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Adult Learning Theory: Insights relevant to the appropriation of ideas, theories, concepts and models by management practitioners

Background

The core aim of the overall research project is to explore the appropriation of ideas, theories, concepts and models by individual management practitioners.

A key theory that is currently proposed as an explanation of the apparently cyclical, some would suggest 'fashionable' or even 'faddish', trends in ideas about management draws upon the parallels with aesthetic fashion. This viewpoint proposes that ideas about management are actively promoted by individuals and organisations that have an interest, frequently of a commercial nature, in so doing. Thus not only do academic institutions, authors, publishers and consultants etc have a vested interest in promoting a constant stream of new ideas; they also have a vested interest in a previously established idea being regarded as out of date.

However in relation to all theories about management Stewart (1983) proposes the following guiding principle :

"Management theories rest on assumptions about managerial behaviour. These assumptions may be explicit or they may be implicit, even quite unrecognised. Whichever they are, they should be identified and then checked against what research has taught us about how managers behave".

(Page 82)

Thus a potentially under-recognised prerequisite for any viable theory regarding the means and mechanisms by which management practitioners might appropriate ideas, theories, concepts and models is that it should be congruent with what is known about the circumstances and situations in which adult learning occurs. Hence the proposed research has an active interest in the insights that adult learning theory might bring to bear upon these matters.

An initial review of the literature in this field of interest has been completed and the purpose of this paper is to:

1. Highlight the findings that are relevant to the core aim of the research project
2. Subject this 'work in progress' to the expert scrutiny of those with a specialist background in education, psychology or business
3. To propose a very tentative, very provisional, alternative, working hypothesis

Schemes, traces, frames and scripts

Bartlett (1932) describes the process by which human beings respond to the ever changing demands of their external environment and by which they learn to match their behaviour to the infinite variety of these experiences. He asserts that a key part in the development of homo sapiens has been their ability to avoid being constantly swayed by their immediate circumstances into a continual series of stimulus and response reactions. The avoidance of this compulsion has led the species to the ability

to develop a range of options and possibilities other than those that are simply determined either by a chain of conditioned reflexes, or by the sequences of a relatively fixed habit.

He reasons, that for mankind as a species to advance beyond low threshold responses, it has been necessary for the 'schemes' of the original experiences to be resolved into their constituent elements and for mankind to subsequently learn how to utilise the component parts in new 'schemes' of an individual's own making. Hence, Bartlett regards the ability to deconstruct a 'scheme' and to reconstruct it in a more useful and advantageous form that is relevant to a context other than the one in which it was first experienced, as the 'pre-eminent function' of human consciousness.

The complexity of the 'schematic formation' process means that many objects, experiences, stimuli and reactions are organised simultaneously into different, parallel 'schemes' with the result that when they are re-experienced multiple strands of organising influence can be triggered.

In addition, since remembering is 'schematically determined', the circumstance that may trigger any particular memory also has the potential to identify the details of the setting in which that 'scheme' was originally acquired. In effect this outcome can function as a predetermined attitude to that particular 'schematic' organisation whenever it is recovered.

Bartlett further asserts that :

"In all these 'schemes' there is operating that kind of unwitting analysis which gives weight to certain elements of the whole".

(Page 302)

and

"Sometimes the weighting is determined directly by sensorial dominance – usually by vision in man, by smell in certain other animals – and often by spatial distinctions within the predominant sense. Sometimes it is settled by appetitive or instinctive dominance. Most often of all, in human adult reaction, it is a matter of the operation of persistent 'interests'".

(Page 302)

Thus, when humanity is seeking to recall from memory a particular piece of information, the overlap of 'schematic' organisation and the crossing of interests mean that items are likely to be drawn from more than one 'scheme'. However, in this context the ancillary 'schemes' will always be subordinate to the one that is central to the task. By contrast, when the task is not one of direct recall, but rather that of 'constructive imagination', the retrieval process ranges more freely from interest to interest as the construction develops and the points of emphasis grow and change. Hence the material from one 'scheme', may be set next to material from any other 'scheme' and the more unexpected and unusual the juxtaposition the more creative the outcome. Equally the process of 'constructive thinking' relies upon a similar process of bringing together material from different 'schemes', but here the rigour and discipline that is implied by the requirement for thoughtfulness, (rather than just creativity) requires that a meaningful connection must be identified for each of the resulting juxtapositions. In addition, the relationship that has been identified must be discernable and apparent to those who are fluent in the appropriate language.

Koffka (1935) considers that the process of learning incorporates all the former occasions during which an individual has carried out a specific activity together with the current experience. From this perspective learning is a cumulative experience. This view makes no value judgement regarding the experiences themselves and accordingly these have the potential to be either positive or negative. Similarly repetition of an activity may lead to either good or bad habits and equally the repetitions may lead to either effective or ineffective ways of undertaking a particular activity. Some implications of this perspective include that :

1. Impressions of previous experiences will need to be retained in the memory
2. Residual sources of information will need to be readily accessible
3. Subsequent experiences may be qualitatively different to the initial ones.

Koffka also postulates that activities can and do take place for reasons other than learning, that the performance of an activity does not of itself indicate that learning is taking place and that learning can occur in a different time frame to that of the activity.

Koffka defines a change in an object with memory that subsequently cannot be completely removed as a 'trace' and he proposes that a key aspect of learning is the ability to consolidate traces. Thus whilst a wide range of different experiences, leave additional traces and there is little doubt that this breadth of experiences constitutes mental development, this variety does not of itself result in learning.

Ultimately Koffka (1935) provides this 'explanatory definition' of learning :

"Learning, as the modification of an accomplishment in a certain direction, consists in *creating* trace systems of a *particular kind*, in *consolidating* them, and in making them more and more *available* both in repeated and new situations."

(Page 544)

Koffka's analysis follows those of Woodworth (1929 : P163) who characterises the essential feature of learning as a "modification of behaviour" and Hunter (1929 : P564) who proposes that learning is characterised by "a progressive change, or trend".

Minsky (1975) begins by acknowledging the work of Schank and Ableson (and others) and he also acknowledges that his concept of a 'frame' is not particularly original and that it clearly lies in the tradition of both Bartlett's 'schema' and Khun's 'paradigms'. However he describes his core concept in the following way:

"A frame is a data-structure for representing a stereotyped situation like being in a certain kind of living room, or going to a child's birthday party. Attached to each frame are several kinds of information. Some of this information is about how to use the frame. Some is about what one can expect to happen next. Some is about what to do if these expectations are not confirmed".

(Page 212)

Minsky conceptualises a frame as a network of nodes and inter-connecting relationships. The higher levels of a frame are fixed and represent those things that are always true about a situation. However the lower levels of a frame have many '*terminals*' that in effect are data slots that must be filled by information relating to specific instances. In this model each terminal is capable of specifying conditions that its attachments must meet and a simple example of this might be a marker that requires a particular terminal attachment to be that of a person. A more complex condition might be a requirement for a specific relationship to exist among the things that are assigned to several terminals. Collections of related frames are linked together into '*frame systems*'.

The core rationale that lies behind Minsky's work is his belief that both the power and the speed of human mental activity is such that this requires more structured and intimately connected 'chunks' of data than previously proposed by either mainstream psychology, or by the rather narrower field of artificial intelligence.

Hence the special contribution that is made by Minsky's proposition is that it goes some way towards dealing with this issue. In particular he proposes that the terminals of a frame are normally filled with 'default' assignments that contain a great many details. Thus whilst a frame may contain information

that is based upon supposition rather than confirmed reality it also has many uses in representing generalised information and most-likely scenarios. Accordingly, it provides a means of bypassing the application of logical reasoning. Since the default assignments are conceived as loose attachments to their respective terminals, these are easily displaced when additional information is acquired that can better fit the current circumstances. In addition, the frame systems are perceived by Minsky as being linked to an information retrieval network that ultimately will find a replacement frame, whenever a proposed frame cannot be adjusted or updated to match the current reality.

It is through this concept of frames and frame systems that Minsky seeks to explain both the processing power and the speed of mental activity in humans.

The concept of a 'script' is widely attributed to Abelson (1976) and scripts represent the familiar, everyday events that fill up our daily lives and the routines of our normal existence.

In fact the terms 'scheme', 'frame' and 'script' are frequently used interchangeably, when in fact a 'script' is a particular form of 'scheme', or 'frame'. Thus whilst 'scheme' and 'frames' are a diverse accumulation of knowledge about the external environment that is stored in the human memory; a 'script' is a particular form of 'scheme' that stores the most frequently occurring sequences of events, such as getting up in the morning, driving to work and shopping at the supermarket etc.

Abelson (1976) provides this early description of what he was then describing as a 'cognitive script' :

"A coherent sequence of events expected by the individual, involving him as either a participant, or as an observer".

(Page 33)

Some 20 years later Schank & Abelson (1997) describe a 'script' as follows :

"A script is a structure that describes appropriate sequences of events in a particular context. A script is made up of slots and requirements about what can fill those slots. The structure is an interconnected whole, and what is in one slot affects what can be in another. Scripts handle stylised everyday situations. They are not subject to much change, nor do they provide the apparatus for handling totally novel situations. Thus, a script is a predetermined, stereotyped sequence of actions that defines a well-known situation".

(Page 41)

Schank and Abelson recognise that by subscribing to a script-based theory of understanding, they are making some strong claims about the nature of the understanding process. Indeed a key implication is that in order to understand the activities that are going on in any given situation, a person must have been in that situation themselves, either as a participant or an observer. In addition they also recognise that the actions of others will only make sense when these are consistent with a stored pattern of actions and that any deviation from the standard pattern that is described by the script will be handled with some difficulty.

They acknowledge their intention for 'scripts' to account for much of the specific knowledge that people have and they assert that :

"Most understanding is script-based".

(Page 67)

In confirmation of this they describe understanding as a process by which people match what they see and hear to pre-stored groupings of actions that they have already experienced and they assert that :

“We view human understanding as heavily script-based”.

(Page 67)

Brandsford (1979) suggests that an individual's capacity to understand and remember is strongly influenced by a learner's currently available skills and knowledge. However the ability to remember a previous experience is not synonymous with the ability to transfer this information to a new situation. This requires the ability both to identify established concepts and to subsequently form new ones.

In answer to the question of what enables individuals to understand and do things that they could not previously understand and do Brandsford agrees that :

“The development of new skills and schemata depends on the interplay between current information and previously acquired knowledge. People's currently activated knowledge can both clarify and be clarified by new information. Through this reciprocal interplay of assimilation and accommodation people can develop skills and schemata that they did not have before”.

(Page 224)

This seems a reasonable description a process that might involve the kind of consolidation of trace systems described by Koffka.

Mandler (1984 : P2) concludes that ‘all mental organization is schematic in nature’ and asserts that :

“Our knowledge about an object or classes of objects, about an event or classes of events, about personality traits and social norms, can all be considered as small networks of information that become activated as we experience these things and that function according to certain schematic principles”.

(Pages 2 - 3)

However she also cautions that :

“At present we simply do not know whether our knowledge in each of these domains is organised in similar fashion”.

(Page 3)

and by reference to the scholarship standard of ‘testability’ she concludes that the use of the term ‘schema theory’ is inappropriate and that ‘schema framework’ might be more accurate on the grounds that :

“No one has yet developed a coherent schema theory for any domain”.

(Page 1)

Adult learning stimuli

If the concepts of 'schemes', 'traces', 'frames' and 'scripts' provide at least the beginnings of an understanding of the organisation of human experiences, knowledge and understanding, together with at least a sense of the retrieval processes that underpin adult learning, a key question that remains is what might stimulate, prompt, trigger, or initiate a specific learning episode.

Support for the general thesis of the likely existence of a trigger mechanism that might prompt adult learning is provided by Dewey (1933). He proposes that 'reflective thinking', as distinct from other operations to which the term 'thinking' may be applied, involves firstly a state of doubt, hesitation, perplexity and mental difficulty, in which thinking originates, and secondly an act of searching, hunting and inquiring, to find material that will resolve the doubt and settle and dispose of the perplexity. Thus :

"The origin of thinking is some perplexity, confusion, or doubt. Thinking is not a case of spontaneous combustion; it does not occur just on 'general principles'. There is something that occasions and evokes it".

(Page 15)

However what is clear from the literature is that from the perspective of 'schemes', 'traces', 'frames' and 'scripts', the overwhelming majority of situations confronted by adults can be handled without the need to resort to overt cognition.

Hence Schutz (1964) describes 'thinking as usual' as :

"Trustworthy *recipes* for interpreting the social world and for handling things and men in order to obtain the best results in every situation with a minimum of effort by avoiding undesirable consequences".

(Page 95)

From the perspective of 'script-based understanding', Schank & Abelson (1997) have reached similar conclusions :

"A human understander comes equipped with thousands of scripts. He uses these scripts almost without thinking".

(Page 68)

Klein (1993) reaches similar conclusions as a result of his detailed studies of 'fireground commanders' in operational situations where time is very limited and where the consequences of an inappropriate course of action can be particularly significant. He describes the process by which these very experienced individuals make decisions, as follows :

"The major factor that distinguishes experienced from less experienced decision makers is their situational assessment ability, not their reasoning processes per se. Experts in a field can look at a situation and quickly interpret it using their highly organised base of relevant knowledge. The identification of situational type carries with it retrieval of one or more action alternatives that constitute appropriate responses".

(Page 18)

Whilst Louis (1980) supports this general thesis she also describes circumstances in which an adult would require overt cognition and in the process she begins to describe a mechanism that has at least the potential to prompt an individual learning episode :

“Scripts provide the individual with predictions of event sequences and outcomes. Implicitly, reasons for outcomes, that is, prospective explanations, are supplied. As long as the predicted outcomes occur, thinking is not necessary. However, when predicted outcomes do not occur, the individual’s cognitive consistency is threatened”.
(Page 240)

Thus for Louis it is a lack of congruence between an individuals script based expectations and a current experience that has the potential to cause the individual to think and thereby to seek a new understanding. From the world of psychotherapy Rogers (1969), in a statement of a principles which he has extracted from both his personal experience and his research, makes a similar observation :

“Significant learning takes place when the subject matter is perceived by the student as having relevance for his own purposes. A somewhat more formal way of stating this is that a person learns significantly only those things which he perceives as being involved in the maintenance or enhancement of his own self”.
(Page 158)

Carl Rogers was perhaps the most influential and eloquent voice of ‘self’ theory during the latter part of the 20th century, although the concept has its roots in the much earlier work of individuals such as Descartes and Freud. Thus the context in which Rogers uses the term ‘self’ is that of it being the central ingredient in human personality, developed through previous social experiences and maintained by current perceptions. There is also the clear implication that any experience that is inconsistent with an individual’s self-concept could be perceived as a threat and that an inability to resolve such perceived inconsistencies has at least the potential to affect an individual’s psychological well-being.

Mezirow (1977), in a seminal paper regarding adult education in which he sets out his theory of adult development, proposes a similarly dramatic trigger mechanism :

“To the degree that our culture permits, we tend to move through adulthood along a maturity gradient which involves a sequential restructuring of one’s frame of reference for making and understanding meanings”.

and

“When a meaning-perspective can no longer comfortably deal with anomalies in a new situation, a transformation can occur”.

and

“Usually a dilemma must generate pressure and anxiety to effect a change in perspective, so that people feel that the rug has been pulled out from under them”.
(Page 157 - 158)

In addition, Mezirow asserts that a transformation in an individual’s ‘meaning-perspective’ cannot be resolved by simply acquiring more information, enhancing problem-solving skills or adding to an individuals competencies and in his description of the process by which the ‘dilemma’ is resolved there is a genuine resonance with views expressed by Rogers’ :

“Resolution of these dilemmas and transforming our meaning-perspectives require that we become critically aware of the fact that we are caught in our own history and are reliving it and the cultural and psychological assumptions which structure the way that we see ourselves and others”.

(Page 163)

However although Mezirow asserts that neither information, nor additional competencies can bring about a new meaning-perspective, he also acknowledges that they can be an important ‘after-the-fact’ element, thus :

“Within a new perspective, people will still require educational assistance in acquiring needed skills and specific competencies they come to see as relevant”.

(Page 160)

Schultz (1964) also describes the whole experience of adult learning in similar, if somewhat less dramatic, terms :

“If we encounter in our experience something previously unknown and which therefore stands out of the ordinary order of our knowledge, we begin a process of inquiry. We first define the new fact; we try to catch its meaning; we then transform step by step our general scheme of interpretation of the world in such a way that the strange fact and its meaning become compatible and consistent with all the other facts of our experience and their meanings. If we succeed in this endeavour, then that which formerly was a strange fact and a puzzling problem to our mind is transformed into an additional element of warranted knowledge. We have enlarged and adjusted our stock of experiences”.

(Page 105)

The role of theory

Kurt Lewin (1946) is credited with being the main pioneer of an approach to reconciling the tensions between theory and practice that has been given the name ‘action research’, or ‘action science’.

This approach is founded upon the premise that technical rationality has served well disciplines such as science, engineering and medicine, but that professions such as social work, education, psychotherapy and management have not been equally well served by these principles.

From this perspective the established approaches to the creation of scholarship produce theories that are too complex to be used by practitioners and are difficult to reproduce in practical situations. The perceived difficulties arise because practitioners must function both in ‘real time’ and in situations where all the variables are changing at the same time. Hence the procedural rules for ‘scientific research’ that produce valid explanations of social problems cannot produce the knowledge needed to do something about them.

Similarly Habermas (1973) sees the creation of theory and the creation of practice as essentially different activities. The purpose of the construction of theory is to reflect truth or at least the most adequate possible interpretation of truth; whilst the aim of developing practice is to achieve the desired outcomes in the real world. Accordingly a theory may influence, or inform, practice and vice versa but there can be no question of a direct relationship.

The link is a discursive one where ideas, notions and elements of a theory can be considered in the development of practice but with no claims to being automatically applicable. Thus the relationship

between theory and practice is seen as three different and independent discourses – a discourse on theory, a discourse on practice and a mediating discourse on how to link them.

Senge & Scharmer (2001) summarise the overall situation as follows :

“Academics create theory with little connection to practice. Consultants develop tools that are often unrelated to theory. Managers focus exclusively on practical know-how and results”.

(Page 240)

Mintzberg & Gosling (2002) are also sceptical regarding the general applicability of theory to the management practitioner :

“Management is a practice, comprising a great deal of art and craft as well as some science. That is why managers cannot be created in a classroom”.

(Page 2)

They also express the view that :

“Learning occurs where concepts meet experience through reflection”

(Page 3)

and they observe that :

“Reflecting does not mean musing; it means wondering, probing, analysing, synthesising and struggling. Confronting old beliefs with new ideas. The learners have to be engaged, which means they have to share their reflections, to learn from each other’.

(Page 4)

Conclusions

The purpose of this paper was to review the literature concerning adult learning and to highlight the relevant insights that this cannon of knowledge brings to the core objective of identifying the means and mechanisms by which management practitioners appropriate ideas, theories, concepts and models.

A detailed consideration of the established scholarship in this field of interest has produced a number of key findings:

- ❖ All mental organisation is schematic in nature.
- ❖ Objects, experiences, stimuli and reactions etc are organised simultaneously into different, parallel ‘schemes’.
- ❖ In all of these ‘schemes’ elements of the whole are given a different weighting.
- ❖ In adult humans the weighting tends to be determined by ‘persistent interest’.

- ❖ When recalling from memory a particular piece of information, the overlap of 'schematic' organisation means that items are likely to be drawn from more than one 'scheme'.
- ❖ The retrieval process for 'constructive imagination' results in the unusual juxtaposition of elements from different 'schemes'.
- ❖ The retrieval process for 'constructive thinking' also brings together material from different 'schemes' but here the rigour of thoughtfulness requires that a meaningful connection must be identified for each of the resulting juxtapositions.
- ❖ Activities can and do take place for reasons other than learning.
- ❖ The performance of an activity does not of itself indicate that learning is taking place
- ❖ Whilst a wide range of different experiences may provide mental development, the variety does not, of itself result in learning.
- ❖ Learning can occur in a different time frame to that of the activity.
- ❖ Learning is a cumulative experience that brings together both the current and all the former occasions during which an activity has been carried out.
- ❖ Learning implies that impressions of previous experiences will need to be retained and that such residual sources of information will need to be readily accessible.
- ❖ A key aspect of learning is the ability to subsequently deconstruct, reconfigure and consolidate schemes.
- ❖ Learning is characterised by a 'modification of behaviour' or 'a progressive performance trend'.
- ❖ Significant learning takes place when the subject matter is perceived by the adult student as having relevance for their own purposes.
- ❖ The overwhelming majority of situations confronted by adults can be handled according to 'scheme' based 'trustworthy recipes' without the need to resort to overt cognition.
- ❖ Experts in a field (including management) can quickly assess a situation using their schematically organised base of specialist knowledge.
- ❖ The identification and retrieval of a recognisable 'situational type' carries with it appropriate action responses.
- ❖ The stimulus for overt thinking or cognition is some perplexity, confusion, or doubt.
- ❖ When an established 'meaning-perspective' can no longer comfortably deal with the anomalies in a new situation, a sequential restructuring occurs and a new meaning perspective can result.
- ❖ Neither information, nor additional competencies can bring about a new 'meaning-perspective', but they can be an important 'after-the fact' element.
- ❖ A theory may influence, or inform practice and vice versa but there can be no question of a direct relationship.

These findings have lead to this very tentative, very provisional, alternative hypothesis :

“Management practitioners will seek additional ideas, theories, concepts and models when their existing ‘schemes, frames, scripts and traces’ are inadequate to meet the challenges of their sense making and decision making responsibilities”.

Laurence Robinson

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References

- Abelson, R. P. (1976). Script processing in attitude formation and decision making, in J S Carroll and John W Payne (Eds), *Cognition and Social Behaviour*: Hillsdale, NJ: Lawrence Erlbaum
- Bartlett, Sir F. C. (1967). *Remembering: A study in experimental and social psychology*. Cambridge: Cambridge University Press
- Bransford, J. D. (1979). *Human Cognition : Learning, understanding and remembering*. Belmont, California: Wadsworth Publishing Company
- Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. Boston: Heath
- Habermas, J. (1973). *Theory and Practice*. London: Polity Press
- Hunter, W. S. (1929). Experimental studies in learning, in C. Murchinson (Ed), *Foundations of experimental psychology*. Worcester, Mass.: Clark University Press
- Klein, G. (1993). *Decision making in action: Models and methods*. Norwood, N.J.: Ablex
- Koffka, K. (1935). *Principles of Gestalt Psychology*. London: Routledge & Kegan Paul
- Lewin, K. (1946) Action research and minority problems. *Journal of Social Issues*, 34, 6
- Louis, M. R. (1980). Surprise and sense making: What newcomers experience in entering unfamiliar organisational settings. *Administrative Science Quarterly*, 25, 2, 226-252
- Mandler, J. M. (1984). *Stories, scripts and scenes: Aspects of schema theory*. Hillsdale, NJ: Lawrence Erlbaum
- Mezirow, J. (1977). Perspective transformation, *Studies in Adult Education* 9, 2, 153-164
- Minsky, M. (1975). A framework for representing knowledge, in P. H. Winston (Ed), *The psychology of computer vision*. New York: McGraw-Hill
- Mintzberg, H. & Gosling, J. (2002). Educating managers beyond the borders. *Academy of Management Learning & Education*, 1, 1, 64-77
- Rogers, C. R. (1969). *Freedom to learn*. Columbus, Ohio: Charles E Merrill Publishing Company
- Schank, R. C. & Abelson, R. P. (1997). *Scripts, plans, goals and understanding*. Hillsdown, NJ: Erlbaum
- Schutz, A. (1964). *Collected Papers II: Studies in Social Theory*. Arvid Brodersen, (Ed) The Hague: Martinus Nijhoff
- Senge, P. & Scharmer, O. (2001). Community action research: Learning as a community of practitioners, consultants and researchers, in P. Reason and H. Bradbury (Eds.) *Handbook of Action Research: Participative Inquiry and Practice*. London: Sage Publications
- Stewart, R. (1983). Managerial behaviour: How research has changed the traditional picture, in Earl, M. J. (Ed.) *Perspectives on Management*, Oxford: Oxford University Press
- Woodworth, R. S. (1929). *Psychology*. New York: Henry Holt