Acting to understand and understanding to act

Ranulph Glanville

Abstract

Purpose – To establish the essential centrality of a circular relationship between acting and understanding, and a role learning plays in this circularity, with special reference to Aristotle's phronesis and sophia. The purpose of this paper is to establish a position.

Design/methodology/approach – The argument is made through critical, cybernetic analysis and argument.

Findings – The argument reconceptualises key relationships in the approach to understanding the world, and in education.

Research limitations/implications – Research implications are not explored: the argument attempts to lay groundwork for other and later work.

Originality/value – The argument establishes a cybernetic circular causality to replace the currently preferred linear causality.

Keywords Practice, Learning, Understanding, Acting, Circularity, Constancy

Acting and understanding

As a schoolboy, and later when studying at architecture school, it was drummed into me that I should understand before I acted. The same message was restated in various guises: for instance, theory is superior to practice (which is dependent on and justified by theory), that post-rationalisation is a sin (whereas, for the creative, it is the only possibility[1]) and, in a slightly different way, by the division of human experience according to the mind and body dualism. It took me many years to move beyond this fallacy, and sometimes I find myself trapped in it, still.

Perhaps the origin of this collection of untruths goes back to Aristotle: not what Aristotle said but how it has come to be understood, nowadays (Aristotle). Of recent years, more of us who are not philosophers – let alone philosophers of knowledge –have come to know of the several styles of knowing/knowledge[2] that he distinguished. In the field in which I earn most of my living, design, two of Aristotle's styles are particularly known[3]: phronesis, meaning the "knowledge for" acting associated with making (the practitioner's practical wisdom); and sophia, the "knowledge of" understanding, even of (intellectual) wisdom[4]. What we seem to have remembered is a part of a second statement: Aristotle tells us that sophia is superior to phronesis as a style of knowledge, perhaps reflecting a wish to believe that the intellectual (of which he was a supreme example) is a superior being. That is certainly what I learnt: theory is superior to practice, and acting should be subject to prior understanding! Indeed, I was so misguided as to dismiss practice as completely unworthy!

What we seem to have chosen to forget is the other part of Aristotle's evaluation –for he also tells us that while sophia my come from phronesis, it returns to phronesis to be probed and tested.

So I understand Aristotle as telling us, from his position of observer-thinker, that there is a circle between these two kinds of knowing: phronesis leads to sophia, which, in turn, leads back to phronesis. Acting leads to understanding leads to acting. Praxis leads to theory leads to praxis. Far from a linear causality, Aristotle establishes a circularity of influence through which, I suppose, we come to aspire to improve. This circular causality was the theme of the Macy Conferences (1942,

1946-1953) on “circular causal and feedback mechanisms in biological and social systems”, often taken as the crucible in which modern cybernetics was developed[5].

But it was not Aristotle whose work brought to my mind the reverse of what I had been taught and had so unquestioningly believed. That was Jean Piaget. It took me many years (and a lot of gentle ridicule from my mentor Gerard de Zeeuw) to accept and understand what Piaget was saying at this basic level. He studied the development of children’s conceptualisations, the process of making and then stabilising compositions of concepts (Piaget, 1955). Piaget (he was not alone and he was not first, but he was my first) insisted that one major way we develop our understanding is through acting on what we come to consider the objects of our worlds. We explore in order to build our early understandings. We learn to see through touching while looking[6]. We look, we reach and we begin to focus – not necessarily in that, or any, order, but as an ensemble. We act on and in our worlds, forming them and their inhabitants as we go, creating Piaget’s constant objects. In other words, for babies, acting if anything precedes understanding: we act, from which we build understandings which we take back to our worlds and act upon.

Thus, in our personal histories (in so far as we can reconstruct them), acting precedes, or at least shares primacy equally with understanding. Therefore, we should, if anything, reverse the fallacy I was taught: at least for the new-born baby, acting comes first, for without acting to creating what becomes the experience we live in, there is nothing to understand!.

Of course, this makes perfectly good and obvious sense, once we start to consider learning. We need to create an understanding from and for something. We live in our experience, from our reactions in the worlds we construct – or find, if that is your word – which requires we check each understanding we have constructed against our further experience, in order to determine if our understanding is (still) what Ernst von Glasersfeld (2007) called “viable”, and to amend or even reject as necessary. (That we do not always do this, that we will ignore what we find in testing, is a telling reflection of our human frailty and, I believe, of the side-effect of an increase in speed and convenience, a “benefit” which I will not elaborate here.) It is from this knowledge that we form our more abstracted, theoretical knowledge.

Consider, for example, axiomatic systems. We do not start with axioms[7]: these result from working on many (probably chaotic) understandings, created from experience and found to be persistently viable, from which we abstract general and simple understandings of enormous range and hence scope. Thus, we can develop powerful explanatory systems, with basic starting points and operations/procedures, and use them, working together, to explain much else in the environment of our probing. These starting points (axioms) are not a priori starting points: rather, they are constructed through processes of abstracting from a collection of explanations, to provide consistency and economy to our explaining, as history shows us.

This may provide a route by which it appears that theory, in the sense of Aristotle’s sophia, is a superior style of knowing. For many years, this has regularly been taken to be so, in the academic, scientific and popular worlds. This has either created or reflected the powerful, dominant and rather simple notion of linear causality: of a flow that pursues one direction, of persistent control of the inferior by the unaffected superior. I take this attitude to be a potent influence in the downgrading of practical knowledge (phronesis), and of its general dismissal within the academic world. But I also take it to be a worrying indicator that we have forgotten that science is a construction, a man-made artefact which has the function of describing the reality we inhabit “as if”: and that, using such descriptions, we create explanations (descriptions of descriptions, as I think of them). Gregory Bateson (1972), in the highly stylised metalogue “What is an Instinct” held between “father” and “daughter” (a thin disguise of Bateson and his daughter Mary Catherine) reminds us as follows:

Daughter: All right – but then what does explain gravity?

Father: Nothing, my dear, because gravity is an explanatory principle.

Yet we have come to talk of science as if it were associated with some ultimate truth, as revealing the Laws of Nature rather than constructing them, which removes responsibility for his/her understanding from the scientist: and, making them (consequently) more repeatable, gives them the unquestionable status of "facts". We have shifted the notion of fact from its Latin origin as "a thing made" to the immutable objective, discovered and preserved, existing as fact in fact in and of itself, with no recognition of its observer, i.e. of agency.

We might, in this context, wish to bear in mind Heinz von Foerster's (1992) aphoristic assertion:

Objectivity is a subject's delusion that observing can be done without him.

The view is not new. Similar and related views have been argued strongly in the philosophy of science for at least half a century, for instance in the work of Popper (1963), Feyerabend (1975) and Medawar (1984). We can take it back to Vaihinger's use of the phrase "as if" as the (English translation of the German) title of his book (Vaihinger, 1911). Glasersfeld (2007) takes us back much further, to Vico and Berkeley. There is little limit to possible backward extensions!

Such a view of science, as a construction and as containing circularities, is cybernetic in form and intent.

Learning in circularity and circularity in learning

At the heart of the circularity that, I argue, constitutes the relationship between acting and understanding, and the knowledge associated with each and both, are processes by which we generate this knowledge and by which acting is transformed into understanding and understanding into acting. Key amongst these processes is learning, the means by which, in this discussion, we are taken to generate knowledge: in these descriptions, it is generally the process of learning that transforms acting into understanding, and, reciprocally (though less often commented on) understanding into acting. The circularity between acting and understanding is powered by learning as the activity that transforms[8].

Let me summarise this by reproducing the three diagrams I drew for the web site of the American Society for Cybernetics' 2013 "Acting, Learning, Understanding" conference (www.asc-cybernetics.org/2013/) to illustrate these processes (see Figure 1).

Circularity lies at the heart of many well-established descriptions of acts of learning, and of the creation of knowing (which, when frozen and externalised, we call knowledge) in the human mind. I will not labour the point here, but educationalists will recognise, amongst others, Kolb's (1984) Learning Cycle, the TOTE (Test Operate Test Exit) unit of Miller et al. (1960), the looped and two level learning of both Bateson (1964) and Argyris and Schon (1978) and, perhaps most of all, Teachback, which Gordon Pask and Bernard Scott (Pask and Scott, 1973) developed, a centrepiece of that most cybernetic of account of learning, "Conversation Theory" (Pask et al., 1973). This goes along with "Learning to Learn", which (for instance) Pask and his colleague Laurie Thomas (Harri-Augstein and Thomas, 1991) both expounded in their joint seminars at Brunel University when I was a student there.

Teachback is a method in which, after the teacher (whether human or machine) has engaged the student in material to be learnt, the learner is invited to teach back his/her understanding of this

material to the teacher. The teacher can then compare the understanding he/she aimed to persuade the learner to construct with the understanding the teacher constructs from what the learner communicates: if the two are a close match, he/she can assume the learner has understood; if not, error correction comes into play with a restatement by the teacher tuned towards the student and his/her misunderstanding; a cybernetic circular system[9]. (While the form of the system is circular, we experience our passage round it as spiral, because we learn as we go.) If there are substantial differences, a cybernetic error correction processes begin. This is the origin of the conversation in "Conversation Theory", but its cybernetic roots go right back, for without error there would be no need for cybernetic steering. The acceptance of the inevitability and even desirability of error is what distinguishes cybernetics from other subjects (Glanville, www.youtube.com/watch?v ¼ m-8GmlNb6EY).

I hope the difference between this approach and the traditional classroom (instructional) approach is apparent. I propose that the idea that understandings can be bashed into the mind of another in some linear approach[10] does not involve teaching and learning, but instruction, and is closely related both to the concept of linear causality, and to communication as coded, that is, communication where meaning is in the words, not in the minds, and where the problem of communication is to transmit a message rather than to build a parallel (shared) understanding (Glanville, 2009).

Summarising, acting can be transformed into understanding through learning, while understanding can be transformed into acting, also through learning.

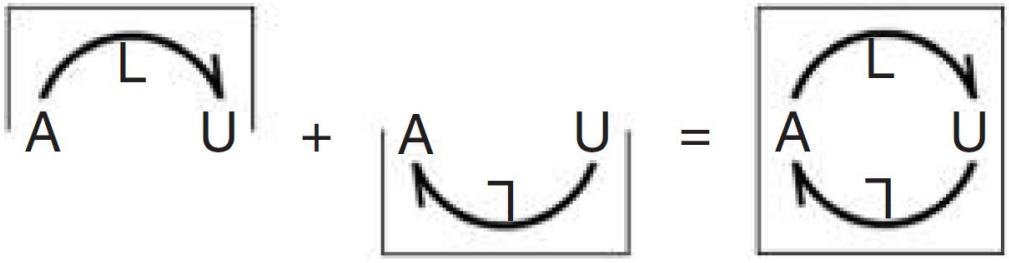
In this circularity that results from learning, we complete the relationship Aristotle proposed between phronesis (acting) and sophia (understanding), where understanding comes from acting, and this understanding is taken back to acting through testing. But it doesn't require theories such as these to convince – just think of your own learning experiences, how you act as a learner!

Practical knowledge, "knowledge for" acting

I have, however, suggested Aristotle's proposal seems to have become simplified along the way: all too often we assume sophia simply throws superior light onto phronesis.

Figure 1.

Diagram of the relationship of acting and understanding, mediated by learning, becoming circular



Theory is taken of necessity to lead practice. This can lead to terrible distortions and damage, as Barnes (2002) shows in his PhD, examining the results of the mindless application of one psychological theory which determined everything about its area of practice without ever checking what happened as a result – a result which was catastrophic for many patients.

The convention that theoretical knowledge is superior to practical knowledge has been questioned by many such as the Arts and Crafts Movement in the UK, with its emphasis on the craft of making. In the early 1980s, Donald Schön (1983), published The Reflective Practitioner. He argued that the academy is not the only place where high quality knowledge is produced, nor does it have the monopoly on proper knowledge production. He examined the ways several professionals develop and improve their knowledge through what he called "reflection in action". In Schön's view, professionals improve their knowledge by reflecting on their practice, in order to improve it – a sort of boot-strapping operation. In terms of this paper, Schön's view redresses the balance by re-introducing a notion of (or at least close to) Aristotle's phronesis. Schön talks of a knowledge deriving from action, and how this complements and sometimes challenges the understandings we have. It positions knowledge in the circle between acting and understanding by locating knowledge not only in understanding but also in acting. Since Schön, knowledge can be seen as all-pervasive. The knowing that comes from acting can no longer be ignored.

Nor should we feel constrained in our thinking about knowing to that which can be articulated. Much phronesis cannot be: the potter does not teach by talking but by showing, sharing hands with the learner as the clay is formed on the potter's wheel. We owe a recent revival that allows us to understand that there is the unspeakable (Wittgenstein's (1961) "Whereof we cannot speak, we must pass over in silence") not to Donald Rumsfeld's Litany of the Knowable and Unknowable (www.youtube.com/watch?v¼GiPe1OiKQuk), but to Michael (1966) and his tacit knowledge.

Styles of knowledge and learning

This ubiquity of knowledge does not require all knowledge to be of the same style. I have suggested associating "knowledge of " with understanding, and "knowledge for" with acting (Glanville, 2007), in the great cycle of acting and understanding. The style "knowledge of " may not fit at all well with acting. This is familiar to generations of designers and other makers who have fought against research the outcome of which is expressed in the style "knowledge of ", rather than "knowledge for". The styles of knowledge appropriate to understanding and to acting, may be very different – a matter of unrecognised importance.

We have a similar situation with knowledge that cannot be put into words. When we try to force it into words, it will slip through unseen or become very distorted. This is one of the greatest dangers of extreme rationalism, considering, as it does, only the speakable. As Beckett (1949) says "There are many ways in which the thing I am trying in vain to say may be tried in vain to be said".

The point I am raising is not a determining overview, but that we recognise that our different styles of knowing allow us a rich and interactively growing way of understanding the world, more inclusive, with greater personal accommodation and variety. Different styles of knowing imply different styles of learning (and teaching), which have been familiar for centuries: for instance in the views of the roles of the teacher and learner that Froebel instituted in his "Kindergarten", and, more recently, in discussion of learning styles often arising out of attempts to optimise learning outcomes in computer mediated learning environments, such as Pask's (Pask and Scott, 1973) serial and (w)holist – the (w) is my addition – learning styles or strategies[11]. I am suggesting that the circular link between acting and understanding, linked by learning, gives us a very rich way of looking at the world, a way that is engaging, powerful and full of varieties of connection with the world. It allows us to learn, to know and to create knowledge in a richer vein. And it comes out of and can be accommodated in our circularities.

Summary: in practice

The argument I am making is not intended to replace understanding (theoretical knowledge, sophia) by acting (practical knowledge, phronesis), but to redress what I have shown to be a damaging imbalance promoted by the dominance of theory, by emphasising a complementarity between these two styles of knowing.

Elsewhere (Glanville, 2014) I have argued that the difference between "knowledge of " and "knowledge for", and that the ignoring of "knowledge for" (at least until recently), reflects and is reflected, in the UK, in the two traditions within which (for instance) design is taught: within the vocational art schools ("knowledge for") and the university engineering departments ("knowledge of "). I do not limit the difference to design education, but simply start there because it is the area in which I work.

Schön's insistence that decent knowledge is created outside as well as within the academy, and Polanyi's reminder that there is knowledge that is not spoken (tacit knowledge), can be seen to have re-opened us up to possibilities that have over many years been largely disregarded, at least in the Anglo-American world. We are now able to value practice, as William Morris did, and as was done when we truly valued the craftsman.

This shift in position is reflected in the development of new PhD's that involve practice. This is a difficult matter, because practice and its associated knowledge style has had little recognised part of the academic world, at least for many centuries. Many ways of working with practice are being tried, and I have been involved in developing some. But the point is that we are again understanding that practice is an activity that generates and depends on knowledge – albeit of different style, i.e. "knowledge for" acting.

However, what we still have to restore is the notion that the two, acting and understanding, understanding and acting are related in a circle[12], that learning is a major means of transiting from one to the other, and that this unity is crucial if we are to develop a better way of being in the world through knowing, and of acting in the world through knowing.

Notes

1. The creative deal in making the new. If the new is to be new, it must not be predictable before it comes to exist (else it is not new, but an extension of the existing). A logic leading up to this new creating may then be constructed after the creating: but not before it exists.

2. I use the word style in the mode of its use in "learning style". I use the word "knowledge" reluctantly, for it suggests an (inconceivable) existence without a knower. My preferred word is "knowing" because it is active and requires an agent.

3. Aristotle distinguished other styles of knowledge, which are not discussed in this paper.

4. I was first introduced to the power of this way of knowing by Richard Jung (19 June 1924-30 March 2014), to whose memory this paper is dedicated. He was perhaps the wisest and certainly the most cultivated academic I have ever met, a man who embodied and lived the great values of the Central European academic tradition.

5. The Greek name cybernetics was revived by Norbert Wiener in his book Cybernetics.Atthe Macy meeting following the book's publication, Heinz von Foerster asked that the name was attached before the start of the official "mission statement" to simplify the Macy conference name.

6. It is often reported that babies deprived of touch fail to develop normally. The same does not seem to hold for those born blind, although they do not form similarly structured clusters of concepts as the sighted.

7. Euclidean geometry was presented to me as an ideal, an absolute devoid of chronological context. But before Euclid, geometry consisted of many separate proofs, using multiple formulations. Euclid's great achievement was to unify this uncoordinated mess, producing order by inventing the axioms and the associated procedures by which the content of this mess could be tidily re-constructed from and within his axiomatic system.

8. I do not claim learning is the only such activity.

9. I prefer not to use the term feedback because it suggests a power relationship that circularity avoids.

10. Mike Robinson (1979) has provided an outstanding analysis of this sort of "teaching" in his study of teaching in the Victoria classroom, discussed in terms of Ashby's Law 9 of Requisite Variety).

11. Pask (1976) later modified his distinction to comprehension and operation learning. This work was also due to Pask's colleague Scott, who is not properly recognised in the author byline. Scott has since carried out many learning style assessments.

12. In one programme I am involved in, the PhD through practice program in Innovation Design Engineering at London's Royal College of Art, we require students to perform an action we call "stitching", in which this circularity is spelled out through the metaphor of stitching theory and practice together through.

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