Practical Knowledge: Outlines of a Theory of Traditions and Skills, J. C. Nyíri and B. Smith (eds.), London/New York/Sydney: Croom Helm, 1988

Knowing How vs. Knowing That

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1. Practical vs. Propositional Intelligence

More than forty years after Gilbert Ryle published his paper on "Knowing How and Knowing That" in 1945,[1] the problem of practical knowledge has still failed to establish for itself a secure position in the field of problems dealt with by analytic philosophers. Thus even today it can safely be asserted that it is discursive or theoretical knowledge, knowledge linguistically expressed, above all knowledge in the form of *propositions*, that holds centre stage in analytic treatments of epistemology and cognition. The present volume, which consists of treatments of the presuppositions and specific character of practical knowledge in different spheres, is an attempt to fill this gap. The successive chapters fall into four interrelated groups:

(1) those dealing with general theoretical problems associated with knowledge and practice and their interrelations;

(2) those dealing with habit, learning, technique and skill as *social* phenomena, phenomena tied to socially established traditions and customs;

(3) those dealing with that special kind of practical knowledge which is manifested in our use of language; and

(4) those dealing with the role of practical knowledge and of tradition in the sphere of art.

Questions as to the role and nature of practical knowledge were addressed by the classical Greek philosophers — not least by Plato in *The Statesman* and by Aristotle, for example in his writings on *akrasia* — as also *inter alia* by American pragmatist philosophers such as William James and Dewey.[2] It is however in the more recent philosophical literature of continental Europe that the most sustained attempts to cope with questions of this sort are to be found. One thinks, for example, of Nietzsche, with his emphasis on the role of training and drill and of the pain involved in repetition and in the punishment of deviation, all of which Nietzsche sees as powerful determining factors in the moral and cultural evolution of mankind. One thinks of Heidegger, whose *Being and Time* is, in its phenomenological core, nothing less than a description of the various forms of everyday action, both successful and unsuccessful, and of the ways in which such action shapes and determines the ontological structure of the world of everyday experience. Above all one thinks of the Gestalt psychologists with their conception of perceptual experience as a spontaneous total process of physiological equilibration, as contrasted with more traditional empiricist views of perception as involving separate or separable phases of sensation and cognition.

2. Perception and Action

Central to the different theories of Gestalt is the idea that our perceptual experiences do not arise because we consciously or unconsciously apply rules or concepts to putatively meaningless collections of data gathered at our sensory receptors. Rather, we have been formed by our previous experiences and by our immersion in our present perceptual environment to the extent that the information taken in by our senses is already, in normal circumstances, endowed with meaning. That this is possible is a consequence of the fact that the contents of sensation are not mere sums of elementary data separated off from the

other elements of the physiological and material contexts to which they belong. Rather, our sensory contents are a matter of holistic structures, experienced as being tied intrinsically to certain kinds of surrounding conditions and to certain characteristic presuppositions and outcomes. Such contents are, most importantly, *regularly recurring*, so that we have been able to build up through experience a repertoire of perceptual structures which we are able spontaneously to call in aid in relevant circumstances. It might indeed be argued that it is recurring holistic structures of this sort which constitute the true building blocks of our perceptual world, something which may explain for example our capacity spontaneously to apprehend a facial physiognomy or the style or period of a work of art or piece of music.

What holds of perception, now, holds also of our actions. Thus Christian von Ehrenfels, founder of Gestalt psychology in the 1890s, points to the way in which complex higher order actions are executed by being broken down into constituent, relatively routine tasks, each of which may be performed without thought or conscious reflection. A given higher order action is then itself able to be carried out more or less automatically in virtue of the fact that the objects whose successive realisation is aimed at in the given constituent micro-actions have become, in different ways, stamped with value in their own right. The desires necessary to call forth each particular task thereby enter into consciousness automatically, or, to put the matter in another way, the subject himself has become affected in such a way that desire for the realisation of each given object arises spontaneously within him, without his having to recall or work out rationally in each successive instance why it is that he finds this given object valuable.[3]

Our everyday actions in the world are effective, then, not primarily because we think out in each case what it is that we want to do. Rather — in part because we have been shaped in certain ways by past experiences — the world in which we act is positively and negatively charged, in different ways, by a pattern of values which as it were attract or repel our successive actions.

3. The Structure of Behaviour

The later Gestaltists argued quite generally that our capacities to think and to perceive are not separate, independent faculties, but rather mutually dependent aspects of a single physiological-psychological whole which would embrace in principle also the habits and skills of the thinking and perceiving subject. The philosopher who has done most to bring out the implications of a view of this sort in regard to its practical, behavioural implications is undoubtedly Maurice Merleau-Ponty, whose phenomenology of bodily experience must come close to being the most sustained defence of the primacy of practical knowledge in the literature of philosophy. For while Gestalt-theorists such as Koffka acknowledged that the holistic implications of their work extended beyond the sphere of purely perceptual phenomena, they themselves were concerned in their work almost entirely with the latter, so that Merleau-Ponty can be said to have drawn out the latent implications of their ideas for the sphere of human practical experience.

In his *The Structure of Behaviour*,[4] Merleau-Ponty argues that, just as proponents of empiricist theories of perception have been misled by the assumption that sensation is to be understood in terms of sums of elementary data, so proponents of behaviourist theories of stimulus and response are misled by the parallel assumption that higher levels of behaviour are a matter of mere sums of meaningless reflexes. Such summative or aggregative accounts of behaviour may, it is true, have some sort of validity for actions carried out under the abnormal conditions of laboratory experiments. In our everyday experience, however, it is precisely the global, non-aggregative effects that are of greatest importance; for our actions are here not passive or mechanical responses to separate pre-existing stimuli of equal value; rather, they are complex wholes within which it is at best possible to distinguish relatively stimulus-like and relatively response-like dimensions. They are in addition wholes whose elements

manifest different degrees of salience — to the extent, in fact, that the subject may be said to choose the stimuli to which he will be sensitive. The functioning of our muscles, nerves and psyche is not, then, identical to the functioning of a mosaic of juxtaposed parts. Human action is rather a matter of integrated behaviours whose physiological and psychological sides are fused together, in much the same way as the information from our five separate senses is fused together in our everyday perceptual experience.

Here again, the subject will acquire, in part through repetition, a repertoire of behaviour patterns, a wealth of different portmanteau reactions (walking, running, tripping, sliding, lifting, pushing, speaking, writing), to which he may resort, spontaneously, from occasion to occasion. These behaviour patterns are as it were written into his muscles ('become part of his very flesh', as Merleau-Ponty would express it). They are however built up in such a way that they can be transferred immediately for example from one group of muscles to another, should occasion arise (for example when a limb is amputated, or when we move from writing words on paper to writing the same words on a blackboard or in the sand).

It is in the promotion of such adaptability — something which cannot be explained by appeal to the notion of repetition — that Merleau-Ponty sees the distinguishing feature of human learning. For where conditioning or drill seems to be at best capable of establishing only the power to produce copies of responses which have been produced earlier, learning proper may lead to spontaneously adaptive responses, to the aptitude to produce novel forms of behaviour in unfamiliar circumstances. Something like this occurs already, for example, in the course of an everyday conversation: the successive remarks of my interlocutor constitute, in effect, a series of more or less trivial problems which I must solve by making remarks of my own in more or less spontaneous and more or less predictable ways. Our adaptability as users of language is indeed so well developed that human speech is to a large extent automatic: we produce our sentences without thinking them out word for word. For our bodies have acquired a sophisticated repertoire of portmanteau reactions in relation to the different words of our language and to the

different patterns of combination of words; this allows us not only to produce well-formed sentences at will, but also to improvise with language, to enjoy successful linguistic combinations and to detect unsuccessful combinations through the displeasure they may cause.

Where such holistic patterns of adaptive responses have been laid down, it is not as if there were cognitive strings pulling different muscles in succession, muscles which are in themselves passive and uninvolved. Rather, the cognitive and muscular movements of the organism are part of a single spontaneously equilibrating whole. Human life itself is conceived by Merleau-Ponty as a single non-decomposable, behaviour-Gestalt — where theories of conditioned reflexes and the like impose onto our organic behaviour alien modes of cleavage, divisions appropriate to a world of merely physical events.

The fact that perception, cognition and action are intertwined in the way Merleau-Ponty describes implies also that the objects experienced in perception are not in the first place things (and nor, *a fortiori*, are they mere data of sense). Rather, they are salient figures against a less salient ground. Typically, they are objects for use, objects with practical, symbolic and emotional values, bound up in our experience with possibilities of action and movement. Thus the objects of experience are not separate items existing side by side and independently of each other and of the subject. Rather, they manifest relations of interdependence and mutual involvement, are locked together within larger networks of interrelations wherein 'each dynamically knows its neighbours'. But now also, as Merleau-Ponty conceives matters, the linguistic signs representing such objects are themselves similarly linked in parallel networks, so that signs represent objects not merely in virtue of their direct empirical association with objects taken singly, but also in virtue of the fact that they stand in relation to other signs in ways which track the relations of the objects signified. Children are thereby able to learn the meanings of words not merely by ostension but also by a constant cross-checking of contexts, to the extent that the similarity of one thing to another may in certain depend for the child upon the fact that the same word is used for both.

4. Learning by Doing

Our experience, then, as Merleau-Ponty conceives it, involves of necessity the gradual building up of aptitudes, of general powers of responding to situation-types in ways which will bring about a spontaneous but always provisional equilibrium of action and cognition. We do not need mental processing in order to react appropriately to, for example, the handle of a door. Such processes have been long ago internalised, as also have many of the processes involved for example in reading French.

For all the generality of Merleau-Ponty's results, however, there is one area where his work seems less than adequate: the area of science, or of higher cognitive processes in general. Here it is above all the Hungarian philosopher Michael Polanyi who has done most to compensate for this defect, and Polanyi's works are indeed in a number of respects complementary to (though produced independently of) those of Merleau-Ponty.[5] Central to Polanyi's work is the idea that science, far from being a purely rational enterprise of cognition and calculation, involves of necessity a non-formalisable, non-mechanisable, characteristically human phenomenon which one might call 'judgment', 'intuition', or, with Polanyi himself, 'tacit' or 'personal knowledge'.[6] This tacit or personal element is manifested, for example, in the scientist's skill in anticipating the consequences of given adjustments of his equipment or in seeing through or beyond established conceptual divisions; it is manifested in the scientist's capacity spontaneously to recognise the rightness of the pattern generated by some new axiom or theory or taxonomy or in his capacity to distinguish what might be a highly subtle and hitherto unacknowledged type of order against a background of randomness. Polanyi, in fact, sees the scientific enterprise itself as resting on a deep-rooted and fundamentally non-utilitarian fascination with order or pattern. Such fascination, which is present already in the baby's pleasure in experimenting with coloured blocks or

with the melodies of language, is manifested particularly clearly in the drive of the pure mathematician to discover the properties of abstract mathematical structures for their own sake, structures for which an application may be found, if at all, only generations after his death.

This personal dimension of science is not capable of being rendered explicit and codified into rules, Polanyi argues, since the higher forms of human activity are always such that the rules for their performance are not and cannot be fully known to the performer. This implies the indispensability, where such activities are cultivated, of personal contact between master and pupil, of *learning by doing* (an idea which might be exploited, in passing, to explain the relative fertility of those contemporary schools of philosophy — from the Brentano and Schlick circles in Vienna to the Wittgenstein circle in Cambridge — where philosophy has been cultivated as a matter of disciplined discussion and argument between successive generations of disciples).

Learning by doing facilitates the extension of the pupil's focal awareness beyond the particular features which first catch his eye to the global features which are normally more truly relevant to the exercise of a given skill. Polanyi makes much of the way in which the craftsman will encourage his apprentice to use his tools in such a way that his attention is focused directly always on the object worked and only subsidiarily on the means applied. Similarly, Polanyi argues, the novice scientist must be brought to a state where he need pay only subsidiary attention to the theories, languages or interpretative frameworks which he is called upon to employ in his work: he must, in Polanyi's own words, learn to 'dwell within them', to allow theoretical tools, languages, disciplines, to serve as natural extensions of his psyche in much the way that the blind man's stick serves as an extension of his body in walking.

Theories, languages and interpretative frameworks are therefore, in Polanyi's view, not abstract objects fixed in some Platonic realm, but rather social formations tied to their contingent factual realisations in the practices nurtured by the community of scientists at any given stage. Thus the technical terms of a science as these are con-

ceived by Polanyi have meanings which are the residues of established usage; hence they will change and mutate with the gradual evolution of this usage within the larger context of scientific practice and will at any given stage be only partially determinate.

That linguistic meanings are only partially determinate, however, implies that language in and of itself must remain at a certain distance from the concrete objects or experiences which it is used to describe; hence in this respect, too, language is subject to a necessary completion or animation in or through the personal experience of relevant language-using subjects. This incompleteness or lack of full determinacy explains also the transparency of language, the fact that when listening to someone speaking the primary focus of our attention is normally directed to the objects to which his words refer and not to these words themselves. (This explains our greater facility in producing summaries of what people say than in remembering the precise words used.) This transparency has limits, however, and it should not be forgotten that there is a sense in which the objects to which we refer are themselves shaped to different degrees by the networks of terms we use to describe them. Thus for example the object-domain of a given science is ordered and integrated by the gradually developing language of the science itself, so that, as Polanyi shows, creative breakthroughs in science may in the end come down to a scientist's having coined a peculiarly apt expression for some given phenomenon. This power of language to shape objects holds not only for each science taken as a whole, but also for each scientist's individual grasp of the science as he learns to 'see' the objects with which it deals. Thus Polanyi points to the way in which, when novice radiologists are attending lectures on how to interpret radiographs, what they *see* is to a large extent dependent on what they hear the expert *say*; yet the meaningfulness of the latter is itself at the same time dependent on the novices' gradually developing capacity to see appropriate structures in the radiographs before them. As Polanyi points out however, it is here not so much individual words that are important, but rather the general structures to which these words relate and which

they may indeed have helped to crystallise. This is seen in the fact that the words may be forgotten — for example after a skilled practitioner has become used to working in a new language — while the capacity to pick out the relevant structures survives unimpaired.

5. Natural vs. Artificial Intelligence

Both Merleau-Ponty and Polanyi see what might be called discursive or theoretical intelligence as resting necessarily on a seedbed of practical knowledge and perceptual judgment. Perhaps the most interesting recent illustration of the failure, or at least one-sidedness, of purely discursive conceptions of knowledge is provided by recent work in the field of artificial intelligence. For one can use the insights and suggestions of Merleau-Ponty and Polanyi, as also of Wittgenstein and Heidegger, to show that computer models based on a purely discursive conception of what human knowledge is, may be incapable of coming close to simulating those achievements of human beings which involve the taking account of a wealth of interdependent contextual clues in spontaneously adaptive behaviour. Certainly the artificial intelligence community is aware of the need to do justice in their models to these aspects of human experience. Already Turing in his essay "Intelligent Machinery" written in the late 1940s had pointed out that the simulation of developed human cognitive performances would be achieved only with the construction of a machine capable not merely of interacting directly with human beings and with the surrounding world but also of learning from this interaction. There is a big question, however, as to whether the necessary interplay across the entire range of experience could ever be achieved. For the concrete experiments actually carried out in the field of artificial intelligence, for all their successes in specific, well-delimited fields, have revealed what seem to be difficulties of principle in taking the computer beyond the realm of what is formally specifiable in any given sphere. The machine seems rather to be cut off from that back-

ground of experience which lends broader contextual relevance and immediate behavioural adaptability to the things we do or see or say.

It is especially the American philosopher Hubert Dreyfus who has sought to draw attention to the limitations of computer models in relation to the achievements of practical human intelligence. In his recent *Mind over Machine*,[7] written together with Stuart E. Dreyfus, there is presented a taxonomy of *levels* of human skill, against which the achievements of computer models can be gauged.

The first level of human skill, according to Dreyfus and Dreyfus, is that of the *novice*, that is to say, someone who has learned a collection of context-free rules which he then allows to govern his step-by-step behaviour. The novice is unable to pick out global features of the objects with which he is working (there is a sense, indeed, in which he does not yet see these objects), and he has no sense of an overall task.

The second level is that of the *advanced beginner*, someone who has learned both situational and context-free rules, so that he is able to recognise global features (the bark of a particular dog, the face of a particular patient), though he is not yet able to say how he achieves this.

Level three is that of *competence*, where the beginner, having begun to be constrained by the fact that he has acquired too many rules, not all of which can be put into practice at once, has succeeded in internalising a network of hierarchical procedures enabling him to bring some strategic order to his rule-following behaviour. Competence therefore implies the ability to recognise what is important and to unify a constellation of separate elements within a single overall plan.

The fourth level is that of *proficiency*, which signifies the presence of the new dimension of involvement: the practitioner is no longer confined to a fixed stock of rule-governed responses in relation to a fixed stock of stereotypical situations; rather he is now so intimately bound to his environment and to the instruments with which he works that he can spontaneously recognise entire constellations of situations as wholes of different

sorts, in such a way as to call forth immediately appropriately adaptive behavioural responses.

The fifth level, finally, is that of the *expert*, of the practitioner who is in the possession of what Dreyfus and Dreyfus call 'deep situational understanding', someone whose involvement has reached the point where he has *become one with* his car, his plane, his chessboard, his violin, his audience, or what you will. The expert does not, in normal circumstances, solve problems or follow rules or make decisions; rather, he simply does what normally works and his fluid performance depends upon the absence of planning and conscious reflection. He is possessed, that is to say, of *know-how* of the very highest degree.

6. Discipline and Tradition

The reader might now have some idea as to what is meant by 'practical knowledge' as this term is used in the present work. Many of our critical remarks in the above have been directed at one or other form of what Ryle calls the 'intellectualist doctrine', and before concluding it may be useful to look once more at Ryle's account this doctrine in his paper of 1945.

The intellectualist, according to Ryle, holds:

> (1) that Intelligence is a special faculty, the exercises of which are . . . specific internal acts of thinking, namely, the operations of considering propositions;
>
> (2) that practical activities merit their titles 'intelligent', clever', and the rest only because they are accompanied by some such internal acts of considering propositions.[8]

Much of Ryle's essay is devoted to a linguistic analysis of terms such as 'intelligent', 'clever', 'skilful', etc., as a means of showing that the given predicates relate not to any special inner faculty but are rather applied directly to

the performances of the relevant actions. Intelligence, Ryle wants to insist, is manifested in our actions quite regardless of any inner intellectual processes by which these actions might be accompanied. But when is the performance of an action an intelligent performance? When, Ryle tells us, it manifests itself to us as being governed by principles, rules, canons — whether or not these latter are capable of being explicitly articulated by the subject himself. The propounding of principles and rules is in fact itself 'just another special activity, which can itself be judiciously or injudiciously performed'.

So far, so much in line with our deliberations above, though we have seen that talk of 'following rules' may be out of place when we are dealing with the 'fluid performance' of the expert. Ryle's account neglects, however, that dimension of our intelligent behaviour which is marked by our use of words and phrases from the vocabulary of feeling. He neglects, in other words, the sense in which intelligent behaviour will involve and give rise to responses that are in different ways emotionally charged. Thus he ignores also the fact that such emotional responses may be indispensable to the successful execution of the relevant actions. The most interesting feature of Ryle's account for our present purposes, however, is that it leads him to a revisionary analysis of the notion of 'discipline'. This term, Ryle tells us,

> covers two widely disparate processes, namely, habituation and education, or drill and training. A circus seal can be drilled or 'conditioned' into the performance of complicated tricks, much as the recruit is drilled to march and slope arms. Drill results in the production of automatisms, i.e. performances which can be done perfectly without exercising intelligence. This is habituation, the formation of blind habits. But education or training produces not blind habits but intelligent powers . . . Drill dispenses with intelligence, training enlarges it.[9]

Ryle sees further that 'discipline' relates not merely to the process of training but also to the results of this

process, to the 'skills', 'competences' or 'intelligent powers' which are acquired by the individual subject of training and which he is then able to exercise in his future actions. What is not here acknowledged is that 'discipline' also has a social meaning: it signifies the common system of principles and rules or of ways of acting which different members of society may acquire. Thus we speak of the 'discipline' which is a certain science, or a special method of painting. It is above all this social dimension of intelligent behaviour to which Ryle's analysis does less than justice. There is a sense, indeed, in which even discipline as process is itself already a social phenomenon. Thus disciplinary actions do not come out of nowhere: the trainer or drill-master behaves as he does in relation to his subjects because certain customs, rites or usages are rooted in the society to which he and they belong, granting him a certain limited authority over those with whom he deals. Further, reflection shows that the results of this process of training, too, are social objects, in spite of the fact that they inhere in each case in some one individual subject. For the subject acquires not merely the abstract capacity to perform in such a way that his actions are manifested as being in accordance with given principles and rules: he acquires also the capacity to do things as his fellows do, and as his ancestors may have done in the past, to do things in virtue of which he may become part of a certain elect group within society, perhaps to do things in such a way that he himself will acquire a certain authority of his own.

A discipline will, therefore, share in the history of the culture or society in which it is manifested. It will constitute — when taken together with the rules or principles, social groupings, customs and methods of training, and all that hangs together therewith — a *tradition* of a certain sort. Individuals acquiring the discipline may do so in such a way that they think of themselves not merely as being in possession of a certain new capacity or skill, but as contributing to the maintenance of the traditions and institutions of the discipline itself. An understanding of practical knowledge, of that knowledge which is manifested in intelligent or judicious behaviour, will therefore

— and this is perhaps the principal lesson of Wittgenstein's philosophy — involve a new sort of understanding of society and of the rules, customs and institutions maintained within it.

Notes

1. *Proceedings of the Aristotelian Society*, vol. XLVI, 1945/46, 1-16, as repr. in vol. II of Ryle's *Collected Papers*, London: Hutchinson, 1971, 212-225. See also ch. 2 of *The Concept of Mind*, London: Hutchinson, 1949.

2. It seems to have been Dewey who introduced the opposition between knowing how and knowing that into the modern philosophical literature. Thus in his *Human Nature and Conduct* Dewey identifies *knowledge how* with habitual and instinctive knowledge, as contrasted with *knowledge that* things are thus and so, which 'involves reflection and conscious appreciation'. It is, he tells us, 'a commonplace that the more suavely efficient a habit the more unconsciously it operates. Only a hitch in its workings occasions emotion and provokes thought.' This, as Dewey points out, may lead some to view consciousness 'as a kind of disease, since we have no consciousness of bodily or mental organs as long as they work at ease and in perfect health.' See *Human Nature and Conduct. An Introduction to Social Psychology*, London: George Allen and Unwin, 1922, esp. p. 178.

3. See Ehrenfels' *System der Werttheorie*, as repr. in vol. I of his *Philosophische Schriften*, Munich and Vienna: Philosophia, 1982, esp. p. 372.

4. *La Structure du Comportement*, Paris: Presses Universitaires de France, 1941; Eng. trans. as *The Structure of Behaviour*, London: Methuen, 1965.

5. See especially Polanyi's *Personal Knowledge. Towards a Post-Critical Philosophy*, London: Routledge and Kegan Paul, 1958. Polanyi's thinking has been for a long time familiar to philosophers of science, but it has received little attention from philosophers interested in the wider aspects of knowledge and action.

6. Here I run together two notions developed by Polanyi himself at different times. 'Personal knowledge' is used above all to bring out the element of commitment on the part of the scientist to his as yet unknown, but approaching, discovery. 'Tacit knowledge' relates rather to the scientist's skills; see his *The Tacit Dimension*, London: Routledge and Kegan Paul, 1967.

7. *Mind over Machine. The Power of Human Intuition and Expertise in the Era of the Computer*, New York: Free Press, 1986.

8. "Knowing How and Knowing That", p. 212 of the reprint.

9. Ibid., p. 223.

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Tradition and Practical Knowledge

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1. Preamble[1]

The first task of this chapter is to indicate how the topic of practical knowledge might involve, or why it should involve, an analysis of the notion of tradition. Such an indication is in fact not difficult to give. After all, both practical knowledge and knowledge embedded in tradition are kinds of knowledge that seem to lie outside the domain of reflection or reasoning; both presuppose an epistemological subject whose activity encompasses more than the life of pure cognition — a subject to whose make-up there belong essentially traits other than the purely mental. No wonder, then, that philosophers with an eye for the dimension of practice in knowledge will usually not fail to draw attention also to the special ways in which that dimension is transmitted: to ways of custom, to institutions of handing down, that is: to traditions.

Thus Ryle stresses that learning *how* is different from learning *that*: the former involves, as the latter does not, inculcation,[2] i.e. persistent repetition, impressing itself upon the subject. Thus also Michael Polanyi, after having argued that the rules of scientific discovery are no more than 'rules of art', goes on to point out that, since 'an art cannot be precisely defined, it can be transmitted only by examples of the practice which embodies it'.[3] Science,