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***Nelson Goodman's general theory of symbols: can it help
characterise some educational concerns?***

WORKING PAPER

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Introduction

Nelson Goodman was active between 1941 and the end of the century. From 1968 he was Professor of Philosophy at Harvard. He died in 1998 at the age of 92 having made contributions in the field of logic and analytical philosophy. His unremitting nominalism led to a radical constructivist or irrealist position. He was a constructivist not only in the sense of acknowledging the constitutive nature of our classifications of things, ultimately amounting to versions of the world, but also in the way that, following Carnap, he saw it as part of the responsibility of philosophy to construct robust and consistent systems of statements that serve as correctives to the logical disarray of natural language. He also took to its logical conclusions another of Carnap's principles namely that the truth of a statement is dependent on a particular frame of reference.

In his first book *The Structure of Appearance* published in 1951 he laid the foundations for his later work. Here and in the earlier paper *Steps toward a Constructive Nominalism* (1947) written with Quine he sets out an axiomatic extensional phenomenalist system that explicitly allows anything to be an individual and that strictly forbids any abstract entities including classes. He also held that there is no one way that the world is but many ways that it may be described and that, as a consequence, one of the main tasks of philosophy is to examine the variety of ways in which symbol systems are, or can be, constructed. As he says in the foreword of *Ways of Worldmaking*,

...I think of this book as belonging in that mainstream of modern philosophy that began when Kant exchanged the structure of the world for the structure of the mind, continued when C.I. Lewis exchanged the structure of the mind for the structure of concepts, and that now proceeds to exchange the structure of concepts for the structure of the several symbol systems of the sciences, philosophy, the arts, perception, and everyday discourse. The movement is from unique truth and a world fixed and found to a diversity of right and even conflicting versions or worlds in the making. (Ways of Worldmaking 1978 p X)

His book *Languages of Art* subtitled *An approach to a general theory of symbols* first published in 1968, is an important part of this overall endeavour. It constructs ways of re-conceiving key aspects of the ways we talk about art including representation, expression, style and authenticity. He does this by taking all art works to refer and then, through careful discrimination, sometimes reveals and sometimes constructs a variety of kinds of reference characteristic of art works. The resulting general theory of symbols departs from then current ways of talking about art. Goodman makes a considerable contribution to the field of aesthetics but his analysis dis-covers modes of reference that promise to illuminate more than the arts. The purpose of this paper is to begin to explore how far and in what ways this might apply to education, schooling, teaching and learning.

His introduction to the book reminds us that in the years leading up to its publication in 1968 structuralist thinking was strong and that Goodman saw his work as directly contributing to that strand of thought.

Systematic inquiry into the varieties and functions of symbols has seldom been undertaken. Expanding investigation in structural linguistics in recent years needs to be supplemented by and integrated with intensive examination of nonverbal symbol systems, from pictorial representation on the one hand to musical notation on the

other, if we are to achieve any comprehensive grasp of the modes and means of reference and of their varied and pervasive use in the operations of the understanding. (Languages of Art: Introduction pxi)

Goodman is a relativist but his relativism is decidedly not lacking in order or authority. The systems of classifications and their parts that combine to make what we variously take to be acceptable or authoritative versions of our world are more or less entrenched through habit and social practice. Further, Goodman argues that we have a variety of means to distinguish and discriminate between good and less good versions. While Goodman has renounced the notion of truth dependent on an appeal to non conceptualised or mind-independent experience of the world or resort to an argument that choice between systems can be based on degrees of verity to something unrelated to a system, he does not let all loose. Choice between systems as to which is better and which worse now focus on questions of coherence, accommodation of statements we would not want to revoke, simplicity and explanatory force. In this he carries forward the tradition of American pragmatism.

Such a position has the effect of placing great importance on three things. We have already noted the first of these, that clarification of the logical status and interrelations of modes of reference, description and classification becomes a prime philosophical task. The second is an emphasis on the role of practice. His analysis of the achievement of articulacy or communication is analogous to a tennis coach's detailed analysis of a Federer backhand itemising for example hand grip, foot position, body shape, timing, back swing, and angle of racket face. Like a successful communication a successful stroke in a match is of a piece, part of a learned practice. At the moment of use it is not a conscious construction of its elements but a performance within a purposive context. In sport the purpose is given, shared and regulated. Part of its value as recreation is its simplicity of purpose. In the case of other forms of social interaction – including art and education - the context is often infinitely more complex and rich and demands vigilant and reflective participation.

The third point focuses on Goodman's concept of entrenchment i.e. that labels have a different prestige within systems such that some are more difficult to deny or affirm than others because of their structural role in our classifying practices. Human interests, and the macro and micro struggles of history and daily life over them, determine what labels and systems of classification become authoritative.

In this paper I consider how Goodman's analysis of the forms of reference might fruitfully be applied to some educational concerns. He identifies two main species of reference, denotation and exemplification, and two main sub-species, representation and expression. Symbols may be labels or samples. I first present his theory of notation and then the operation of labels and samples in turn and consider how we might use them to describe teaching and learning. I further apply them to explain the role that experience plays in a teacher's professional development and how they might help to characterise the personal dimension of teaching. I then present his theory of metaphor and expression and finally suggest ways in which these and his other concepts may help theorise parental choice of school as part of a re-conceptualised theory of social practice.

The theory of notation

In his theory of notation he draws a series of formal distinctions between systems that are maximally determinate and those that are not and cannot be. A symbol system is defined as a symbol scheme correlated with a field of reference. The symbol scheme is the class of 'characters' in the system (the schema) used to refer to some object or event. Thus in the standard system of musical notation the note in Figure 1 would be an instance of a character in that system and all other G naturals would be an instance of the same character.

Figure 1



A character is a class of such instances. The symbol scheme is the syntactic element of a symbol system. The field of reference of a character is that which is denoted (or referred to in some other way) by a character. The field of reference of the above musical character if it occurred in a work is a sound event distinct from all other sound events in the work denoted by different characters. This is the semantic element of the system. Conventional musical notation makes possible re-performances because the identity of the work is preserved.

An example of a workable notation other than music is chess notation whereby each move of a game can be recorded and the game re-played if wished. But the syntactic or semantic characteristics of some systems are such that they can never be precise and determinate in this sense. For example, systems may be either syntactically or semantically dense or both.

Syntactic density (i.e. density of the symbol scheme) is contrasted with the finite differentiation of characters. The characters of a symbolic scheme must be disjoint. That is there should be no inscriptions that belong to more than one character. If there are then the chain of inscription to compliance class to inscription could lead to two different inscriptions and eventually to two different compliance classes. It must also be possible, in a notation, to tell two characters apart, or whether an inscription belongs, or does not belong to a given character. For example consider a scheme whose characters are 'red', 'blue', 'yellow', 'purple', 'orange', 'green', 'red-orange', 'yellow-orange', 'yellow-green', 'blue-green', 'blue-purple', and 'red-purple'. When used to denote the colours ranged on a colour wheel such as that in Figure 2 the 12 characters in the symbol system are disjoint and finitely differentiated. That is, for any one character we can establish which of the regions it denotes and for any regions picked out by the pointer we could establish with which character they comply.

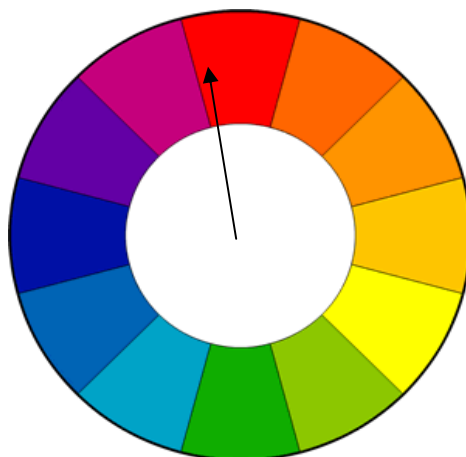


Figure 2

Now consider another symbol system taking, as before, change of colour as a change of character. (Fig. 3). In this scheme there is a gradual change from one colour to the next as in the spectrum. This means that no matter how small a movement the pointer makes, a change of colour, however minute, will have occurred. Now this is not symbolically different from our previous example if we still take the same six colours as the only characters in our scheme. All that we will have done is to make determination of the boundaries much more difficult. However we do change the symbolic nature of the scheme if we say that for every movement of the pointer, there being a change in colour there is a change in character. We can do this by generating some such additional characters as 'yellow-yellow-green' and 'green-green-blue' and 'yellow-yellow-yellow-green' and green-green-green-blue' and so on. In this case there are an infinite number of characters for between any two there will always be a third. Discrimination of such changes of character and the colours it denotes is impossible to accomplish. Such a system is syntactically and semantically dense. The result is an ineradicable indeterminacy.

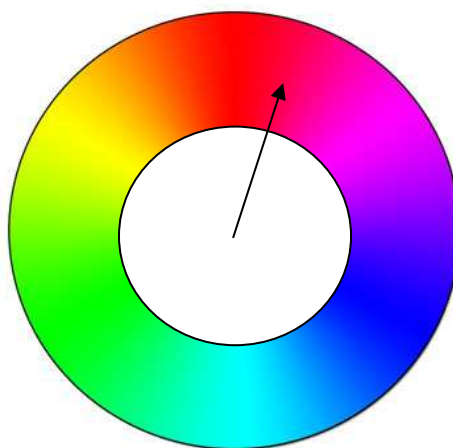


Figure 3

Goodman's analysis establishes what features a symbol system requires for it to be maximally determinate. He concludes that to do this, five logically independent conditions must be fulfilled by the system.

Conditions of the syntactic apparatus:-

Characters must be disjoint.

Characters must be finitely differentiated.

Conditions of the semantic field:-

Compliance classes must be disjoint.

The semantic field must be finitely differentiated.

There must be no semantic ambiguity.

Clearly both the symbol scheme and the field of reference can be more or less determinate. These conditions, serve as a means to identify how far and in what ways any symbol system complies with or departs from maximal determinacy. Indeterminacy arises when a symbol system is ambiguous or is either syntactically or semantically dense, or both, and density is defined in relation to differentiation. Unsurprisingly, this places most ordinary languages as non-notational. The logical distinctions in his theory of notation show that there are symbol systems that are inherently indeterminate because of their syntactic and semantic features and this plays an important part in his analysis of the forms of reference typically found in the arts.

In defining the nature of maximum determinacy he makes possible the recognition of degrees of in-determinacy as the -violation of some or all of the above conditions. While the presence of indeterminacy of reference in some of his formulations has been a focus for criticism it has seldom been recognised that indeterminacy can also be seen as an extremely fruitful aspect of his analysis, a point I expand on later in the paper.

Labels and Denotation

Labels denote. Denotation is the successful application of a label to an individual. An individual may be denoted by any label under whose extension it falls.

A denotes B is to say that A is a label and B is under the extension of A.

Labels come as part of a set of related labels or schema. Most of these syntactic resources we inherit from our culture and its languages. The set of English words for the three primary colours (red, yellow and blue) and three secondary colours (purple, orange and green) is one such schema. The more numerous (and often more whimsical) names on a paint retailer's colour chart (poppy red, brick red, paprika red etc) offer a more elaborated schema.

Denotation by a label in Goodman's analysis may be understood as the equivalence of the four statements below with A4 the formal expression within his system:

A1. 'Red' denotes the colour of an English fire engine.

A2. An English fire engine is red.

A3. An English fire engine possesses the property of being red.

A4. The extension of the label 'red' includes the colour of an English fire engine.

He extends the analysis of reference beyond the linguistic. Not only words operate as labels. So can pictures, objects, sounds of various kinds and actions. For example pictures of balls, skipping ropes, bats and bean bags on a set of boxes for PE equipment may equally well denote their contents. Any individual can act as a label depending on the symbol system in operation in a particular context.

Samples and exemplification

A characteristic of denotation highlighted by Goodman is its singular direction of reference from a label A to a feature or property B. In denotation labels refer but are not themselves referred to by the thing denoted. Samples on the other hand do just that. Labels denote features that the sample possesses and the sample refers back to (some of) those labels.

If a exemplifies b then (1) a possesses or is denoted by b; and (2) a refers to b.

The often quoted illustration from *Languages of Art* is that of the tailor's swatch which functions as a swatch because reference is in both directions. The swatch has (possesses) properties of colour, weave etc in so far as it is correctly denoted by labels from the differentiated sets of weave-labels (weave-schema), colour-labels (colour-schema) etc. But it also possesses properties not considered relevant. Its properties are countless but only some of them are exemplified because it only makes reference to some of the labels that denote it.

.... A swatch does not exemplify all its properties; it is a sample of colour, weave, texture, and pattern, but not of size, shape, or absolute weight or value.... The swatch exemplifies only those properties that it both has and refers to. (Languages of Art p53)

Both exemplification and denotation are a function of the communicative context. Exemplification is less determined by precedent than is denotation and therefore it is even more important to attend to clues present at time of use. For example the properties exemplified (i.e. possessed and referred to) by the tailor's swatch will vary if the interrogative context changes. The swatch will exemplify certain properties of the different kinds of cloth it contains if it is offered as a sample in response to some question as to what kinds of material are available. But if it is offered in response to a question as to what a tailor's swatch is it would exemplify being a tailor's swatch even if none of the cloths it contains are currently available. And if at another time it was presented as an example of a door stopper the relevant properties change again.

Goodman contrasts exemplification with denotation using the more general notion of reference. But how this form of reference is characterised by Goodman has been criticised as intolerably vague and inadequate (Dempster 1989; Jensen 1973; Peltz 1972; Brentlinger 1970; Shottenkirk 2009). Attempts to clarify the relationship and avoid circularity by interpreting (2) as compound denotation of some sort have been shown to be largely unsuccessful (Coldron 1982; Vermeulen 2009; Lehrer 1989). In a recent review Vermeulen et al (2009) concede that exemplificational reference is not adequately explicated by Goodman but argue, in my view convincingly, that it should be taken neither as a definition, nor as a shorthand term for a more elaborated account but as a 'basic notion' in Goodman's system.

A second criticism (Dempster 1989) highlights that according to condition (2) above exemplification is a matter of reference by a sample to a label that denotes it, but there are many cases of samples that appear to have no relevant labels available and these Dempster argues stand as counterexamples to Goodman's analysis. Goodman's answer to this is in terms of self-exemplification. He uses dance as an illustration.

Some elements of the dance are primarily denotative, versions of the descriptive gestures of daily life (e.g., bowings, beckonings) or of ritual (e.g., signs of benediction, Hindu hand-postures). But other movements, especially in the modern dance, primarily exemplify rather than denote. What they exemplify, however, are not standard or familiar activities, but rather rhythms and dynamic shapes... To regard these movements as illustrating verbal descriptions would of course be absurd: seldom can the just wording be found. Rather the label a movement exemplifies may be itself; such a movement, having no antecedent denotation, takes on the duties of a label denoting certain actions including itself. Here, as often elsewhere in the arts, the vocabulary evolves along with what it is used to convey. (Languages of Art p64-65)

But as Dempster (1989) and Textor (2008) point out self-reference raises some difficult questions for Goodman's account. It appears for example to lead to paradox. However Vermeulen et al (2009) propose ways in which it can be resolved coherent with Goodman's system.

What is missed by Dempster, Textor and other commentators (e.g. Shottenkirk 2009) is the way in which indeterminacy is fruitfully incorporated in Goodman's system. It arises from the dynamic nature in which we determine correct reference and brings together his technical analysis and the practice of art appreciation and effects a re-description of the artistic process as a dynamic, interactive, symbolic activity. Goodman celebrates the fecundity of indeterminacy and the vital role of critical reflection. His precise formulations of the logical conditions of indeterminacy are essential for this convergence to be successful. He says of pictorial exemplification and expression:-

In any such system with a dense symbol scheme and a dense or unlimited set of reference-classes, the search for accurate adjustment between symbol and symbolized calls for maximal sensitivity, and is unending. (Languages of Art p236)

and of music :-

....despite the definition of works by scores, exemplification or expression of anything beyond the score by a performance is reference in a semantically dense system, and a matter of infinitely fine adjustment. (Languages of Art p238)

and of literature:-

Thus even though a literary work is articulate and may exemplify or express what is articulate, endless search is always required here as in other arts to determine precisely what is exemplified or expressed. (Languages of Art p240)

Such an analysis gives great importance to contextual clues and the determining influence of the host of semi-rules, customs and conventions of (in these instances) artistic practice. Thus understanding is dependent on being historically informed and artistically sensitive. The fecundity of this cognitive process seems likely to have application in relation to education.

Imagine the following gym lesson¹

- A. The class gathers for a lesson the objective of which is to improve their performance of knee-bending, toe-touching, and squat-jumping
- B. The instructor, wishing to gauge the initial standard of the class, verbally instructs them to perform ten knee-bends, ten toe-touches and ten squat-jumps.
- C. After they have completed these actions she stands at the front of the class, instructs them to watch carefully, and performs the same actions, sometimes explaining as she does so what points need care to achieve and pointing out what problems might be encountered.
- D. She then instructs the class to perform ten of each kind of action in turn. She watches and offers further advice, instruction, and admonition.
- E. After a while the time has come for the class to practise what they have learnt. The instructor explains as follows, "*I shall show you which action to perform and I want you to continue until I show you the next one.*" She then performs a knee-bend and after the class have begun she circulates watching their performances and occasionally offering advice..
- F. Then she moves to the front, performs one toe-touch and watches again offering advice as needed.
- G. She moves to the front and performs one squat-jump and returns to watching and occasionally offering advice.
- H. She then stops them and says, that to reinforce their learning they will do a sequence all together and they will all change actions when she does so. She then performs the actions in sequence, the class doing likewise, changing when she does. The class and the instructor perform the same number and sequence of actions.

What modes of reference can be discerned? Clearly the instructor's original verbal instruction at B is denotational. Her subsequent demonstration at C helped by explanation seems clearly exemplificational. Her actions at this point authoritatively exemplify the labels "competent knee-bend", "competent toe-touch", "and competent squat-jump."

In D the students are attempting to exemplify 'competent-knee-bend, squat jump, toe-touching' by replicating the relevant properties of the samples given by the teacher at C. The second instance when she performs these actions at E is primarily denotational in the context since each is a label denoting which actions should be performed. Indeed it seems

¹ . This is an example used by Goodman on page 63 of *Languages of Art* to illustrate forms of exemplification. I have elaborated on it here for the purpose of this paper.

that the instructor could as easily have substituted verbal prescriptions. Note however a crucial difference that exists between the label "knee-bend", exemplified by the class the first time they did it at B and the label "knee-bend", exemplified by the instructor at C, E, F, G and H and, hopefully, by the class at the end of the session. An understanding of the denotation of "knee-bend" would involve (indeed may be measured by) perception and replication in performance of the properties referred to by the samples provided by the instructor. The term the instructor exemplifies is, as we saw, "competent knee-bend" and this label was not (let us assume) exemplified by the students' first performances. The action of the instructor whilst functioning to denote the kind of action next to be performed by the students may also be taken as an example of the required response. It is then a label exemplifying itself. There are two forms of reference operating at the same time serving to perform and inform three kinds of educational action – instruction, description and prescription.

The final performances by the instructor at H are of two kinds. The first performance of each set, i.e. the first knee-bend, the first toe-touch, the first squat-jump, denotes and prescribes what action should then be performed i.e. competent-knee-bend, competent-toe-touch, and competent-squat-jump. Her subsequent performances of each kind are a matter of her exemplifying how to obey the instruction that each first performance conveys. Her first performances act primarily as labels exemplifying themselves and all subsequent performances as examples.

A feature of this explanation is that the example participates in the characterisation of a revised meaning of the label. In the example just discussed the label 'competent knee-bend', was as far as the class were concerned, without an established antecedent denotation, or more accurately the educational context invites them to a willing suspension of any prior denotation they may have assumed. Indeed it seems plausible to describe the educational purpose of the lesson as to consider and achieve an alternative denotation with the hope that this will better enable them to exemplify it in their own performances. This alternative denotation and subsequent exemplification in their own practice is to be regarded as more authoritative. The exemplificational relationship helps constitute the final denotation insofar as this authority is conceded. In this illustrative lesson exemplification features as an essential part of how new understanding is achieved. The new understanding acquired by pupils is of the reference decreed to be acceptable within a particular social context. In this way they participate in the practice of gymnastics as socially defined. Understanding the variety of forms of reference and the willing suspension of prior denotation (i.e. acceptance of the invitation implicit in the educational relationship between the role of teacher and the role of pupil) is a prerequisite for learning in this lesson..

Let us suppose that the purpose of education may plausibly be defined as to enable participation in a variety of key social practices that constitute for example science, art, politics, moral discourse, religion and sport. Goodman's irrealist philosophical position and his elaboration of his general theory of symbols led him to the constructivist view (laid out in *Ways of Worldmaking*) that we continually rework inherited symbolic resources by deploying the various forms of reference, together with processes of composition and decomposition; weighting; ordering; deleting; supplementing; and deforming. Indeed participation may be defined as commitment to such reworking; it just is critical engagement in these practices. This is not a new idea but, arising as it does from a general theory of symbols, it allows us to ask slightly different questions and to approach familiar concerns from a different

philosophical perspective. What would an educational practice look like that took seriously the kind of referential complexity of even a simple gymnastics lesson? Is ultimate participation in a practice dependent on understanding how to deploy the forms of reference characteristic of that practice? Is this the same as 'doing science' or 'making art' or 'being religious'? How should we characterise the role of 'authority' in teaching and learning? Learning is at least partly a matter of coming to know the correct projection of predicates. In relation to the current debate in the study of cognition between those who emphasise internal states and those who emphasise the role of ready-made tools for thinking Goodman's general theory is firmly externalistic. Indeterminacy is minimal for example in projecting the predicate 'is red'. Is it minimal in the same way in the projection of the predicate 'is a gas'; 'is an excellent vault jump'; 'is a correct calculation'; 'is a good likeness'; 'is a wise action'; is a well written play'? Does Goodman provide us with the means to develop a more precise and robust theory of creativity as the ability to contribute to revising versions by deploying symbols in new ways appropriate to the practices?

Practice

Practice is fundamental to Goodman's general theory of symbols. For the tailor's swatch to exemplify requires knowledge of the symbol system in operation although 'knowledge' here may be a misleading term for the achievement of reference that is dependent on such things as the participant's knowing how to take their roles as customer or vendor; knowing what a shop (and more precisely a tailor's shop) is for and both customer and vendor being aware of the general practice of promising. The exemplification of practice-relevant labels by a tailor's swatch is a function of its role in such a practice and it will change its role (i.e. the labels it denotes or exemplifies) when it participates in a different practice. Social practice is crucial in his general theory of symbols because it picks out the labels a sample exemplifies from an almost infinite set.

The term practice as used above applies to specific instances when reference is achieved, in this case the interaction between a vendor and a customer, as well as to the notion of more general social practices that frame the specific interactions and give them meaning. The existence of these practices and their constitutive symbols (their discourse) are also the mechanisms by which relative entrenchment of labels is achieved through habituation and ontological depth.

Although practice in both senses is important in his system Goodman explicitly abstains from any attempt to theorise or further enquire into how certain labels come to be entrenched or particular practices established. He provides neither a sociological nor a psychological theory about why we have the world versions, the practices and the symbol systems that we do. He is concerned with the forms of reference that we use in achieving these things. More specifically with describing better their logical variety; their logical inter-relationships; their combinations into powerfully illuminating chains; and the way in which this better understanding calls into question our current classifications of things as scientific, artistic, affective or cognitive. He offers a re-sorting by offering new categories created through new distinctions.

A focus of educational debate has been the nature of professional practice. The quality of education in schools is largely dependent on the quality of the professional practice of

teachers. For this reason anyone interested in improving education (or more precisely schooling) will need to focus on the quality of professional practice. Interwoven with the policies and actions taken to do this has been a debate about how to classify such practice. Definitions vary in the ingredients they emphasise. For some it is primarily a craft to be learnt working next to experienced masters who fruitfully share methods that work with other masters in similar contexts. Others see it as a technology or semi-science like medicine where what works can be rigorously established and should then be adopted by practitioners. Yet others cast it as a moral enterprise or emphasise its artistry. These different conceptions of the practice of teaching support differing and sometimes opposing approaches to the initial and continuing education of teachers.

Goodman's work has already provided philosophical resources within this debate. In his seminal contributions concerning practice Schon (1987) deploys Goodman's notion that all we have are versions of the world re-fashioned from inherited symbolic resources. But this is interpreted by Schon as the activity of an individual and the determining role of social practice is minimised. Further, Schon's characterisation of practice as artistry relies largely on Dewey's theory of art and experience. Consequently he emphasises the intuitive nature of practice and imports some of the logical problems of Dewey's concept of expression. Goodman's reformulation of expression as metaphorical exemplification² avoids a resort to intuition and ineffability that in philosophically careless discourse threatens to tip into mystery and mysticism. Schon unsystematically deploys the notion of exemplification to describe professional practice:

When a practitioner makes sense of a situation he perceives to be unique, he sees it as something already in his repertoire. To see this site as that one is not to subsume the first under a familiar category or rule. It is, rather, to see the unfamiliar, unique situation as both similar to and different from the familiar one, without at first being able to say similar or different with respect to what. The familiar situation functions as a precedent, or a metaphor, or (...) and exemplar for the unfamiliar one. (Schon 1983, p138.)

The process he is trying to capture may be posed as one of meta-representation. The development of a 'language' by which an individual achieves representation of their particular experience that precedes classification. Lehrer (2000) sees exemplification (or the action of exemplarizing) as a process that provides the link between pre-linguistic experience and conventional language use. He deploys (in a modified form) Goodman's concept to stop the threats of infinite regress or circularity that attend philosophical accounts of language acquisition that posit the need for cognitive ascent through meta-levels of representation. His account is dependent on how understanding of a word is achieved and this is both socially inherited and individuated.

...one may understand a word before one can understand a representation of what it means... Understanding a representation of the meaning is a simple consequence of exemplarizing over the understood word... The understanding of a word arises as one acquires dispositions to apply the word and to draw inferences involving it. These dispositions constitute vectors of understanding in the idiolect of the individual. The vectors of individuals may be aggregated within the individual and within society in

² See Coldron 1982 for a full discussion of Dewey's concept of expression and Goodman's reworking.

terms of the relative weights assigned to the vectors. The public language is an aggregation of vectors within individuals, and may be realized within the idiolect of some individual or constitute a fiction of the average speaker of the language. The presence of these dispositions involving the word, combined with grammatical and pragmatic factors, yield an understanding of it. (Lehrer 2000 p 308 - 309)

Goodman's notion of exemplification makes it possible to see how Schon's reflective practice can generate knowledge-of as well as knowledge-how through the articulacy afforded by this form of reference applicable to unique situations and how it operates as a meta-language. Take this example from a teacher talking about his practice. He describes how the experience of a particular lesson, in which he read at length from a story by Capote, came to have significance for him.

...the taste of this lesson lingers with me still. It is the taste of a failed relation. I was swept up by the power of my teaching past the bounds of my ordinary judgement, defended the teaching to myself despite my own clear sense of its faults, felt compelled to write out that long sequence of moments that nearly made me weep, and in the process nearly wept again...In the end doubts about this lesson are what I remember most. The result is that my memory of the incident has become an exemplar, a constituent element of my practical judgement as a teacher. (McDonald 1992: 26)

This failed lesson (the experience of it and the recollection and reflection on it) in Goodman's terms is a sample that exemplifies for McDonald a host of labels co-extensive with 'wrongness' or more precisely 'wrongness-as-displayed-by-this-example'. As such it is used by him to discern, to come to know, to re-cognise and discriminate. The incident has become a means of discrimination because it is available as a way of labelling (denoting) and exemplifying (both literally and metaphorically) and therefore is a powerful tool for the categorisation and articulation of his experience. It is also imbued with (or even constituted by) feeling which is both a part of the experience itself and a means by which the experience is understood and appreciated.

We may follow Lehrer in his description of how individual exemplifications may be aggregated into patterns of meaning. This is just one example and McDonald has we may assume constructed during his career many other such samples of wrongness and rightness. All teachers have their own stock of stories, examples and moments, remembered with a shudder or a smile, which contribute to their sense of professional identity and guide their actions. In this way they produce a resource of artefacts that act like available labels making possible all the forms of reference identified by Goodman. They guide their professional choices and in making those choices they create a pattern of personal meaning, find their voice and create their own style. The growth to maturity of practice is a matter of continually enhancing the rightness and reducing the wrongness of performance not only in relation to external criteria but also to their own. Teachers represent rightness and wrongness ever more complexly, completely and explicitly to themselves as they develop their abilities as educational critics and connoisseurs. Using Goodman's theoretical distinctions we can see how this happens through the creation and deployment of personally wrought labels, and samples to make a variety of forms of reference in sometimes complex strings and in particular contexts.

These arguments also help us to better characterise the personal nature of teaching. There is ample evidence from the studies of individual teachers' practice that teaching feels like a complex personal activity that encompasses the professional. It is neither experienced as a dispassionate technical or moral activity nor as only externally imposed. Every aspect of the work seems to have a personal dimension, in the way teachers are with children and colleagues, in the many decisions of day to day classroom interaction, in the character of their classroom presence, in their conception of learning, in their interpretation of the curriculum and in their responses to whole school policies. We can say that teaching is personal just because other teachers even in the same schools do these things differently. The symbolic manipulation (articulacy) afforded by a process of self-exemplification of experienced events such as particular lessons explains how individual teachers inevitably develop a set of understandings that guide practice and make possible subsequent judgements. These individually forged meanings are inherently difficult to communicate to others except by further exemplification hence the importance of the apprenticeship model of teacher education. The difficulty of communication is a result of the forms of reference involved – syntactic and semantic density and self-exemplification. These are as Goodman puts it 'symptoms of the aesthetic' and go some way to a more satisfactory account of what Schon wishes to emphasise namely the artistry of professional practice.

Metaphor

While denotation is elaborated by Goodman to incorporate representation (including but not restricted to that within the arts), exemplification is elaborated to incorporate expression. The latter is dependent on his account of metaphor. Metaphor is the sorting effected when a label and the schema of which it is a part is applied outside of its normal realm. When we say, 'Pete is blue' we take a schema (colour words) normally applied to physical objects and from that schema select a label structurally differentiated within it (blue) and say that Pete's mood is denoted by 'blue'. In so doing we are claiming that the schema or part of it can be fruitfully used to sort moods and that 'blue' correctly distinguishes Pete's mood as sad.

The metaphorical is usually contrasted with the literal which in turn is often assimilated to the actual. On this account the predicate 'is blue' if true would indicate actual possession of the property but when metaphorically applied would imply either figurative possession or no possession at all. Goodman has defined possession as correct denotation by a label. Pete is blue in so far as Pete is included in the extension of the label 'blue'. Freed from a commitment to a realist or correspondence view of literal and actual Goodman holds that both metaphorical and literal denotation indicate actual possession and that the literal and metaphorical need to be distinguished not by a difference in the way they relate to the way the world is but by a difference in the operation of the symbols.

Metaphorical possession is indeed not literal possession; but possession is actual whether metaphorical or literal. The metaphorical and the literal have to be distinguished within the actual. (Languages of Art p68)

Transference is from a home realm to an alien realm involving the transgression of established limits of use, but through such transgression a different but applicable syntactic apparatus (a schema) is made available which provides a potentially fruitful new organisation of the alien realm. Thus metaphor is taken strictly as a novel assertion of possession and is not logically but only temporally distinct from assertions of literal

possession. Both literal and metaphorical possession are functions of the correct denotation by a label within a schema and both assert actual possession.

Distinguishing the literal and the actual follows from the adoption of strict nominalist principles, but his view of metaphor does not give an adequate account of the relationship of the transferred syntactic apparatus to literal projection. The problem is that Goodman appears to appeal to an antecedent similarity in trying to explain how a metaphor is deemed to work³. I argue elsewhere⁴ that this difficulty can be overcome. Similarity can be characterised as the likelihood of successful reapplication of the new schema created by the metaphor back in the original home realm of the literal schema. This account of the literal-metaphorical relationship does not involve appeal to some antecedent similarity but does explain the sense of affinity that is the grounds for the fruitful interaction between metaphor and its literal parent and is formally acceptable within his system.

Expression

Goodman puts his accounts of metaphor and exemplification to work in his reformulation of the notion of expression. He focuses his attention on a key question: *How we can make sense of such a sentence as: That picture is sad?*

Exemplification is reference by a sample to one of its properties, or rather to a label that correctly denotes it - possession-plus-reference. This preserves the sense of intimate, non-arbitrary association of a sample and what it stands for. If a property can actually be possessed either literally or metaphorically, then there are also two species of exemplification – literal exemplification (the tailor's swatch) and metaphorical exemplification (the sad picture). Metaphorical exemplification is Goodman's reconceptualisation of the concept of expression in the arts and elsewhere.

What is expressed is metaphorically exemplified. What expresses sadness is metaphorically sad. And what is metaphorically sad is actually but not literally sad, i.e. comes under a transferred application of some label co-extensive with 'sad'.

and more formally,

.....if a expresses b then: (1) a possesses or is denoted by b; (2) this possession or denotation is metaphorical; and (3) a refers to b.

By making actual possession, whether literal or metaphorical, a matter of the extension of labels he is able to define the expressive symbol as both referring and possessing. Thus the expressive content is emancipated from speculation that might give rise to limiting or mystical or obscure assertions of origin, whilst the immediacy of the expressive symbol is retained. Nothing can be more immediate or intimately connected with a symbol than properties it actually possesses.

Since expression is the metaphorical exemplification of labels, any labels can be so exemplified, not just labels related to feelings and emotion. This is a radical departure from

³ See Scheffler (1979) for a statement of this criticism.

⁴ For the full discussion see the section on Metaphor in Coldron 1982.

features of the expressivist tradition⁵. More importantly for the purposes of this paper it makes possible the application of Goodman's theory of expression to the problem of how to account for the affective dimension of social practice.

Parental choice of school

If professional practice is illuminated by Goodman's general theory of symbols so are other practices. Personal exemplification generated from past experience and guiding future actions is a general feature of social practice. The notion of practice is under-theorised in Goodman's work but is an essential ingredient. A theory that incorporated the operation of interest in a way compatible with his general theory of symbols would be an important extension of Goodman's account. This is of course a large undertaking but I indicate some starting points. For example Bourdieu (Bourdieu 1984, Bourdieu and Wacquant 1992) showed how the personal exercise of taste is a manifestation of deep dispositions influenced by our social location expressed as a present calculation. What he did not do was offer a credible account of the immediacy or visceral nature of such choices nor of how these dispositions (*habitus*) become our own. Application of Goodman's analysis of symbol systems to Bourdieu's theorisation of interests promises a reconsideration of the logic of practice.

Such a re-theorised conception of practice would have implications for some current debates in the policy of education. Parental choice of school and more generally how parents relate to schools, has received a great deal of attention from scholars in many parts of the world where a market solution has been sought to the diversity and quality of provision of schooling. What is clear from many of these studies is the visceral response of many parents and children to the issue. By this I mean that the experience of choosing a school is full of feeling. For example some who face difficulties getting their children into the school they prefer are anxious, frightened for the security of their children, deeply antagonistic to particular social groups, threatened with loss of face within their social networks and guilty about the selfishness that they are displaying.

For all parents choosing a school is a public act that reflects how they wish to classify and be classified. It is an act of meaning making in this sense and deploys all of the modes of symbolisation identified by Goodman including denotation, representation, exemplification and expression. It expresses for example how they wish to relate to their friends, neighbours and relatives.

Bourdieu and many others have mapped out how these things are patterned. But what Bourdieu does not have is a theory of the affective. While he blunts the crassness of rational action theory he replaces it with habit and disposition and offers little theorisation of the more lively and immediate emotions of affirmation or disgust.

What is needed is a way of conceiving of social practice that combines a subtle understanding of how practices (choices, policies and tastes) are embroiled in a continual struggle to maximise status in hierarchies shared and idiosyncratic; a full acknowledgement

⁵ See Coldron 1982 for a full discussion.

of the habitual that includes not just individual dispositions but also the inherited discursive resources that structure our selves – what Bourdieu calls habitus and Goodman calls world versions and Taylor describes as hyper-goods; and an account of the role of affect in each of these. I suggest that Goodman's general theory of symbols, gives us valuable conceptual resources to enrich our understanding of each of these ingredients.

Concluding remarks

In this paper I have concentrated on presenting rather than appraising key aspects of Goodman's work. Given the restrictions on space I have only been able to indicate some of the main kinds of criticism levelled at Goodman's general theory of symbols and some of the defences that can be mounted. A full critique was not the purpose of this paper. Rather it was to explore whether there is anything to be gained from applying Goodman's general theory of symbols to educational issues. The answer to that question I hope I have shown is yes.

Goodman enables us more clearly to articulate the forms of reference that are deployed in the process of teaching and learning. Re-describing them in this way suggests different ways of thinking about what we teach and how we teach it; about the kinds of understanding that students need in order effectively to participate; and suggests logical nuances in how authority operates in learning. Goodman's theorisation of indeterminacy, shows why sensitivity is needed to understand in any system, and how we are required to strive to determine more precisely the reference involved and that, in doing so we make, or become aware of, finer distinctions. This is a fundamentally important cognitive activity. His system gives a logical characterisation and fundamental role to symbolic richness achieved through the abundance of referential relationships that defy easy analysis. The sensitivity, provisionality, vigilance, discrimination, empathy, creativity, imagination and sheer intellectual effort to understand what is being 'said' at any particular time and how to 'say' things oneself in a variety of ways is a commonplace of social interaction but we should not minimise the level of engagement and subtlety of discrimination required to pull it off. Attempting to incorporate these insights into our understanding of teaching and learning is likely to be of considerable philosophical interest.

In general the fruitfulness of his thought comes from a combination of ingenious and logically tight characterisation of ways we achieve reference together with the precise characterisation of indeterminacy that requires attention to the role of context and interest interwoven in complex and dynamic referential chains that he called 'routes of reference'.

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