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The Metamorphosis of the Construction of Competence

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The Metamorphosis of the Construction of Competence

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Abstract

The idea of competence has different meanings in ordinary, academic, and vocational education and training practice. These meanings also have historical dimensions. That is, what is meant by competence has evolved over time and has been constituted differently in different areas of practice. For instance, in contemporary discussions in education and training, competing notions of competence have been the subject of debate, somewhat reminiscent of recurring debates in education over the last century or more. One hope of those coming from the modern construction of competence is that, because of its focus on outcomes, it can be used as a vehicle to achieve more convergence among sectors of education, eg across the aims and practices of schooling, vocational education, training, university education and adult and community education. Yet, there appears rather to be a polarisation of the organising principles within these sectors. Why is this so? Why is it that there is a continual re-cycling of different ideas of what should be acquired in education? Why is that, despite apparent advances in cognitive psychology about the nature of knowledge and its use in expert action, there are such fundamental differences in the kinds of knowledge that are implicitly and explicitly advocated in different sectors of education? These questions are addressed as follows. This paper examines the possible reasons why different meanings are associated with the term competence by examining the nature of the ends that are sought in constructions of competence in different areas of practice. The paper relates advocacy for different constructions of competence to the normative views that underpin them, and to periods in history when they gained their greatest sway. The genesis of the position of the cognitive psychological construction of competence and that of the competency-based training movement are examined against these normative positions. It is suggested that, for any convergence of meaning to occur, the construction of competence needs to have features that enable transactions across areas of practice. The cyclical movements in constructions are likened to an incomplete metamorphosis, continually thwarted by a failure to address the normative aspects of constructions of competence.

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INTRODUCTION

This paper¹ explores normative aspects of different constructions and re-constructions of the idea of competence. The term, **normative**, is used here to mean involving judgements of value, ie such ethical judgements as those of what is appropriate, desirable or good. The analogy of metamorphosis is used to indicate two things: the various multifaceted transformations that have occurred in the construction of the idea of competence; and the desirability of the culmination of these transformations in some better construction. The perspectives used here to understand and analyse the idea of competence reveal the normative aspects of these ideas. They also reveal cycles, where these cycles seem to be driven by clashes in values. Both of these conclusions suggest that the continuation of conflicts in rival constructions of competence are sourced in the continuing deferral of questions of value. That is, it is argued that the emergence and re-emergence of competing systems of values, each seeking a dominant position, seem to contribute to the unfinished nature of the project of constructing the idea of competence.

This paper is structured as follows. Firstly, normative aspects of different constructions of competence are identified. These constructions are drawn from everyday and educational activities and discussions. This is followed by a discussion of the contributions that philosophy and cognitive psychology can make in constructing the idea of competence. The purportedly value-free position of cognitive psychology in relation to competence is examined against these ideas. In the following section, the way in which competence is constructed by the Competency-Based Training (CBT) movement is examined and appraised in relation to cognitive psychological and philosophical ideas of competence. In the final sections, it is suggested that there are cycles in normative positions about what constitutes competence, that these are related to the deferral of questions of value at the core of those constructions, and that the progress of constructing competence is like an unfinished metamorphosis.

NORMATIVE ASPECTS OF VARIOUS CONSTRUCTIONS

There appear to be substantive differences in everyday and various educational constructions of the idea of competence. These differences are outlined below, by examining ideas of competence in different kinds of practice. By **practice** is meant the set of activities that are undertaken by a particular group of people, who have commonalities in the purposes that they are seeking to achieve. That is practice refers to the activities of different cultures, eg the activities and related purposes of everyday life, the activities and purposes of academics (although they would use words other than practice to denote their activities in achieving purposes), and the activities and purposes of those in vocational education and training.

Such differences are outlined, firstly, by examining everyday or common sense constructions of competence (characterising everyday practice), and then those of vocational education and training and academic practices. These constructions are chosen to highlight differences in their normative characteristics.

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Everyday Construction of Competence

In everyday activities, the capacity to undertake an activity well, where the notion of “well” is subjectively or normatively determined, is usually denoted competence, eg a competent musician, bike-rider, politician, manager or teacher. The attribution that someone undertakes an activity well usually relates to two characteristics: whether or not it involves the capacity to achieve a common *good*, ie an end commonly accepted as desirable (eg good government, good legal judgements or good learning); and whether the activity is executed skilfully. We do not normally assign competence to human capacities unless we approve of the ends that are achieved by these attributes. For instance, one does not normally find references to competent murderers, except perhaps amongst those who believe that such capacities deserve merit. These notions of good vary across groups with different ideas about the relative merits of different endeavours and the goals at which they are directed. For example, the ideas of what constitutes good music varies across age groups and other socio-cultural variables. It also varies over time. So too for medical practice, where in our own lifetimes, we have witnessed dramatic changes in views about whether such techniques as acupuncture and use of natural medicines are good and part of the armoury of a competent western health worker. At the same time, competence is often attached to rights conferred by qualifications or extent of experience, eg a competent lawyer, doctor, motor mechanic, teacher or builder, because it is thought that competence derives from substantial experience in appropriate practice.

Thus, in everyday constructions, competence has both cultural and time dimensions; and the denotation of competence can be idiosyncratic, multi-vocal or consensual. It is concerned with capacities to do things both skilfully and appropriately. It is these variations in views about whether an activity is competent that are here called *normative*, because these differences involve variations in judgement about what is appropriate and, therefore, valuable. In the following paragraphs, other constructions of competence are examined in more detail.

The Vocational Education and Training Construction of Competence

In contemporary discussions about vocational education and post-compulsory education, the idea of competence has been very prominent over the last decade. In this practice, competence refers to the capacity to perform defined and predictable tasks according to some pre-specified standard. Particular interests are represented in defining the standards, eg competent at the level expected by industry, as specified in industry standards (The National Training Board, 1992). Attention to these interests is taken to be good, because it is argued that it achieves other goods, eg international economic competitiveness and resultant higher standards of living. The connotations of this construction of the idea of competence are then promulgated as corresponding with the idea of competence used in everyday practice. The growth in acceptance of this construction of competence appears to have been assisted by the “conversationalization” (Fairclough, 1988) of the term, ie a modelling of its use on everyday conversations. However, it is argued here that it leaves out the everyday normative aspect of competence.

The example of competency-based training, with its apparent adoption of industrial values, is just one illustrative theme, taken as a point of reference at this moment in the unfolding construction of competence. (Yet it is reminiscent of other moments in history and analysable in terms of these same perspectives.) In the present case, a particular idea of what constitutes the “*good*” (ie what is desirable for society) (yet which accommodates only particular values) is taken to be the defining criterion of competence. That is, the debate about what is desirable has been pre-empted. A certain idea of what is desirable has been presumed without any attempt to secure consensus or to accommodate plural views.

Such pre-emption is not new in education. For instance, this contemporary view is, in many ways, not unlike the views that it seeks to displace. That is, the implicit view of competence in academic (including general) education, without recourse to that term, has also been one which has accommodated only particular values. For example, consider recent cycles in curriculum practice in general education. The earlier policy of assignment of grades to students on the basis of their relative performance against others or against pre-set criteria constitutes a value-judgement about the worth of these criteria or the worth of those relative performances. This worth relates to the differential value that is afforded to different kinds of knowledge, and represents only particular interests, such as the interests which seem to prevail in academic practice and its heritage of disciplines of knowledge. It may well be that the emergence of a new set of particular values, represented by CBT, has occurred for this very reason, as discussed below. As discussed later, this may be one of the reasons why we continually witness the emergence of reactionary constructions of the idea of competence. Let us turn then to the academic construction of competence.

Academic Construction of Competence

In many areas of practice, the term competence is used both positively and negatively. When used negatively, it is used to denote incomplete capacities; and when used positively, a full and comprehensive capacity. In academic practice, competence is not a commonly used term. When used negatively, it denotes “just skills” or the so-called “mere” capacity to perform routine tasks, eg those of a skilled practitioner. That is, in ordinary conversation in university and school practice, competence is often seen as confined to a limited aspect of humanness, something possessed by others. For example, some people would be offended if they were regarded as “merely” competent. Imagine calling a Vice-Chancellor or Dean competent and contrasting such a person with one who is thought to be visionary and shows leadership; or contrasting a competent artist with a creative one; or a competent doctor with a pioneering one.

However, while the term, competence, is seldom used in a positive sense, the construction of what would be regarded as competence, if the term were used positively to denote academic practice (ie the capacity to undertake an activity well - or the capacity to take appropriate action), would have a particular meaning. For instance, the purposes of academic practice are often seen in terms which are regarded as different from those concerned with “mere skills”. Rather they are seen to relate to such ends as the cultivation of abstract thinking, generation of new

knowledge, excellence, rigour and reflection. Accordingly, if we assume that the general (positive) idea of competence should accommodate the valued attributes of academics, the implicit notion of competence, if pressed to use such a word, would include having the attributes for the purposes mentioned above, eg having a “good brain” and using it for approved purposes, such as generating original contributions to knowledge, which are seen to be good. That is, the academic sense of what is appropriate action has a particular meaning in academic practice and is normative. It incorporates ideas of what is desirable and appropriate.

The above argument is that current differences seem to be grounded in whether practice is seen to be inherently normative and the ways in which normative practice is viewed. An important point to note, however, is that, just as in other areas of practice, this implicit notion of competence in academic practice, just as in any other practice, needs to be seen as problematic. That is, this construction invites the question of whether such a set of values which gives prominence to such kinds of performance is legitimate; and, if so, then, should be confined only to academic practice. Differences in the constructions of competence can create tensions in practice across the various views, and contribute to a polarisation rather than a reconciliation of ideas about what constitutes competence and the value that should be attached to different capacities. It is argued below that the creation of a construction of competence, shared across different practices, is held back by a lack of reconciliation of such normative considerations.

Two kinds of academic practice where one could expect find treatment of these questions are philosophy and cognitive psychology - philosophy, because of its concern with the nature of knowledge, reality and ethics; and cognitive psychology, because of its concern for explaining knowledge and learning. Let us consider these ideas in turn.

PHILOSOPHICAL CONSIDERATIONS

Philosophy treats as problematic claims about the nature of reality and its construction; and the nature of knowledge and its relationship with time, culture, individuals and social institutions (See Stevenson, 1994c,d; 1995a). These concerns mirror the dimensions of everyday constructions of competence outlined above. Illustrations of some of the dimensions of these concerns are depicted in Table 1.

Thus, in philosophical constructions, the connotation of competence would have ontological, epistemological and ethical dimensions. Although these dimensions are inter-related (eg the idea of what knowledge is valuable would depend on what knowledge was thought to be real), this paper concerns itself only with the question of what capacities are valued because they are regarded as appropriate. That is, the last two columns of the table are the primary focus of the present paper.

The possible variations in what can be taken as the valued purposes for knowledge and the valued attributes that are involved in securing these purposes are examples of the normative dimensions of competence. That is, since the capacity and disposition to engage in practice is taken as an ethical matter involving the pursuit of a good (something desirable), then the nature of what constitutes the good is problematic, and so too, then, is the nature of what constitutes competence. Taking

the philosophical ideas of valued purposes and valuable attributes in achieving these purposes, competence, can therefore be thought of as having both causal and teleological (ie related to purposes) aspects.

Such differentiations have their roots in Aristotle's differentiation of the "five ways in which the soul arrives at truth" (Thomson, 1976, p 206) - art or technical skill (techne); science or scientific knowledge (episteme); prudence or practical wisdom (phronesis); intelligence or intuition (nous); and wisdom (sophia). For instance, Aristotle viewed art and technical skill as being concerned with making or **production** and therefore of a different kind from prudence or practical wisdom which is concerned with deliberating rightly what is good and advantageous; and therefore constitutes right **action** rather than production. Aristotle left open the question of whether vocational pursuits are of a lesser value, or are devoid of the need for prudence or practical wisdom. Thus, it is possible to speculate on whether any limitation of attention to causal aspects of competence ignores capacities that are important in vocational pursuits.

Table 1: Some Conceptions of Reality, Knowledge and Values

Nature of Reality	Nature of Knowledge	Valued Purposes	Valued Personal Attributes
Resident in intrinsic nature of external phenomena	Given: Timeless and independent of construction	To discover knowledge	Verbal concepts
		To apply knowledge	Understanding
Constructed by academic disciplines	Relative to time	To make industry competitive	Cognitive processes
	Interpretable in terms of configurations of disciplines of knowledge	To empower individuals	Skills
Constructed internally by individuals	Relative to individual choices, values and representations	To achieve social goals for humanity as a whole	Feelings
		etc	Motivation
Constructed by social institutions		etc	etc
etc	Relative to social contexts, cultures, power relations		
etc			
	etc		

Based on Aristotle's ideas, later authors have differentiated knowledge in two ways: (a) a differentiation between theoretical and practical knowledge, and (b) a differentiation between knowledge that enables control over causes, and knowledge that enables "practical" action to secure what is appropriate or good. For instance, critical theorists emphasise this latter distinction, by separating knowledge into that concerned with the technical and that concerned with the practical, where the technical is concerned with the achievement of mastery or control - truth or

efficiency; and the practical is concerned with the achievement of the good (See Grundy, 1987; Kemmis with Fitzclarence, 1986).

Carr (1993), on the other hand, takes on both of these distinctions by arguing that the capacities that are needed for competence are those that enable active practical enquiry, “determining what should be done for the best in the realm of conduct” (p 264). It is not “the knowledge that of scientific theory nor the knowledge how of routine craft skills, ... but a kind of moral wisdom or judgement that is rooted in rational reflection about .. policies and practices and what is ethically, as well as instrumentally, appropriate to achieve them” (p 265). Carr differentiates, firstly, the causal aspects of performance (**dispositions**) as those which enable us to perform “specifiable functions either by training or natural endowment” (p 237). He includes in these dispositions: skills, habits and faculties that enable us to achieve mechanical efficiency. On the other hand he regards the holistic sense of competence as **capacities** which are normative and enable practical action through voluntary and deliberate exercise of principled judgment, ie “right” or good action. Thus, capacities enable the pursuit of the “good” and are normative.

For these reasons, Carr is concerned that competence may be seen only in dispositional terms, where it is assumed that the development of the capacity for practical action requires merely the development of pre-specifiable skills. He is concerned about empirical researchers and psychologists “who are given to speaking and writing quite unproblematically of value neutral ‘processes’ of skills and creativity.” (p 256).

Such a concern would have been shared by Dewey (1916) who claimed:

“...there is a great difference between a proficiency limited to immediate work, and a competency extended to insight into social bearings; between efficiency in carrying out the plans of others and in forming one’s own.” (p 371).

In making the above claim in his chapter on vocational aspects of education, Dewey was concerned with narrow notions of what constitutes vocational, and argued that :

“the dominant vocation of all human beings at all times is living - intellectual and moral growth....In an autocratically managed society, it is often the conscious object to prevent the development of freedom and responsibility; a few do the planning and ordering, the others follow directions and are deliberately confined to narrow and prescribed channels of endeavour. However, much such a scheme may injure to the prestige and profit of a class, it is evident that it limits the development of the subject class; hardens and confines the opportunities for learning through experience of the master class, and in both ways hampers the life of society as a whole.” (pp 362-363).

Thus, Dewey was explicitly normative in his views of what constitutes vocational and what it is to be competent. In Dewey’s view, competence is the capacity to determine rightly what is for the best and to take action to achieve these ends; not only the proficiency to achieve the goals set by others. So the “good” that is taken to be the normative end of competent capacities is, from this point of view, more than technical efficiency, and applies to occupational pursuits as much as any others.

Thus, variations in constructions of a competent academic, builder, teacher, doctor, lawyer, bike-rider and musician, across communities of practice, are variations in the extent to which normative aspects are accommodated and the kinds of norms adopted. These variations are comprised of such differences in value as those afforded to highly polished automatic skill; the capacity for accurate problem-solving; the capacity for creative production; the capacity to develop others; the capacity for good judgments and the capacity to generate new knowledge and understanding. Such variations are related to what is seen as desirable for the purposes of the various endeavours; and also to the value attached to those endeavours.

Accordingly, they vary from the relatively unproblematic notions implicit in everyday constructions, where the consensual meaning of what is appropriate, within areas of practice, often applies. The variations emanate from differences in value positions, ie views about what is appropriate and therefore of high value, and underscore the value-laden judgements that are involved in the denotation of competence. That is they underscore the idea that competence is related to the value attached to the ends for which competence is needed, and that the value attached to the capacities called competence are derived from the values attached to these ends.

In the following section, the unfolding construction of competence in cognitive psychology is examined against these normative ideas, ie ideas about how the denotation of competence involves value judgements about what is appropriate.

CONSIDERATIONS FROM COGNITIVE PSYCHOLOGY

In cognitive psychology, competence is variously defined, sometimes as a stage between novice and expert action (Dreyfus & Dreyfus, 1986; Shuell, 1990) and sometimes in terms of expertise itself (Evans, 1993; Glaser, 1990; Stevenson, 1994b). For Dreyfus and Dreyfus (1986), competence is a stage in skill acquisition following the stages of novice and advanced beginner and coming before the stages of proficient and expert. For Glaser (1990), "competence is characterised by both efficiency and principled understanding, by both fast pattern recognition and conscious monitoring" (p 36); where "principled" refers to an organisation of knowledge in terms of structural principles, rather than having normative connotations of rightness. Glaser's view connotes what is usually designated in cognitive psychology as expertise. In this case, competence is constructed more positively, as denoting expertise, itself, where the label of expertise carries with it connotations of adaptive, generative and innovative activity, eg expert chess players, artists and physicists. In cognitive practice, efforts are made to explain the kinds of knowledge and thinking involved in "enabling" these aspects of expert action.

For the purposes of this paper, let us take the cognitive constructions of competence and expertise to be synonymous, thus avoiding attributions of different value to such terms and ignoring differentiations between the variously posited latter stages of skill acquisition. Let us reserve the term competence for the final stage of any process of acquisition of a capacity, as opposed to any novice stage. What, then is expertise? Novices and experts are usually differentiated in such ways as depicted in Table 2 (eg Anderson, 1982; Evans, 1991, 1993; Fitts, 1964; Flavell, 1987; Glaser, 1989; Gott, 1989; Scandura, 1981; Shuell, 1990; Stevenson, 1986a, 1986b, 1991, 1994b).

There are existence assumptions in this portrayal of differences, ie assumptions that the kinds of cognitive representations delineated actually exist-in memory, and that the kinds of representations posited are essentially distinct (Hirst, 1991; Ryle, 1949). Ignoring the problematic nature of these assumptions, the portrayal is as follows. An expert, or one who is competent in the positive sense of the word, is one who can automatically execute compiled procedures in routine situations to achieve the predictable goals needed for that situation; and who can reason forward in new or problematic situations by recognising the kinds of problems that the new situations present, and make moves based on so-called deep structured conceptual understanding. These moves may also be strategic or opportunistic (eg Gott, 1989). Thus, competence is seen as being enabled by compiled specific procedures, general problem solving procedures and so-called "principled" understanding. Coordination over the use and deployment of these structures is posited as the mechanism for routine action, problem-solving and strategic and opportunistic reasoning.

Table 2 Differences between novices and experts

Characteristics	Novices	Experts
<i>Knowledge organisation</i>	Conceptually isolated facts	Structured Coherent chunks Accessible at different levels
<i>Problem representation</i>	Surface features	Underlying principles
<i>Knowledge structures</i>	Declarative knowledge, isolated form applicability; general domain-independent problem-solving procedures	Compiled procedures, bound to conditions of applicability/goals
<i>Attention</i>	High demands	Automaticity
<i>Metacognitive skills</i>		Approaching problems; Monitoring; Perceiving difficulty; Apportioning time; Predicting outcomes

An important aspect of cognitive constructions of expertise (ie where competence has positive connotations) is that they often purport to be value-free, or make no reference to normative matters at all, confining attention to causal mechanisms that are involved in achieving goals, irrespective of the value of the goals. Yet, Goodnow (1993) warns that research is far from being value-free, in that "...in research...we bring to the analysis of intellectual performances some tacit "cognitive values" ... that lead us to regard some problems or tasks as more "significant" than others, and to define intelligent behaviour in particular ways ... to approve, for instance, of elegance, originality, efficiency, speed, or absence of redundancy, etc, even though they may not be essential to the task as officially defined " (Goodnow, 1993:4).

Because cognitive psychology purports to be value-free, one needs to check if it is concerned merely with explaining the causal mechanisms for knowledge acquisition and use, irrespective of its normative purposes; or if it is concerned with developing

certain kinds of knowledge to which it accords higher value. On the one hand, it is clear that cognitive psychology can be applied to different normative ends, eg the attainment of different curricular goals flowing from different normative positions. For example, it can be argued that cognitive psychology need not be associated solely with a technicist orientation to curriculum (Stevenson, 1994c; 1995a) (Table 3).

However, the quest in the cognitive literature is generally for the development of a particular kind of expertise; and the knowledge that is implicitly valued in this literature, for the achievement of expertise seems to change as views of expertise change. The current position of cognitive psychology is that possession and control of the certain posited cognitive structures are valuable. These structures are thought to constitute various abilities and enable associated activities. Thus, there are usually implicit attributions of value to such abilities as those involved in problem solving, far transfer, adaptability, innovation, creativity, metacognition, so-called abstract understanding and the like; and the cognitive representations that are posited as enabling these activities and attributes.

Table 3: Relative emphases of different cognitive structures in curriculum orientations (Modified from Stevenson, 1994c, 1995a)

COMBINATIONS OF VARIOUS GROUPS OF CURRICULUM ORIENTATIONS	POSITED COGNITIVE STRUCTURES		
	Propositional Knowledge	Specific Procedures	Higher Order Procedures
Training and efficiency; Technicist	i (implicit in problem- solving)	++ (skills)	i (implicit in problem- solving)
Academic Disciplines	++ (realms of knowledge)	++ (principles of procedure)	i (implicit in problem- solving)
Humanist; Personal; Learner centred	i (implicit in meaningful learning)	i (implicit in achieving own goals)	++ (exploration; discovery; personal control)
Social Reconstructionist; Radical; Critical pedagogy and social action	++ (understanding; perspective transformation)	i (implicit in taking action)	++ (judgement, critical reflection)

Note: ++ denotes an explicit emphasis on developing this cognitive structure in this orientation
i denotes an implicit need for this posited structure

This current position has been reached through a long history, where the emphasis attached to different categories of cognitive representations has undergone many changes. Glaser (1990) and Perkins & Salomon (1989) trace these movements from periods such as early emphases on “disciplined” thinking afforded by the learning of such subject matter as Latin; to behaviourism where the emphasis was on the demonstration of specific skills; to the age of heuristics where the emphasis was on the development of general problem skills, heuristics and metacognitive procedures. Since the time of their writings, and on the basis that experts seem to have a large knowledge base (Chi, Feltovich & Glaser, 1981; Gott, 1989), there has been a growing emphasis on the development and structuring of so-called conceptual understanding, in such a way that schemata are acquired, which enable the recognition of problem states and the appropriate associated strategies and moves (eg Sweller, 1990).

What is noteworthy about this development of cognitive psychology is the slippage that has occurred in the terms used to conceptualise the idea of competence. Much of the current state of cognitive psychology is due to work in information processing (Anderson, 1982; Gott, 1989; Glaser, 1990; Newell & Simon, 1972), which has its origins in a distinction between “knowledge that” and “knowledge how” (Ryle, 1949). However, in the cognitive literature, there has been a movement from computer simulations of human problem-solving based on specific productions and general problem-solving procedures (Anderson, 1982; Newell & Simon, 1972) to the development of so-called expert systems or programmes that access a large base of organised concepts (See Glaser, 1990; Gott, 1989). What seems to have occurred in the process has been a developing emphasis on that conceptual knowledge which can be represented in declarative form as language or pictorial models. This emphasis has accrued through both the kinds of research tools used (focussed on knowledge that is readily rendered in language or other symbolic forms) and the areas of performance that are typically examined (eg language and mathematics acquisition, chess, physics, and other well-defined problems). Ironically, this emphasis makes problematic the original distinction between knowledge “that” and knowledge “how”, and may constitute the re-invention of the “ghost in the machine” that Ryle (1949) warned us about. Ryle saw competent performance as not needing the invention of separate internal processes to explain or describe it. In his view, the performance constitutes the understanding itself: a position akin to that of Aristotle.

That these changes are changes in value is signified by the changes in research concerns and the tools that are used for that research. When expertise was viewed as the capacity for automatic fluid action, it was the procedural knowledge that enabled that skill to be performed that was accorded high value. When it was thought that heuristics and general problem-solving procedures conferred expertise, it was these structures that were valued. It is schemata that are now valued, now that it is posited that experts are characterised by their capacity to represent problems in terms of their so-called deep structured conceptual understanding, and their capacity to coordinate and control the deployment of specific and strategic procedures associated with different levels of abstraction of problem representation. Thus, at this time, contemporary cognitive psychology affords more value to so-called

conceptual understanding than to specific procedural knowledge, because it affords more value to the capacity for solving new problems than the performance of routine skills with fluency.

A further noteworthy feature of the changes in the cognitive construction of competence is the continuing re-emergence of emphases on so-called abstract thinking. For instance, importance was attached to “abstract thinking” viewed as internal processes of thinking in countering the presumed sufficiency of early conditioning explanations of behaviour, and, later, in the form of heuristics and metacognition, in countering the re-emergence of behaviourism as a curriculum orientation. It has now re-emerged, in the form of deep structured conceptual understanding, in countering the presumed sufficiency of artificial intelligence emphases on specific and general purpose procedures and productions. Cognitive psychology now seems to be back in the position where knowledge “how” is again devalued with respect to knowledge “that”; a position quite contrary to the views of Ryle and Aristotle.

In summary, the current position of cognitive psychology is an interesting one, for a number of reasons:

- the language of cognitive psychology involves normative words whose meanings have shifted from those of ordinary and philosophical practice (eg principled, understanding, dispositions, learning and memory)
- the shifts in meaning are often associated with the possibility of category mistakes (Ribes-Iñesta, 1991; Ryle, 1949; Wittgenstein, 1980), where a differentiation between thought and action is made, but terms whose meanings relate to action are used to denote thought
- the use of language and other symbols are often taken to be competence, rather than representing a particular rendition of competence
- “abstract thinking” seems to be a recurring theme in the concerns of cognitive psychology
- a vicarious value is attributed to cognitive representations that are thought to enable non-routine performance
- as a result, a discipline which regards itself as non-normative has arrived at a position where differential value is implicitly attributed to different kinds of cognitive representations
- the conceptualisation of expertise contributes to tensions between values implicit in general and vocational education (Stevenson, 1993).

Cognitive psychology itself is not content with its current position. For instance, there is increasing recognition of the situatedness or context dependence of knowledge (eg Collins, Brown & Newman, 1989; Pea, 1987); the cultural nature of knowledge (Lave & Wenger, 1991; Rogoff & Lave, 1984); the affective and dispositional nature of knowledge (Perkins, Jay & Tishman, 1993a, b); and the nature of implicit knowledge, memory and learning (eg Buchner, Funke & Berry, 1995; Graf & Masson, 1993; Long, 1995). However, what continues not to be

addressed is the essentially normative nature of knowledge and competence. That is, cognitive psychology still has little to offer about what knowledge is involved in appropriate or right action, how this knowledge is acquired and how it is used. In addition, cognitive psychology continues to differentiate thought from action.

This brings us to the construction of competence by the competency-based training movement.

COMPETENCY-BASED EDUCATION AND TRAINING

The essential features of competency-based education and training (CBT) (Stevenson, 1993a; 1994d; 1995b) are that:

- a pre-emptive good is assigned to education, viz the achievement of more efficient industrial practice
- valued knowledge is constructed by spokespersons for industrial bodies, as timeless, independent representations of a given universal reality
- to achieve the pre-emptive good, education is valued for its development of the ability to apply pre-defined knowledge, where that knowledge should emphasise, solely, targeted cognitive processes and demonstrable skills
- power is vested in new institutions, supported by new organising principles
- the construction forces the development of curricula which give almost exclusive emphasis to causal outcomes or performance pre-specified as the appropriate result of instruction.

The strength of this construction is that it is explicitly normative. What is problematic is the nature of the norms that are adopted. The normative aspects of this construction of competence are as follows. Firstly, the ethical questions about what is good for the community and, therefore, what is good in vocational education have been pre-empted. They have not been arrived at consensually; nor have individual or plural voices been given space. Secondly, an equation has been made between knowing and doing. That is, it is taken that if conforming performance can be observed then the required knowledge exists. This philosophical position overcomes the Cartesian problem of separating the body from the soul or the possibility of category mistakes in cognitive psychology in inventing unnecessary “ghosts in the machine”. However, the movement is equivocal on this point. In its early versions (eg The National Training Board, 1990, 1991), competency-based training was overtly behaviourist, in that it equated knowing with doing. However, in its more recent manifestations (eg The National Training Board, 1992), knowledge is regarded as a separate phenomenon which underlies performance and which can receive legitimate attention in curriculum development. The “right” values for action in meeting standards are also regarded as necessary, but not as a separate legitimate curricular concern. Thus, a normative position is attached to cognitive structures and values, but in a deputed way. This movement from a singular construction of knowledge and action to a dualistic construction has occurred safely for the CBT movement, because cognitive psychology purports to be value-free. That is, adoption of cognitive psychology, has not disturbed CBT’s taken-for-granted good or its definitions of appropriate performance in achieving that good.

Competency-based training seems also to have achieved a kind of colonisation of cognitive psychology (Stevenson, 1995b). This has been achieved partly because of the vulnerability of the non-normative or causal position that cognitive psychology purports to adopt. Thus CBT can adopt the contributions of cognitive psychology in explaining the mechanisms of action that are needed for the particular normative ends of CBT; namely securing the good that is conveyed as the immediate needs of industry for efficiency. Perhaps this is why CBT has moved from a behaviourist to a cognitivist position. In addition, cognitive psychology offers dignification to the movement, as the movement seeks legitimation. It can adopt a set of principles that have currency in academic practice and gain greater respectability. For example, it can justify its position on skilful technical ends and observable performance directed at these ends, by recognising the role played by the cognitive structures that have been posited for expertise. Another example of this colonisation is the way in which CBT justifies its emphasis on learning in the workplace by calling on findings from cognitive psychology about the importance of functional and situated learning. The non-normative way in which cognitive psychology treats its growing interest in implicit learning presents a further appealing opportunity for CBT.

CYCLES IN NORMATIVE POSITIONS

The emergence of the normative position of CBT and its appropriation of cognitive psychology can be viewed a snapshot of change which is but a short cycle that appears to be repeated many times in history (Stevenson, 1993a).

The frequent emergence of governmental imperatives in the name of such bodies as industry and its values in defining what it asserts is appropriate practice has its counterparts in the history of emphases in educational goals (Table 4) (modified from Stevenson, 1993a). In this table, there appear to be cycles in what is seen to be the "good" in education, with recurring emphases on various portrayals of the themes of **individual development, relevance and the individual in relation to society**.

These changes in emphasis are associated with changes in what kinds of development are appropriate in education, ranging across different kinds of cognitive structures, and different target outcomes - all related to differences in what are seen to be the valuable purposes of education. It is especially interesting that, when one examines the progression of cycles in emphases, against various crises in social life, there appear to be relationships between the presence of major social crises and the generation of cycles in emphases.

The governmentally orchestrated pre-emptive determination of the good, marked by historical crises in social life, can be seen in three ways. **Firstly** it can be seen as a recurrent reaction to expressions of normative positions concerned with the individual, wider social life and improvement of society, whenever these positions prevail. Interpreted in this way, the phenomenon represents recurrent attempts at suppression of normative constructions of competence that afford value to the needs of the individual and/or the collective, as opposed to particular or singular interests of parts of society such as privileged groups or industry. Its expression, when industry is used to legitimate the normative claims, takes the form of a construction concerned with alleged irrelevance, the need to return to the "basics", the alleged

dis-embedded nature of learning in schools and the alleged abstracted nature of academic pursuits.

On the other hand, the cycles suggest that, when the interests of preserving existing stratifications of society prevail, the expression returns to calls for the development of abstract or conceptual understanding. Thus a **second** possible interpretation may be that normative constructions seeking to preserve the academic construction of competence are in fact the reactionary elements of the recurring cycles. They may be reactions to explicitly normative constructions of competence that afford value to technical (and scientific) knowledge; or the coincidence of knowing and doing. It may be that the sources of energy for the recurring cycles lie not in the reactionary power of industry and government, but in powerful interests seeking to suppress value for technical knowledge or skilfulness. Its expression may be in terms of the alleged needs for abstract knowledge and understanding, legitimated as calls for analytical abilities, adaptability, creativity and innovativeness. Equally, the expression may be rendered in calls for the needs of the individual and the collective.

Table 4: Cycles in Educational Imperatives (Modified from Stevenson, 1993a)

THE "GOOD"	CRISES	"APPROPRIATE" PRACTICE
Individual Development 1: Fullest intellectual and social meaning of work (Dewey, 1916)	↓	Develop more than specific skills; use problem-solving to develop meaning
Relevance of Education 1: Scientific efficiency (Bobbitt, 1924; Charters, 1924)		Develop routinised automated manual dexterity, related to industrial demands
Social Responsibility: Tyler, 1949	↓	Aim for plural outcomes drawn from all aspects of social life
Relevance of Education 2: Behaviourism (Mager, 1962; Skinner, 1954)		Develop observable, measurable performance on predicted tasks
Individual Development 2: Humanism (Maslow, 1971; Rogers, 1969) Adult learning (Knowles, 1979, 1980); UNESCO Report on Learning to Be (Faure et al, 1972)	↓	Help individuals to develop in ways that are important to them
Relevance of education 3: OECD Report on Competencies Needed in Working Life (OECD, 1980)		Develop functional competence for work
Social Action: Critical Theory in Adult Education (eg Boud, 1987; Brookfield, 1988)	↓	Empower through learning, so that right action can be determined and pursued
Relevance of Education 4: Industry driven education		Teach for observable, measurable performance to industrial standards
	<i>High levels of youth unemployment; economic and political crisis</i>	

A third interpretation may be that each of the variously discussed constructions of competence has inherent flaws and none of them can subsume or be subsumed by the others. For example, the final metamorphosis of a CBT construction of competence, despite its appropriation of cognitive psychology, may be thwarted because cognitive psychology itself does not address the normative aspects of competence in an explicit manner. The tensions may remain because the implicit normative position of cognitive psychology is not directly compatible with the explicitly normative position of such movements as CBT. For instance cognitive psychology places a high value on deep structured conceptual understanding and so-called higher order problem-solving and metacognitive procedures, for their potential use in problem-solving and generative action; while CBT confines its attention to pre-specifiable actions conforming to the securement of ends derived from the needs of industry. Further, the reconciliation of the CBT construction with the academic one is also thwarted by differences in normative positions.

Irrespective of the identity of the sources of energy for the recurring themes, they seem to signify attempts at dominance and suppression of differences in positions, on the value that should be attached to different kinds of knowledge. Such a tension is manifested clearly in the current polarisation of general and vocational education, where attempts at convergence seem to succeed only at the margins.

THE METAMORPHOSIS

The continuation of the metamorphosis of the construction of competence seems to have followed a recurring path. And this journey seems to have been inevitable because of the failure to treat, as problematic, normative aspects of competence. While considerations from philosophy compel a forthright treatment of such issues as what is appropriate, principled, prudent and right action, both cognitive psychology and CBT construct the normative aspects of competence unproblematically. Cognitive psychology purports to confine its attention to understanding how action is initiated and conducted; yet this explanation of performance itself leaves out any explanation of how right action is determined. CBT overcomes this problem by pre-empting the good that is the goal of action. Cognitive psychology nevertheless affords implicit value to knowledge long given high status in institutions like schools and universities - especially so-called abstract conceptual understanding (which is not surprising as cognitive psychology is an example of academic practice). Further, it has placed itself in a position where it has invented the existence of cognitive structures that are separate from performance and that account for performance; yet, the nature and existence of such structures can only be supposed and can be contested.

As an instance of the cycles that occur repeatedly in recent history, CBT is a good illustration of the tensions that can exist in various constructions of competence. It addresses the separation of thinking from action that is presumed in other constructions and the disconnectedness of knowledge "that" and knowledge "how" that these constructions project. It does this in apparent reaction to the devaluing of knowledge "how" or skilful knowledge that characterises other practices. However, in addressing this concern, it assigns a pre-emptive good to education and training.

That is, one must surrender quests for making good value judgements in action, in the pursuit of skilfulness, because the development of skilfulness is confined to that skilfulness that industry prescribes, and which is taken as good for the community because of its promoted relationship with overall socio-economic goals. In doing this, it supplants the individual's quest for the variety of the forms of knowledge that Aristotle identified, for a pre-emptive, supposedly collective, criterion of what knowledge is appropriate; and, moreover, this pre-emptive good is not one that has been arrived at consensually. Thus, its quest for redressing unsustainable attributions of higher value to "knowledge" that is not skilful is thwarted by its own pre-emption of the good and failure to treat the good as problematic.

We are therefore left with contesting constructions, none of which deals directly with normative aspects of the construction of competence, and we have moved a long way from common-sense or everyday constructions of competence which are essentially normative. It seems likely that these tensions will persist with cyclical periods of dominance of one construction over another, marked by social crises, without attempts at reconciliation among constructions based on normative considerations.

Thus, let me conclude that, while projects that seek to bring finality to the quest for a construction of competence ignore the implicit and explicit normative aspects of performance, any final construction seems caught at some point in its ultimate metamorphosis. Suggestions for making a start on a way forward in bringing some finality to the quest for a reconciliatory construction of competence would include:

- acknowledgment of the essentially normative nature of competence
- researching the nature of normative knowledge and its acquisition
- identifying the normative purposes of current educational endeavours
- creation of space for discussions about alternative normative purposes
- creation of space for pursuit of different normative ends in educational endeavours
- contextualisation of any advocacy for particular educational endeavours in terms of their normative purposes
- suspension of any undue political privileging of certain kinds of knowledge
- pursuit of any desirable convergence of educational endeavours in explicitly normative terms

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