

The Learning Organisation Meme: Emergence of a Management Replicator (or Parrots, Patterns and Performance)

PRICE, Ilfryn and SHAW, Ray

Available from Sheffield Hallam University Research Archive (SHURA) at:

<https://shura.shu.ac.uk/4837/>

This document is the

Citation:

PRICE, Ilfryn and SHAW, Ray (1996). The Learning Organisation Meme: Emergence of a Management Replicator (or Parrots, Patterns and Performance). In: 3rd International conference of the European Consortium for the Learning Organization, Copenhagen, May 1996. [Conference or Workshop Item]

Copyright and re-use policy

See <http://shura.shu.ac.uk/information.html>

The Learning Organisation Meme: Emergence of a Management Replicator (or Parrots, Patterns and Performance)

By If Price The Harrow Partnership, Pewley Fort, Pewley Hill, Guildford GU1 3SP UK [and Unit for Facilities Management Research, Sheffield Hallam University] I.price@shu.ac.uk and **Ray Shaw** The Harrow Partnership, 28 Rushworth Road, Reigate RH2

Originally published In Campbell . and Duperret Than V. Eds. 1996 Proceedings of the third ECLO Conference, Copenhagen May 1996. Pagination not available.

Organisations and organisms are self-maintaining systems which spontaneously seek to preserve an evolved order. Both are enabled by replicators: memes or genes respectively. Whereas genes are the units of transmission of our biological inheritance memes are the units of transmission of our cultural inheritance. They cause organisations to settle into patterns, routines and habits of behaviour: manifestations of a particular memetic inheritance. These patterns enable the organisation but simultaneously limit its performance. Both systems share the evolutionary dynamic of adaptive radiation followed by stabilisation. Memetic examples include new markets, new technologies and new business ideas. Business theories and their derivative, managerial fads, are a class of memes. This paper illustrates the increasing returns dynamic in the evolution of management recipes by contrasting Business Process Re-engineering and the Learning Organisation. It ends with a plea for the Learning Organisations to retain memetic diversity rather than be trapped in sterile competitions to define an LO. **The power of the Learning Organisation movement may, paradoxically, be that we are not stuck with what it is.**

IS ECLO ALIVE?

This paper ultimately concerns the patterns of language and thinking which stop organisations, and individuals, learning as fast as they might, thus stunting their growth. Interrupting conventional language patterns facilitates interruptions of conventional thinking and we, intentionally, choose here a different and interrupting style of writing: hence the starting question. Our hope is that we can extend a different invitation to the reader. We would rather stimulate dialogue and enquiry into that which limits, in any given context, than into the rightness or wrongness of a theory. When so-called learning is no more, or is perceived as no more, than an exercise in intellectual one-upmanship, or when it is a debate among spectators unconcerned with helping themselves, and others, make a difference, then it is, for us, limiting. Please read not only to enjoy but also with a view to making a difference. Consider, for a minute, the definition of life offered by the English biologist Richard Dawkins (9) **[Life is]...a property of improbable complexity possessed by an entity that works to keep itself out of equilibrium with its environment.** To exapt Dawkins most graphic example a dead parrot thrown into the air obeys the laws of physics, describes a perfect parabola, and then falls back to earth. A live one disappears over the county boundary; its component parts working together to maintain their collective entity against the force of gravity. Now - using that definition what is different about a company, or any other form of organisation, including the ECLO? All organisations maintain an improbable complexity to achieve some purpose that their component people and parts, working separately could not achieve. [See (14) (27) (28) (36) for further discussion of theoretical comparisons]. Professor Herman Van den Broek started the ECLO conference series by reminding us *how quickly people adapt to tacit agreements and recreate recognisable settings* (35). We operate to keep ourselves in our own equilibrium rather than succumb to the random decay of the second law of thermodynamics. Yet, in the process, our organisations and sometimes

even we ourselves fail to learn. How can we be so stuck in the rich tapestry of our collective achievement? Nothing if not ambitious, we offer here a very simple answer to the riddle

PARROTS & PATTERNS OF PRESERVATION

Why do we all tacitly participate in structures that we know are not yielding us the result to which we aspire? Why do we all conspire in corporate behaviours that each of us may admit, privately, are suicidal? Herman van den Broek's enquiry was one of many which have pointed out how organisations settle into patterns of established behaviour. In a spirit of European integration let us acknowledge that Machiavelli made the same point 500 years ago. Organisations coalesce around rules, habits, traditions, customs, codes, mental models, paradigms, language: shared patterns of taken for granted being-in-the-world. They maintain these patterns as surely as a live parrot maintains the long tradition of parrot-hood. The parrot ultimately has no choice in the matter. It is the creation of a tradition encoded in countless generations of parrot genes. It owes its being in the world to those genes relentless search for their own replication (8) (10).

Not to put too fine a point on the matter, and ignoring only time scale, even those of us who espouse the cause of organisational learning and human choice are usually as stuck with our patterns and traditions as are generations of parrots with their genetic inheritance. Standing for a 1256 different perspective on the world, a different outcome in a company, or even, dare one say, a different presentation in a conference with an established tradition, risks the fate of a "green" in a colony of "*Norwegian Blues*", or of a member of any community who does not conform to the mores and paradigms of membership. Companies reject, conferences have no listening for, and individuals do not hear, that which does not conform to their expectations on the world. It is safer then to talk about learning within an established pattern rather than risk membership. Yet, for a pattern to be changed the risk may be needed. We, none of us, learned to walk without risking abandoning the comfortable pattern of crawling.

WHAT SOURCE THEN THESE PATTERNS?

For the parrot, and every other living species, the source of the pre-ordained order, the root, at one and the same time of the ability to maintain *improbable complexity* and the stuckness in the tradition of a particular species, is very simple. It is the genetic code, the genome of the species or the genotype of the individual. All species, including our own, are lumbering robots created, specified by their genes, to act, and interact with others, in ways that maximise the chances of those genes leaving copies of themselves in the world. As many are now pointing out [see postscript] the parallels of organisation and organism extend beyond the maintenance of improbable complexity. Both are complex systems that evolve and adapt, that self-organise in webs of complex relationship. Both depend for their survival on strategies, explicit or otherwise that anticipate the future: usually as a continuation of the present. Both depend, for their ability to maintain order on what Murray Gell-Mann (14) has called schemata or Richard Dawkins (8) replicators: codes bent on their own reproduction through the systems they create. DNA as a genetic replicator provides a biochemical language through which are encoded and transmitted the instructions that enable and specify every complex, self-maintaining, living system (22)(23)(36). The individual gene is a strip, a phrase, in this language that survives because it manages to convey utility to its host in the competition for survival in the organic economy. To do so the gene must act in the context created by the thousands of other genes in a given genome; as words and phrases, to convey meaning, act within the context of the language and tradition in which they are used. Our starting proposition is simple. It is to take literally Dawkins suggestion that there exists in the cultural world a second class of replicators, - *memes* - transmitted from brain to brain through human language and cultural artefacts. The distinction meme (10) (27) (28) may not yet be one that has a context in the language and intellectual tradition of many readers. It does not yet exist as a separate perceptual and linguistic entity through which many people view

the world. So what is it? In brief: *a unit of cultural transmission that propagates from mind to mind conveying a meaning in the process; a meaning that may mutate each time it is transmitted but one that is captured and remembered.*

Any linguistic or other cultural artefact can serve. As Dawkins puts it: When you plant a fertile meme in my mind you **literally parasitize my brain**, turning it into a vehicle for the memes propagation in just the way that a virus may parasitize the genetic mechanism of a host cell. Tunes, fashions, advertising slogans, phrases, linguistic distinctions, gods, technological recipes, paradigms, mental models, perceptual filters and all the stuff of tradition, language, culture and cognition are memes and complexes of coexisting memes. The advertising industry runs on memes without bothering to explore the fact. Every slogan, every image it creates, is designed to infect the mind and influence the actions of the recipients. Hence its fundamental irrationality (21). A geological metaphor provides an image of the physiology and psychology of memes at work upon the individual, or collective, mind. Imagine a landscape, eroded over time to provide streams, rivulets, and rivers interspersed between higher plateau. It provides a simple example of a self-organising, locked-in, system. Over time accumulations of rainfall carve out stream and river beds and settle into pools and lakes. Any new rainfall will no longer find its own way but will rather take, and reinforce, the already sculpted path of least resistance. Though the falling rain may be evenly distributed across the land, in its collection and flow across the landscape, it will tend towards a predetermined route, one taken by previous rainfalls. Just as the rainfall follows established routes so perception follows established ways of seeing. Technically, even if the light sources which perturb the back of the retina, or the acoustic waves the eardrum, are identical, what will be noticed from all that could be seen or heard will depend on the perceptual lens through which we view the world. What is there is not independent of the receiver. What is there is what we have been trained [or conditioned or have learnt] to see. We may discard, indeed we can be blind to, anomalies that do not fit. The self-organised pattern which we call our thinking grants a particular perceptual blindness and rigidity to our perceptions of the world. Exploring the analogy further we could say that an idea, a single thought, an utterance, -a meme in fact, is like the single raindrop. It falls upon a pre-formed perceptual memescape. Isolated thoughts gather together in a string - a pattern of co-existing memes - which we might compare to a few drops congregating together in a splash of water. With sufficient mass the splash of water starts to flow into streams and rivers which are, if we like, the connectors between the raindrops and the pools and lakes, if not the oceans, of our thoughts. The pools and lakes we may view as concept pools and theory lakes. Thus a self organising system is inherited and developed in which the flow of perception takes a certain course: it follows a certain pattern, a largely given paradigm. Patterns in companies, habits and rules of behaviour, codes of thinking, systems of language, states of relationship coalesce in similar fashion around shared landscapes of perception (6)(16)(27)(28)(29).

Take this simple idea of memes as a reality in the world and you arrive at an explanation of a plethora of observations from many field of scholarship concerning the behaviour of human systems with self-fulfilling prophecies, self-replicating patterns, mental-models [e.g. (2) and unwritten rules [e.g.(6)(27)(31)] at their core. The **ECLO** is a meme around which a pattern called conference has emerged; a pattern similar to that of many another conference but a pattern with its own emergent tradition of rituals, conventions and unwritten rules of behaviour; a pattern that both enables and circumscribes what we may or may not learn from one another within the context of this conference. To understand the phenomenon of emergent organisation we should ask not what benefit it confers on the participants but what benefit it confers on the meme. How does the emergent tradition of the conference assist a meme called ECLO infect more minds?

MEME'S EYE VIEW

Dawkins main argument in *The Selfish Gene* is that to understand evolution and its products we

should examine it, and them, not from the benefit a particular phenotypic behaviour confers on an individual organism or a species, but from the perspective of a genes [or a complex of genes] replication. We want to make the same point in respect of memes in organisations. From the perspective of one set of memes enthroned in an individual mind, or shared by a collective organization what matters is their replication in meme-space, not the benefit or otherwise conveyed to the host. As Dennett (10) traces, many memes in the paradigmatic landscape of the humanities triggered defensive routines to Dawkins suggestion; an example of the generic "**not invented in my head**" syndrome that inhibits learning at many levels (3). We want now to demonstrate this switch of perspective by comparing the evolutionary history in the world of two memes; two ideas that have infected the minds of a population of organisational theorists and practitioners in recent years. One of these will, we suspect, be easier for readers of this volume to visualise as an alien virus seeking to parasitise other minds so we will start with that one.

THE BAD AND THE UGLY? BPR AS A MEME

Think back some eight years to the late 1980s when the Business Process Movement first became noticeable in management practice and language. Around about then, in most corporations in most sectors, the pressure to extract more value from white-collar activity became overwhelming. The competitive advantage of doing so, and the threats in not doing so, were simply too large for companies to ignore. The environment was ripe for new approaches to structuring work and organisation.

From the flux of variation and mental mutation that is the soup of business theory and practice there then arose several variations on the theme of Process Management seeking meaning space in the new environment. Most could be considered adaptations [more strictly exaptations] of prevailing manufacturing approaches. Most large American corporations and some European ones announced process as a key plank of their strategy for the 90s. As one director of a British company recently recalled to us *"My boss went to the USA and caught the BPR bug"* Yet it was not then the only bug in town. A brief survey of the popular management literature in late 1990 and early 1991 would have revealed:

- Business Process Review
- Business Process Simplification
- Business Process Management
- Business Process Innovation
- Business Process Improvement
- Business Process Control
- Business Process Transformation
- Business Process Re-engineering

Each came with subtle shades of meaning and recipe depending which corporate initiative or guru you were talking to. The differences were more theoretical than significant. Now, five years later, we hear only the one term used. That dynamic - widespread proliferation and experimentation followed by stabilisation around one, or a few designs, is common if not universal in the introduction of new technologies. Consider the history of the motor car, the aeroplane, the personal computer, the video cassette tape or the typewriter keyboard. When a new technology, or idea creates a new niche in the system of interactions that is an economy, or when a new demand opens a new opportunity, the response of the market is a radiative bloom of innovation followed by stabilisation around one, or a few, dominant designs (4) A similar dynamic is found in new industries as in new technologies. New companies enter new markets, either as new entrants or when established players seek to diversify beyond their original sector. The market for Facilities Management services in the UK is currently undergoing just such a bloom with participants competing for share on the basis of traditions in IT, technological services, property

and estates management, architecture and interior design, catering and hotel services, engineering, construction, image processing and consultancy. As the market matures a new stability will doubtless emerge (30). In the process new business relationships, and new patterns of relatedness, are emerging to challenge old ideas about what is core and non-core and how such services are purchased (6). The dynamic is also an old one. The first instance on record occurred 570 million years ago in the so-called Cambrian Explosion when the technology of multi-celled life first expanded into the opportunity space of a sea of edible algae. Life experimented with a range of fundamentally different archetypes before settling down to the score or so of phyla which have survived to this day. The story of the Burgess Shale made famous by Stephen J Gould (17) serves as an example of a pattern since repeated at many scales of biological and cultural evolution.

But to return to fads in general and BPR in particular. The rise of fads in management is well documented (e.g.32), as is the disillusionment of many who practice the latest recipe only to find it does not yield the result they expected. BPR is not unique in this regard but - in seeking an explanation - our normal convention is to ask either *What's wrong with the recipe* or *What's missing in the people who tried it, such that it did not work*. We add recipes to cure the failure of the last recipe heaping fad upon fad rather like the old lady who swallowed the fly. What we do not do is look at the rise and fall of a business fad from the perspective of the fad itself, as a replicator bent on blindly infecting as many minds as possible. We do not ask: What is seeking its own replication here? Consider the following thought experiment. BPR Inc. We invite you to stand in the meme's perspective. See the world through its eyes. Perhaps it will help to imagine yourself as the CEO of *New Fad plc*. Your shareholders will judge your reward by the number of new minds you 'infect'. This is not dissimilar to running an advertising campaign by the way. Launching and marketing a fad is not unlike launching and managing any other product [except the fad that succeeds promotes itself].

Stage 1. Your 'product' has got to have some sort of relevance out there. Launching a product that the market not only doesn't know they want, but aren't ready for yet, is a recipe for commercial disaster. So is the premature launch of a new idea, business solution or paradigm. Galileo, for example, had this problem with the prevailing paradigms of the day. Just as there was no listening for a heliocentric solar system in the prevailing orthodoxy of medieval Europe so, before about 1990, there was simply no listening - no space in the collective business meaning-scape for Process. When the need emerged many memes competed, as we have seen, to fill it.

Stage 2. You have to find some niche. If your fad is not relevant and useful to someone forget it. Any fad that is going to get talked about and written about - propagated in the world - must, almost by definition, first have to be useful to someone. Those who first label a new management technology are unlikely to talk enthusiastically about what failed.

Stage 3. If you are 'lucky' [and there are a whole lot of questions buried between those quote marks], your fad hits/ creates a rising market. When a lot of essentially similar fads offer much the same thing under a slightly different name [or brand] some will succeed and some will not. It may be pure chance as to which first gets critical mass. Replay the tape of business theory since 1990 and we might be talking about BPT or BPI rather than BPR [just as we might be playing the tape on Betamax or Video 2000 rather than VHS format machines].

Stage 4. Early share is critical because of the process by which a fad replicates. As it succeeds consultants with a living to make, managers with a name to make, business school professors with an image to make, journalists with copy to fill, or just plain seekers after enlightenment start to play. Positive feedback rules. Just as VHS became a more favoured format the more users it had (4) so BPR became the easier language to use the more it was used. For the really successful fad a whole structure of articles, books, recipes, societies, conferences, internet discussion lists etc. etc. emerges. This structure has a vested interest in the replication of the meme by which it is

infected, even if it is not sure what that meme means any more. Congratulations CEO you did it if you got to this stage. Go directly to the bank and collect your \$200.

But think, while you do what has happened: Somewhere in the process above a switch occurred. To infect other minds, to acquire believers, reputation becomes more important than performance. Whereas early sales may be on the basis of benefit conferred to a company later sales are on the basis of status conferred to an individual and even current fashion. We have the fad because everybody has it. Memes remember have no foresight. They exist to go on replicating and preserve the structures and behaviours which enable them so to do. A virus succeeds even if it kills those it infects provided it is transmitted first. Syphilis increases libido [or so we have read]. Re-engineering may drive companies to corporate anorexia (12) in the name of being lean and mean but that is of no concern to the re-engineering meme, provided only that it can go on replicating. Its lack of foresight may ultimately be its downfall. Space is created for a new fashion in articles asking: What's wrong with BPR. New more vigorous fads invade old territory until they, too, keep people equally stuck.

THE LEARNING ORGANISATION MEME

The concept of Learning Organisations emerged into the world of business theory at about the same time, or shortly before the BPR meme. Interestingly it seems to have evolved largely separately several times. Perhaps learning as meme already had its niche in the language of academia. What researcher after all does not like to think that they belong to an institute of learning [and how many university departments that you know would you really classify as learning organisations?]. Perhaps also the learning organisation has had a harder time infecting the listening of the practical business audience because the language [the meme] triggers more defensive routines in the memetic pattern of the practicing manager who has escaped all that stuff. Many a successful manager is after all doing, what observers might choose to call organisational, or action, learning without needing the benefit of the learning organisation meme. They may call it innovation, or performance, or even Process Re-engineering. They may even simply call it managing!!!! We do not actually know what a Learning Organisation is. We do know that competing definitions abound and that there is no common sense of meaning conveyed by the term, even within the bounds of this conference. John Harvey -Jones gives a, relatively pragmatic, senior businessman's definition when he refers to the Learning Organisation as *the Philosophers Stone of Business; the thing everyone is searching for that no one he knows has found*. By contrast Thurbin (34) argues it can be reached in 17 days! Some equate the LO with the capability to adapt, react and change in contrast others [especially Senge and those inspired by him] who would rather reserve the LO as something of a vision, a quest, a search for generative innovation and a new sense of community in organisations; one in touch with traditions other than the dominant paradigm of western business.

Another more operational viewpoint sees a LO as one in which ideas and lessons learnt are, openly and quickly adopted elsewhere in the company, or for some pioneers the whole supply chain. Not many companies manage such learning well despite databases of good practice, and books of lessons learnt. Some professional services firms do it very well and a few companies have cultures where it just happens as a matter of course. Other schools seek to capture the high ground of learning for a particular function within the corporation, usually the corporate centre hence planning as learning benchmarking as learning audit as learning and even control as learning. Most notably of course this pattern prevails in the HR function where learning often appears as a flag behind which the personnel and training specialists fight for their place in the sun and share of the corporate resource. Consider this definition of the top [sixth] level of maturity of an organisation from a recent article in the UK *is* IPD magazine: **Training and Learning are the process through which strategy is formulated**: Are HRD people at the top table as both actors and facilitators in policy formation? Is the organisation acquiring the

characteristics of a Learning Company? Why the right hand state is a prerequisite of the left is not explained. Yet, albeit gradually, a Learning Company is becoming perceived, even by pragmatic business people as something they want to be. The Learning Organisation is not so much a meme as an opportunity space that many other memes are seeking to occupy. Whereas various, similar, recipes and names competed for market share of Process Management space, different meanings compete for the LO label. The confusion - and righteousness - thus engendered probably hinders any of them becoming dominant. It also enables much pleasurable discussion and debate into what a Learning Organisation really is: a debate which unfortunately falls frequent victim to the *my meme right your meme wrong syndrome*. We can be so stuck in our unconscious traditions, biases and language, so thrown to a condition of being right that we fail to enquire into what is possible.

SO WHAT IS POSSIBLE?

The science of genetics has revealed the value of genetic diversity as a source of innovation; a richness from which new forms of order can emerge, or indeed can be deliberately sourced. The new science of complex systems is showing that order emerges from a diversity and critical density of inter-relatedness and inter-connectedness (20) (21) New futures in the human world, new individual perspectives and aspirations, new systems of beliefs and assumptions, new relationships at the inter-personal level, new organisational innovations and inter-organisational relationships likewise emerge from new and different connections between people and ideas. New language, and new listening, can create new futures. Just as genetic diversity is a source of biological wealth so memetic diversity is the source of cultural wealth. It resides in different thinking and is exchanged and grown in different conversation.

Neither memes nor language is unique to the human species. Parrots have their own language as well as the ability to mimic ours. Parallels with human organisations may strike the reader!! 1263 What can differentiate us is our freedom to choose. We do not have, in Dawkins words, to suffer the tyranny of the selfish replicators. We have the capacity, if we choose to exercise it, to see or at least to enquire into the rivulets and lakes of our perceptual landscape and ask how the world around us, and our interaction with it, might change if we choose to operate from a different perspective. When we do we can, perhaps, cease to be victims of our prior experience and conditioning and instead become authors of different futures: futures in which we can enroll others if we create the space for the emergence of a different meaning space; one that offers a rationale, a set of rules, and a relationship for learning. **This is key.** We have the latent capacity to be, and perform, differently, individually and collectively The learning organisation can foster memetic diversity if it creates a context, an environment, where thinking and acting differently in pursuit of different futures is acknowledged and enabled. Creating memetically isolated populations is an easy enabler (26)(29) but the resultant tension requires the balance of a context which encourages exchange of ideas between such populations (see 4 for the fundamental theory). The danger, in many organisations, including those that seek to perpetuate the Learning Organisation is that the debate centres on what the Learning Organisation is. Social and political processes ensue that disenfranchise or excommunicate those who do not conform to the party line. *Different people placed in the same system produce the same result* (2). The result is the slow death of learning. Hence we offer our concluding paradox: **The learning organisation will only be a learning organisation when it is not stuck with discussing what a learning organisation is.** If instead, in any organisation, the conversation concerns what the organisation will be and do, and how people will relate to each other in the doing much more is possible.

POSTSCRIPT

A danger of departing from established conventions of academic papers is that one fails to convey

and acknowledge the depth and breadth of contribution derived from the works of other authors. We include here a brief reference to some of the contributions that have had a major influence on the emergence of our own memes. In earlier contributions to the ECLO series (16) (27) and elsewhere (6) (28) (29) we have tried to provide more complete references. Our pending book —Shifting the Patterns|| explores all the issues presented here in more detail. Dennett's recent book (10) offers a rigorous review of the emergent field of memetics. Our intellectual synthesis would grant more influence to autopoiesis (23) (24), self-organisation (1) (18) (19) (33) (36) and punctuated equilibrium (11) (15) (29). We would assert that memes explain the well documented influence of traditions on behaviour (6) (12) and the link between being, speaking and results (e.g.6). Many of Morgan's images of organisation (25) can be explained by the same proposition as can the successes and failures of many approaches to the facilitation of change and learning. Ultimately one does not need an explanation of a fundamental process to utilise its effects. You can drive a car without understanding the workings of the internal combustion engine. You are less likely to be able to tune it for a different level of performance.

REFERENCES

- (1) Allen P. M. *Coherence, Chaos and Evolution in The Social Context*. Futures 1994 26:583-597
- (2) Akhlaghi F. *The Critical Role Of People In Delivering Services* ICM London conference address 1995
- (3) Argyris, C. *Reasoning, Learning and Action: Individual and Organisational* . San Francisco, Jossey-Bass 1982
- (4) Arthur, W. B. *Positive feedbacks in the economy*. McKinsey Quarterly Journal 1994 1:81-9
- (5) Axelrod, R. *The Evolution of Co-operation*,. New York, Basic Books Inc. 1984. (
- (6) Batchelor, J and Shaw, R. *The Shifting Patterns of Business: Transforming Purchasing for the New Eras* Proceedings of the North American Association of Purchasing Managers Annual Academic Conference 1996, 11-25
- (7) Bateson, G. *Steps Towards an Evolution of the Mind*, London, Paladin, 1973
- (8) Dawkins, R. *The Selfish Gene*, Oxford, Oxford University Press, 1976 and 2nd Ed. 1989
- (9) Dawkins, R. *The Blind Watchmaker*. London, Longmans, 1986
- (10) Dennett, D. C. *Darwin's Dangerous Idea: Evolution and the Meanings of Life*, New York, Simon and Schuster, 1995
- (11) Eldredge, N. and Gould, S. J. *Punctuated Equilibrium: An Alternative to Phyletic Gradualism*, In T. J. M. Schopf (ed) Models in Palaeobiology, San Fransisco, Freeman Cooper and Company 1972 82-115
- (12) Hamel, G. and Prahalad, C. K. *Competing for the Future*, New York, McGraw Hill, 1995
- (13) Flores, F, and Winograd, T. *Computers and Cognition*, Ablex, 1987
- (14) Gell-Mann, M. *The Quark and the Jaguar: Adventures in the Simple and the Complex*, London, Little Brown, 1994 (15) Gersynk, C. J. Punctuated Equilibria as a Model for Organisational Change *Academy of Management Review* 1991 16:10-23 1265
- (16) Gibbons, B. and Shaw, R. The Learning and Performance Dynamic in T Cambell and V Duperret-Tran (eds) *Second Conference of the E.C.L.O* 1995, 121-128
- (17) Gould, S. J. *Wonderful Life : The Burgess Shale and the Nature of History*, New York, Norton,. 1989
- (18) Hull, D. *Science as a Process*,. Chicago, University of Chicago Press, 1986

- (19) Kauffman S. A. *Origins of Order: Self-Organization and Selection in Evolution* Oxford, Oxford University Press, 1992
- (20) Kauffman S. A. *At Home in the Universe: The Search for The Laws of Complexity*, New York, Oxford University Press, 1995
- (21) Kay, J. *Foundations of Corporate Success: How Business Strategies Add Value*, Oxford, Oxford University Press, 1993
- (22) Lloyd, T. *The Nice Company* . London, Bloomsbury, 1990
- (23) Maturana, H. R. and Varela, F. *Autopoiesis and Cognition: The Realization of the Living*, Dordrecht, Reidel, 1980
- (24) Mingers, J. *Self-Producing Systems: Implications and Applications of Autopoiesis*, London, Plenum Press, 1994.
- (25) Morgan, G. *Images of Organization*, London Sage, (1986)
- (26) Nonaka, I. and Takeuchi H. *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation*, New York Oxford University Press, 1995
- (27) Price, I. The genetics of the learning organisation, in T Campbell and V Duperret-Tran (eds) *First Conference of the E.C.L.O* 1994, 81-96, E.C.L.O Conference Proceedings 1994
- (28) Price, I. *Organisational Memetics?: Organisational Learning as a Selection Process*, Management Learning 1995, 299-318
- (29) Price, I. and Evans, L. *Punctuated Equilibrium: An Organic Metaphor for the Learning Organisation*, European Forum for Management Development Quarterly Review, 1993, 93(1) 33-35
- (30) Price, I. and Akhlaghi, F. *Emergent Order on the New Frontier: Future evolution of the UK FM Market Place*, UFMR Special Report No 1, in prep.
- (31) Scott-Morgan, P. *The Unwritten Rules of the Game*, New York, McGraw Hill, 1994
- (32) Schapiro, E. *Fad Surfing In The Boardroom*, New York, John Wiley and Sons, 1995 1266
- (33) Stacey, R. D. The Science of Complexity: An Alternative Perspective for Strategic Change Processes, *Strategic Management Journal* 1995 477-495
- (34) Thurbin, P. J. *Implementing the Learning Organisation: The 17-Day Programme*, London, Financial Times & Pitman Publishing, 1994
- (35) Van den Broek, H. Business trends and the learning organisation, in T Campbell and V Duperret-Tran (eds) *First Conference of the E.C.L.O* 1994, 1-16
- (36) Waldrop, M. M. *Complexity: The Emerging Science at the Edge of Order and Chaos*, New York, Simon and Schuster, 1992