-

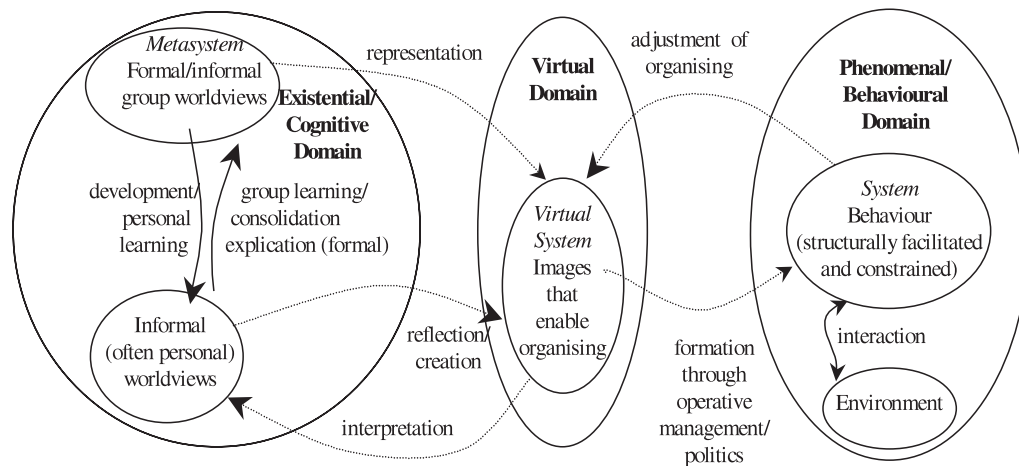


Figure 3: Epistemological Content for the three Ontological Domains

ment derives from Schwaninger (2001). It is also a form of operative politics, and can be directly related to the autopoietic processes. Autopoiesis enables images held in the virtual domain by an autonomous actor to phenomenally self-produce, i.e., give their images a structured related behavioural status. Autogenesis is a second order form of autopoiesis, and gives the latter guidance through the creation of principles. These ideas are explored more deeply in Yolles (1999) and Yolles and Guo (2002).

## 4 Organisational Intelligence

It is possible to construct a theory of intelligence within the context of viable systems theory, and the details of how this can occur are due to Yolles (2005). The notion of the intelligent organisation is fashionable today, and an interest here is to postulate a set of characteristics as a metaphor that can be used to identify the nature of the intelligent organisation within behavioural and related decision-making contexts. To do this there has been a need to explore some theories of intelligence that relate to both the organisation, and to individuals. Some of these are concerned with the psychological non-conscious, which draws us into the need for a psychological model of the organisation. A Freudian model (Freud, 1962) is chosen for this, but it must be said that what results should necessarily be considered as a detailed metaphor. Having said this, Brown (2004) and others note the importance of metaphor to science that enables principles to be articulated, and it should not be confused with the simile that is a simple comparator.

Concepts of organisational intelligence also centre on ideas of knowledge, but they extend further than this. Our definition of an actor, a singular individual or a plurality of individuals that make up a collective organisational, with intelligence is as follows:

*Intelligence is closely linked with the ability of a singular or plural actor to discern attributes of cultural knowledge, and in particular to efficiently and effectively discriminate, relate, manipulate and apply that knowledge in a variety of phenomenal environments. For plural actors this facilitates collective viability.*

When an organisation is viable, it has overcome the pathologies (ill-health) that limit its capacity to perform operations and operational processes effectively. Most organisations have some form of pathology, and it is this that for instance drives them to having to develop mechanisms for identifying and managing crises. We do not have

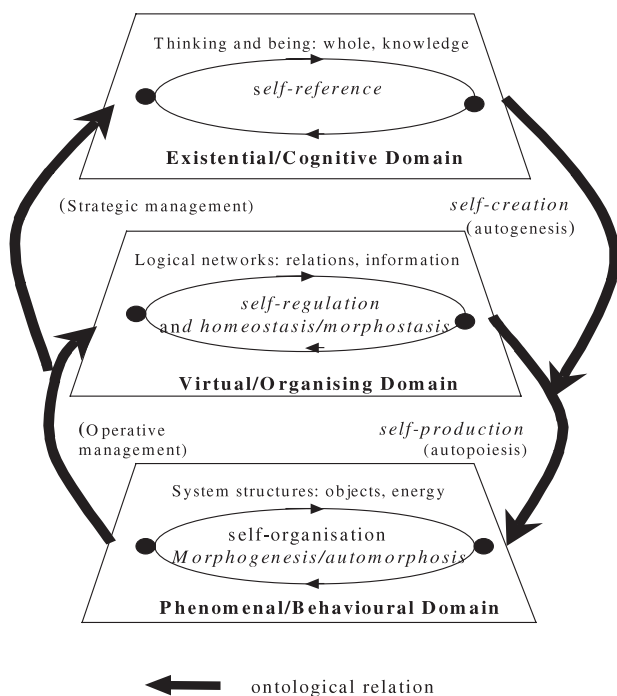


Figure 4: Symbolic Ontological Relationship between the three Domains of Viable System Theory (Yolles, 1999)

space her to discuss how this has arisen, but ultimately it results from the consideration of a variety of conceptualisations that derive from people like Bourdieu, Gardner, Bonnet, Sloman and Schwaninger. All have been interested in intelligence in one form or another, and here we use a metaphor for organisational intelligence that originally derives from an eclectic analysis of their ideas. Schwaninger is concerned with cybernetic intelligence in the social community, and considers the nature of viability and how it may be achieved. Bonnet and Sloman represent a more traditional information technology goal orientated thinking process that is common in artificial intelligence. Bourdieu and Gardner were interested in intelligence within the context of child development. The psychological frame of reference (related to that of Freud, 1962) provides a basis from which they can be considered. It extends beyond the purely Freudian notions posited by Kets de Vries (1991) about how organisations can be healed.

An important aspect of intelligence is autopoiesis, which in many cases is expressed in terms of political processes. There is another frame of reference that is important, that of politics. Decision making in organisations may be seen in terms of political processes in which managers and their groups each have their own approaches, wants, styles, interests and views. This idea hinges on seeing actors as pluralistic, where a "host" or "objectivised" culture provides an orientation to many sub-actor cultures (or actor subcultures) that maintain their distinct beliefs, values and attitudes. We say objectivised because it is the viewer that determines the cultural commonalities that exist across the subcultures that form the "host" culture in cohesive organisations. The cultural commonalities are culturally homologous, involving elements that are more or less common to all or many of the subcultures within the organisation. The culture and subcultures are jointly responsible for the structure that is ultimately created. When subcultures exist decision-making managers usually represent them. The subcultures are reflected in the structure because the managers take responsibility for their own areas of interest and try to ensure that these interests are materialised. It is due to cultural pluralism that it is unlikely that only one goal and set of values will spontaneously arise. There will be a multiplicity of them. The

creation of multiple goals requires discussion and bargaining, and any conflict that arises because goal differences are contested must be resolved.

Schwaninger (2001) suggests that the intelligent organisation is adaptable, effective, virtuous, and sustainable (table 2), and we refer to this form of intelligence as cybernetic. We have already considered adaptability in terms of some of these characteristics. Some of the attributes can be expressed in terms of intrinsic processes - that is those that occur internally to the organisation. Others are extrinsic since they are outwardly directed.

Expressing the Schwaninger attributes in terms of intrinsic and extrinsic elements enables a linkage to be made to the ideas of Bourdieu about non-conscious processes. For instance his idea of inculcation occurs through an extrinsic interaction between an actor and its environment. The environment can be seen in terms of physical or psychological structures that can facilitate and constrain extrinsic behaviour, and it is these that inculcate the actor.

Actor decision-making may not be limited to making very particular types of decisions that are constrained to a narrow related environment. It is often the case that decision-makers need to achieve a degree of success in searching a wide variety of goals under a wide variety of environments. According to Levine et al (1986) this constitutes a definition for Intelligence. However, if this is the case then some questions develop about this definition. Thus, what constitutes a "degree of success", a "variety of goals", and a "range of environments" is not defined. As a result, comparative evaluation is allowed into the definition of what constitutes intelligent behaviour. Consequently, intelligent behaviour may be seen as a relative concept. However, other areas of work define the nature of intelligence more broadly than simply in terms of decision-making process. Indeed, one interpretation of Gardner's work that we shall consider below is that it can be explored in terms of culture, structure and behaviour. The concept of the intelligent plural actor is well established in the knowledge management literature (Solesbury, 1994; Quinn, 1992; Quinn, 1993). It also exists in the field of cybernetics, where an intelligent organisational actor can be read into the term complex adaptable system (McMaster, 1997; Schwaninger, 2001).

Table 2: Nature of Cybernetic Intelligence in Organisations (based on Schwaninger, 2001)

Characteristic	Intrinsic/Extrinsic interests	Nature of Characteristic
Adaptability	Both	The impetus for change comes from extrinsic stimuli that the organisation responds to, and so adaptable organisations must be responsive to change.
Extrinsic effectiveness	Extrinsic	The organisation can effectively influence and shape its environment, and this implies the ability of market organisations to perform well in competitive environments
Virtuous	Intrinsic	The organisation is virtuous in that it can reconfigure itself in relation to its environment.
Sustainable	Both	The organisation can make positive net contributions to viability and development of the larger suprasystem (whole) in which it is embedded. It is thus able to sustain itself.

Table 3: Postulated Dimensions of Intelligence

Domain	Attribute	Nature
Phenomenal/ Conscious  <i>Collective ego reflected in common behaviours directing in- terests</i>	Extrinsic effec- tiveness	The actor can effectively influence and shape its environment, and this implies an operational ability to perform well in competitive and other situations.
	Sustainability	The actor can make positive net contributions to viability and development to the whole situation in which it is involved. It is thus able to sustain itself.
	Morphogenic transposability	Enables an actor's form or structure to be transposed from one field of activity to another.
	Structure	Connected to the facilitation and controls that are exerted by the structures and functions of organisations and the objects that they adopt and operate through.
	Behaviour	In intentional situations that operate within structured environments, behaviour may be legitimate when it conforms (or illegitimate when it does not) to the constraints and facilitation decreed by the norms of the culture in which it develops.
Virtual/ Sub- conscious  <i>Collective su- perego operating through norms</i>	Rationality	A response must be appropriate to the situation or events eliciting it. It is not a question of who judges.
	Appreciative- ness	Occurs through reflections of the structures and phenomenal objects that are associated with an organisation. Purposeful reflections centre on the virtual image.
	Inference	Gives possible or probable consequences of experience that are logically and information related.
	Image of inten- tional behavi- our	Occurs through reflections of the structures and objects that are associated with a social community. It is also connected to the facilitation and controls that are exerted by the structures and functions of organisations and the perceived phenomena that are adopted and operate through intentional behaviour.
	Adaptability	The impetus for change comes from extrinsic stimuli that the actor subjectively responds to, and so adaptable actors must be responsive to change. Adaptability is purposeful, it must first be expressed in the form of a virtual image that has within it optional variety. This variety can be enhanced through the creation of new knowledge.
	Intrinsic virtu- osity	An actor can reconfigure itself in relation to its environment. However, if virtuosity is to be purposeful, it must be reflected in the virtual image.
Existential/ Unconscious <i>Cultural sta- tes &amp; dispo- sitions, though likely to be manife- sted noncol- lectively through uni- tary actors</i>	Inculcation	An actor is conditioned extrinsically by its environment
	Generative structure	An actor has experiences that contribute to the generation of dispositional (preconscious) and structured perceptions, attitudes, and beliefs about practices.
	Semantic Transposability	Perceptions, attitudes, and beliefs about practices can be applied from one psychological field for which they were originally acquired to other fields of attention or application. This can also be related to content, and enables a meaning to be transformed from one area of activity to another related one.
	Worldview	Knowledge is generated and symbols manufactured that can be used in social interactions.
	Reference	Enables a position or identity to be made
	Self-awareness	Includes the ability to reflect on and communicate about at least some of ones own internal processes and explain ones actions, decisions, or conclusions. Such explanations are often elaborated on with belief based delusions or myths.

From the above mentioned authors we distinguished between four dimensions of intelligence: non-conscious (Bourdieu, 1984), capability (Gardner, 1985), decision-making (Levine, 1986), and cybernetic (Schwaninger, 2001). Two of these derived from explorations of the development of children, and the other two are specifically related to the development of human or technological organisations as agents of behaviour. Our interest will be to migrate patterns of conceptualisations from both sets within our paradigm.

In this definition, and in line with the arguments about the relationship between individualism and collectivism that explain how characteristics of the individual can be applied to the collective, we recognise that cultural knowledge relates to the values attitudes and beliefs that

enable primary propositions to develop in the unitary or plural actor, and this may be personal or social. In the latter context of a social community the knowledge is "objectivised" through the formation of normative social knowledge.

Since theories about children and organisations are differently posed, contextually distinct, and having a set of primary propositions, their paradigms are incommensurable. The discerning and use of principles is a process that enables knowledge embedded in one theory to be migrated into a different frame of reference, a different paradigm, and through this act catalytically for the development of new hypotheses of social community intelligence. The conceptualisations are qualitative, and may be validated through traditional means.

There is another caveat that we must consider that comes from discussions about the creation of a psychological frame of reference for the social. There is a distinction between children as unitary actors and socials as plural actors in that the former can be described in terms of psyche and its associative projection and the latter is constructed and expressed in terms of the collective psyche. Any intelligence that is attributed to the unitary actor is a function of its individual psyche, while the intelligence that is attributed to the plural actor is a function of its collective psyche. The primary distinction between these two conceptualisations is that the unitary actor operates through a traditional psychological explanation, while intelligence in the plural actor is mediated by cultural structure, rationalised, and then constrained or facilitated through social structure.

While there are differences between the social and the individual, it is possible to argue that there is some correspondence between them. We can note further that knowledge about cognitive aspects of organisational theory has already been migrated from theories of the individual. Such theory has become important in the human resource management literature (e.g., Nadler, 1993). In the area of child development, people like Piaget (1970, 1977) have produced parallel theory in the same paradigm (Overton and McCarthy Gallagher, 1977), where cybernetic theory is also strongly linked to cognitive (or Gestalt) theory.

In developing a model of plural actor intelligence we relate the four dimensions of intelligence we have referred to, and semantically migrate them into the Viable Systems Theory model. We should also note the earlier psychological frame of reference in which the cognitive, virtual and phenomenal domains were directly associated with unconscious, sub-conscious and conscious dimensions of social (plural actor) awareness. The model of social community intelligence that we postulate is presented in table 3, and has been arrived at by exploring and interpreting conceptualisations from other authors provided in the next few subsections, and arguing that they can be represented in the three domains model.

This leads to some interesting reflections. Firstly, it provides us with an appreciation that the science of conscious intelligence centres on our awareness of extrinsic effectiveness, sustainability and morphogenic transposability. The science of subconscious intelligence involves shared appreciation of rationality, inference, cybernetics, adaptability and intrinsic virtuosity among membership of the social community. It requires that organisations that have subconscious intelligence can access their shared virtual images and modify them communally, and within a critical theory perspective this cannot be achieved through despotic means, but rather requires inclusion of unitary actors in the visualisation process. Finally, the science of unconscious intelligence (that we acquire from Bourdieu's non-conscious conceptualisation) involves inculcation, generative structure, semantic transposability, worldview, reference, and self-awareness. Organisations that are seen as having unconscious intelligence have the

capacity to access their worldviews and the knowledge associated with them, and to re-invent themselves through the creation of new knowledge. Attributes of the unconscious can also be placed in terms of Wollheim's (1999) notions about mentality, or metaphorically equivalent within the context of the plural social collective, culture. There are two aspects of this: state and disposition. Cultural state consists of impulses, perceptions, imaginings and drives; it is also transient, relatively brief, and can reoccur frequently to give the impression of a maintaining continuity. Cultural disposition consists of beliefs, knowledge, memories, abilities, phobias and obsessions. Both mental states and dispositions are causally related, cultural state being able to instantiate, terminate reinforce and attenuate cultural disposition. Cultural dispositions can also facilitate cultural states. Three very general properties characterize these two types of cultural phenomena: intentionality, subjectivity and three exclusive grades of consciousness (conscious, preconscious and unconscious). Cultural subjectivity is associated with cultural state, while cultural disposition is experienced through the cultural states in which they are manifest. Emotions also play a part in this structure. Emotions are preconscious cultural dispositions and cannot be directly experienced, while feelings are cultural states (associated with cultural dispositions) that can be experienced.

The three domains model has a recursive nature (Yolles and Guo, 2003), enabling us to define a lower focus of examination than the unconscious. It involves non-accessible unitary actor worldviews that are not amenable to reflection and modification for the organisation. They reside at the lower non-accessible focus that belongs to the individual disparate autonomous members of the social community. In the plural actor organisation it is likely the collective preconscious cultural disposition that is defined by the individual and distinct worldviews and associated patterns of knowledge that results in the critical idea of knowledge migration.

This cultural disposition will be reflected in the sub-conscious domain, and be responsible for differentiation across membership of a social community in the shared images that leads to diverse appreciation of common purpose. It will also be reflected in the conscious domain, resulting in the potential for diverse incoherent behaviour across the organisation. This is addressed by the creation of structures that both facilitate and constrain the behaviour of the membership of a social community, thus more effectively enabling people to work together coherently. It is through the creation of this facilitation and constraint that the notion of legitimate (and thus illegitimate) behaviour arises.

This construction has use, if we are to understand how it is possible to increase the effectiveness of the plural actor, in particular within the context of knowledge management. This may, for instance, indicate a need for plural actors to recognise and address non-conscious and sub-conscious aspects of their collective psyche.

## 5 Organisational Pathologies

Organisations that are intelligent have the capacity to deal with their pathologies. These pathologies are a condition of ill health that inhibits the organisation to perform in a way that enables it to manifest phenomenally (through structures and behaviours) agreed and coherent ideas or purposes. Pathologies can inhibit organisations from performing properly through poor management, poor procedures, poor communications, and so on. This does not refer to individuals who may happen to be in-

competent in a particular area, but to structures and processes that inhibit viability. Types of pathology that are capable of being illustrated ontologically are given in figure 5. The first of the types of pathology (type 11 and 12) that we shall refer to occur when autopoiesis is blocked, and this can result in disassociative behaviour that has little reference to subconscious images. When this occurs, behaviour may be influenced directly by the unconscious. The second type of pathology (including type 21 and 22) that can occur is when autogenesis is blocked, so that normative coherence cannot develop within the cultural fabric of the plural actor, in part because learning is not possib-

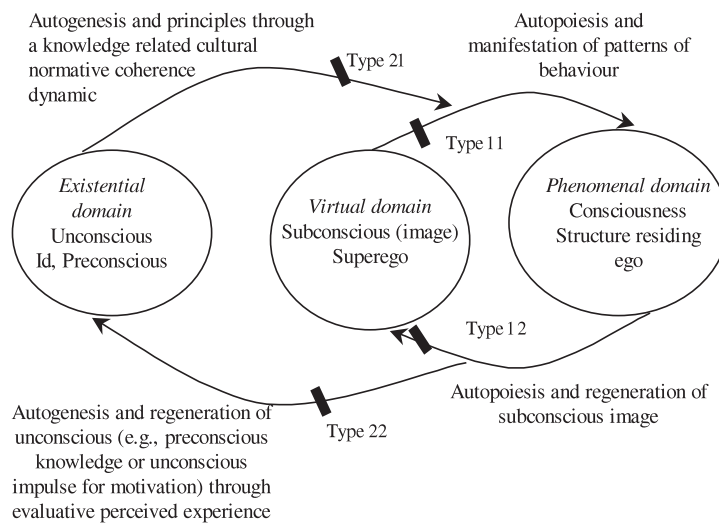


Figure 5: Transverse psychological model of the collective showing type 1 and 2 pathologies

Table 4: Types of Ontological Pathology, and Possible Associative Relationships between Type Combinations

Pathology Type	Nature		
1 (11 and 12)	Can result in disassociative behaviour that has little reference to subconscious images. When this occurs, behaviour may be influenced directly by the unconscious. Type 11 relates to phenomenal image projection, while type 12 to an ability to have a feedback affect.		
2 (21 and 22)	No changes in the normative coherence can develop within the cultural fabric of the plural actor. In type 21 existing knowledge cannot have an impact on the autopoietic loop, while in type 22 learning is not possible. This has major implication for the way in which patterns of behaviour become manifested. An example of the type of pathology might be when patterns of behaviour occur independently of subconscious constraint, but responsive to the instinctive unconscious.		
<b>Associative Type Combinations</b>			
	<b>T11</b>	<b>T12</b>	<b>T21</b>
<b>T12</b>	No phenomenal image projection or feedback resulting in direct link to existential domain		
<b>T21</b>	No knowledge development/ learning and no phenomenal image projection. Feedback cannot be responded to.	No feedback resulting in regeneration of subconscious image, and no learning process development.	
<b>T22</b>	No phenomenal image projection, and no possibility of coherence through learning capacity.	No regeneration of subconscious image through experience, and no evaluative process deriving from experience.	No influence of knowledge or knowledge development (i.e., no learning or reflection). Image and phenomenal image projection cannot develop.



le. This has major implication for the way in which patterns of behaviour become manifested. Micro-variations to this can occur by defining two forms of each type of ontological pathology, as illustrated in table 4, as types 11, 12, 21, and 22. An example of the type 11 problem might be when recurrent patterns of behaviour occur independently of subconscious constraint but responsive to the instinctive or emotional unconscious. In the case of social communities that have cultural instability (where there may be a plurality of shifting norms), this non-coherent and perhaps gratuitous/un-self-regulated behaviour may simply respond to the instinctive or emotional needs of individuals in that community. When type 1 and 2 pathologies occur together, behaviour is purely responsive and determined from structural capacities. Table 5 suggests the composite possibilities that can arise with the combination of different microscopic ontological pathologies.

## 6 Revising the PPP Model

Let us now return to the PPP model of Dealtry. At the entry to this paper we questioned the neatness of the PPP model as a sequential cyclic process. Indeed, by scheduling the sequencing of each P that is required to operate in a given order, we are mechanising a social process. This is not normal since social systems tend not to conform to mechanistic representations. They tend to be much too

complex for this. We are now, therefore, in a position to explore an alternative representation and association between the three Ps. To do this it will be appropriate to establish the model using our cybernetic approach, with each P defined in table 5, and expressed ontologically in figure 6.

It may be the case that P1, P2 and P3 will occur in a sequential order as the system evolves. This means that changing principles affect changes in the virtual image that are then manifested phenomenally. This is a simple rational sequential argument that is comforting for managers. However, there is never any guarantee that the PPP model will operate in this way. Let us consider that P1, P2, and P3 do not operate together as a sequential and cyclic of development. Rather, they have a fundamental cybernetic interconnection and they may “fire” out of sequence, or they may fire simultaneously resulting in impact delays. Poor sequencing or impact delays may be due to the occurrence of pathologies, or due to external factors that the organisation has not anticipated. There are two forms of anticipation (Yolles and Dubouis, 2001) that relate to strategy (autogenesis) and phenomenal organisational structure. Poor anticipation may therefore also be classed as pathology.

Practices develop from the current knowledge rich paradigms that the organisation has adopted; this of course assumes that there is a dominant paradigm and that the organisation is therefore not analytically schizophrenic.

Table 5: Representation of the PPP model as a Viable Systems

Type Intellectual P	Nature	Ontological Connection
P1: Purpose	Connected with organisational vision	Virtual domain
P2: Properties	Enable visions to be known and specified	Autopoiesis, in that these practices involve operative management and self-produce phenomena as structures and behaviours.
P3: Practices	Have phenomenal manifestations in programmes of development, these manifestations being timely and relevant.	Autogenesis that enables principles to be defined and thus facilitate autopoiesis; this has a strategic dimension.

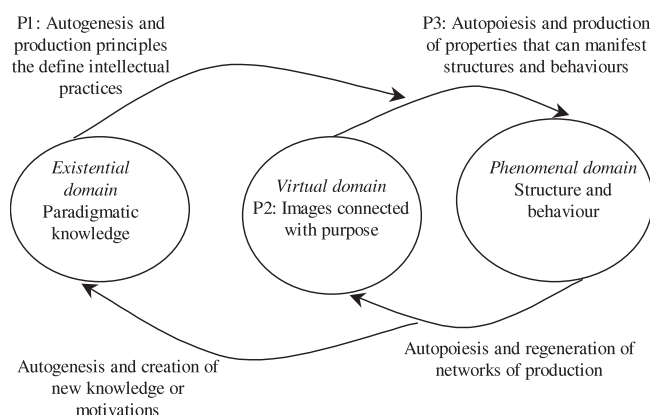


Figure 6: Proposed Relationship between P1, P2 and P3 in a Viable System

From this a set of principles develop that, under certain conditions that permit the notion of optimality in relation to certain specific and constrained phenomena, may be called best practices. These principles should emerge from the paradigm, but since they exist in its unconscious, there is not normally an institutional realisation that they exist, even though individual participants in the organisation may recognise it. Whether the use or recognition of these principles is timely, relevant and connected to the manifestation of intellectual properties is determined by whether pathology types 21 or 22 exist.

The intellectual properties are an operative management process that enables the phenomenal manifestation of intellectual purposes. Images and purposes may not always be recognised organisations since it is part of the subconscious. Social psychiatrists may be needed to help organisations recognise their own images and purposes, and self-reflection through, for instance, action research, may be of value here. Where pathologies type 11 or 12 exist, the capacity to manifest image and purpose becomes seriously incapacitated. Where type 12 operates, the organisation is unable to adapt to change, and finds way of reinforcing the same intellectual properties even though their base intellectual purposes may need to be altered.

This representation of the PPP model provides for a further insight. Autogenesis and autopoiesis may occur simultaneously or they may not occur at all, even while intellectual purposes are maintained. Different forms of pathology can exist in an organisation so that the relationship between the three Ps is castrated, resulting a severe problems for the organisation and a likely early failure. This does of course not mean that the three Ps cannot occur in a sequential and cyclic pattern, but it is likely that this will occur only in very special circumstances.

## 7 Significance of Concept of Organisational Intelligence

The notion of organisational intelligence is best thought of as a metaphor, in particular because it draws on conceptualisations that are normally applied to the individual rather than the collective. However, the metaphor is a powerful tool, and operates to underpin many forms of scientific enquiry. In the picture of organisational intelligence offered here, arrived at by adopting cybernetic principles for the viable system, provides a new way of exploring the organisation in terms of its intelligence. It adopts a Freudian psychological model that offers a powerful way of examining organisational situations and offers a very well developed language to explore its social psychological pathologies. Ontological pathologies also exist that stand against the organisation's ability to achieve and maintain its viability, and inhibits its capacity to become competitive, efficient, effective, profitable, or any of the other contextual terms that may be appropriate.

There are many applications for the notion of organisational intelligence, and the idea of the intelligent orga-

nisation links intimately with that of the learning organisation. However, it is intelligence rather than knowledge management that can effectively deal with the fitness of an organisation. We have shown that the use of the viable systems approach can dig deep into the causes of why certain pathologies exist and how they can be managed.

Only one illustration of the cybernetic utility of organisational intelligence has been provided through the PPP model that relates, as indicated by Dealtry, to intellectual equity. However, the idea of the intelligent organisation is broader than this. In the same way as organisational learning and knowledge management paradigms have swept the academic world in the last two decades, the organisational intelligence paradigm that is currently developing and that encompasses these and other attributes will begin to develop and predominate. Just as child intelligence was so important in the time of Piaget and Bourdieu, so the metaphors that enable ideas of collective intelligence to be applied to organisations will be important. The problems of quality that so frequently come up, in some cases dramatically (e.g., from oil tanker disasters to deadly problems in hospital procedures) are all issues, in the end, of organisational intelligence. The notion of the organisation as a psychological entity subject to analysis, as posited for instance by Kets de Vries, is necessarily part of the whole conceptualisation of intelligence. It points to the development of a new status for not only social psychologists, but also social psychiatrists who will help diagnose organisational pathologies and help develop viable systems. They will also likely be versed in many of the subsidiary topics that include knowledge processes, organisational learning, change management, and staff inclusion/participation is organisational processes.

## References

- Bonnet, A. (1985). *Artificial Intelligence, Promise and Performance*. Prentice Hall.
- Bourdieu, P. (1984). *Language and Symbolic Power*. Polity Press, Cambridge, UK.
- Brown, T.L. (2003). *Making Truth: Metaphor in Science*, University of Illinois Press.
- Dealtry, R. (2005). Achieving integrated performance management with the corporate university, *The Journal of Workplace Learning*, **16**(1): 65-78
- Kets de Vries, K., M.F.R. (1991). *Organisations on the Couch: Clinical Perspectives on Organisational Behaviour and Change*, Jossey-Bass Inc, USA.
- Freud, S. (1962). *Two Short Accounts of Psycho-Analysis*, Penguin Books, Harmondsworth, England, originally published in English in 1926 under the title *The Problem of Lay-Analyses*, Maerker-Branden, NY.
- Gardner, H. (1985). *Frame of Mind*. Paladin, London.
- Levine, R.I., Drang, D.E. & Edelson, B. (1986). *A Comprehensive Guide to AI and Expert Systems*, McGraw-Hill.
- McMaster, M. (1997). *The Praxis Equation: Design Principles of Intelligent Organisation*. Knowledge Based Development Co., USA. Available from: <http://www.co-i-l.com/coil/contents>
- Piaget, J. (1970). *Structuralism*. Basic Books, New York.

- Piaget, J. (1977). *The Development of Thought: Equilibration of Cognitive Structures*. New York: Viking.
- Quinn, J.B. (1992). The Intelligent Enterprise: A New Paradigm. *Academy of Management Executive*, **6**(4): 48-63.
- Quinn, J.B. (1993). Managing the Intelligent Enterprise: Knowledge and Service-based Strategies. *Planning Review*, **21**(5): 13-16.
- Schwaninger, M. (2001). Intelligent Organisations: An Integrative Framework, *Sys. Res.*, **18**: 137-158.
- Schwarz, E. (1997). Towards a Holistic Cybernetics: From Science through Epistemology to Being. *Cybernetics and Human Knowing*, **4**(1): 17-50
- Slooman, A. (1984). The Structure of the Space of Possible Minds. Chapter contained in *The Mind in the Machine*. Ed. Torrance, S. pp.35-42. Ellis Harwood, Chichester, UK.
- Solesbury, W. (1994). *Intelligent Organisations: A Review of the Literature*. ESRC final report, available from [http://sites.netscape.net/mcyrhul/intelligent\\_organisations.html](http://sites.netscape.net/mcyrhul/intelligent_organisations.html)
- Wollheim, R. (1999). *On the Emotions*, Yale University Press.
- Yolles, M.I. (1999). *Management Systems: a viable approach*, Financial Times Pitman, London.
- Yolles, M.I. (2000). From Viable Systems to Surfing the Organisation, *Journal of Applied Systems*, **1**(1): 127-142
- Yolles, M.I. (2001). Viable Boundary Critique, *Journal of Operational Research Society*, **51** (January): 1-12.
- Yolles, M.I. (2003). Enhancing Competitiveness in European Organisation through Intelligence and Knowledge Intensification through a Specific Targeted Research Project, Project submitted to the EU Framework 6 research initiative.
- Yolles, M.I. (2005). *Organisations as Complex Systems: An Introduction to Knowledge Cybernetics*, Information Age Publishing, Inc., Greenwich, CT, USA. In process.
- Yolles, M.I. & Dubois, D. (2001). Anticipatory Viable Systems. *International Journal of Computing Anticipatory Systems*, **9**: 3-20.
- Yolles, M.I. & Guo, K. (2003). Paradigmatic Metamorphosis and Organisational Development, *Sys. Res.*, **20**: 177-199.

---

**Maurice I. Yolles** is a professor of Management Systems at Liverpool John Moores University, based in the Business School. His doctorate, completed more than a decade ago, was in mathematical social theory, in particular the formal dynamics of peace and conflict. His research book on management systems was published in 1999, and his new book *Organisations as Complex Systems* is due out shortly. He has published more than 140 papers in refereed journals, conferences and book chapters, mostly in managerial cybernetics and its development in social collectives, International Joint Alliance Theory, and Human Resource Management. He is editor of the international journal of Organisational Transformation and Social Change (OTASC). He is also the vice president of the International Society of Systems Science. His main teaching area is in Change and Knowledge Management, and he heads the Centre for Creating Coherent Change and Knowledge. Within this context he has also been involved in, and run, [http://cwis.livjm.ac.uk/socrates/Maurice head and shoulders.gifa](http://cwis.livjm.ac.uk/socrates/Maurice%20head%20and%20shoulders.gifa) number of international research and development projects for the EU under various programmes within countries experiencing transformational change, including involvement in TEMPUS projects in Central and Eastern European Countries. He has also lectured and run organisational change programmes in China.