

Between zero and one: on the unknown knowns

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"There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we now know we don't know. But there are also unknown unknowns. These are things we do not know we don't know."

Donald Rumsfeld

This infamous comment of February 12, 2002, by US Secretary of State for Defence Donald Rumsfeld, concerning the lack of evidence linking Iraq's government to the supply of terrorist groups with weapons of mass destruction, was widely ridiculed at the time and, since 2002, has been referenced widely as evidence of the lunacy, paranoia and sheer stupidity of the Bush era executive. Amongst many other "accolades" it received the Plain English Campaign's 2003 Foot in Mouth Award. Slavoj Žižek felt subsequently compelled to respond to Rumsfeld's apparently bizarre logic. In his riposte in *The Guardian*, Žižek suggested that Rumsfeld had overlooked something;

"What he forgot to add was the crucial fourth term: the "unknown knowns", things we don't know that we know - which is precisely the Freudian unconscious. If Rumsfeld thought that the main dangers in the confrontation with Iraq were the "unknown unknowns", the threats from Saddam we did not even suspect, the Abu Ghraib scandal shows where the main dangers actually are in the "unknown knowns", the disavowed beliefs, suppositions and obscene practices we pretend not to know about, even though they form the background of our public values. To unearth these "unknown knowns" is the task of an intellectual." (Žižek 2005)

Putting aside Žižek's particular, if probably reasonable, interpretation of Rumsfeld's statement as evidence of a paranoid Freudian subconscious at work within the US defence system, whilst accepting his assertion that the territory of the "unknown known" is an appropriate frontier for intellectual inquiry, Rumsfeld's knowledge matrix could be regarded as evidence of an, admittedly inadvertent, subtle appreciation of

epistemology. The implication of this matrix is that knowledge can exist in a variable and uncertain state and yet still function as useable and applicable knowledge upon which action can be based.

As Zizek has observed, one thing that is evident in Rumsfeld's Boolean matrix is that one possible form of (un)knowing is absent from its logical array, the "unknown knows" - things we don't know that we know. This form of knowing is often referred to as tacit and has become a popular subject of inquiry in the arts and other practice based activities where knowledge of techniques, methods and relationships are often accepted a priori, as being embedded in the skill-sets and processes of certain practices learned through the careful rehearsal and subsequent adjustment of acquired ability.

David Pye (1968) distinguishes between two modes of workmanship which might be employed to evidence how tacit knowledge can evolve and be applied. Pye identifies the "workmanship of risk" and the "workmanship of certainty". Quoting Elizabeth Hallam and Tim Ingold (2007) on Pye, "In the workmanship of risk the quality of the outcome depends at every moment on the exercise of care, judgment and dexterity. The practitioner has continually to make fine adjustments to keep on course, in response to the sensitive monitoring of the conditions of the task as it unfolds". By contrast the workmanship of certainty "proceeds by the way of a pre-planned series of operations, each of which is mechanically constrained to the extent that the result is predetermined and outside the operative's control". However, Hallam and Ingold problematise this duality, noting earlier in the same text that "life is unscriptable" and "cannot be codified", for the world is not a fixed but fluid phenomenon. Thus, in practice, the workmanship of certainty is never fully realised as no system or set of phenomena is so predetermined and known that we can complete a task in respect of it whilst on auto-pilot. All of our activities are, to some degree, creative and engage the real-time evaluative processes inherent to tacit knowledge. In this sense tacit knowledge and the creative impulse are not the preserve of those engaged in the creative arts but are aspects of life, both extraordinary and quotidian.

When creative practitioners find themselves working within an academic knowledge economy of qualified and quantified knowledge they are often required to submit to the same measures of rigor and transparency as their colleagues in more conventional academic subjects. Key in this is the principle that knowledge is of most value when it has been rendered open and transparent to critical evaluation by

others. In order to achieve this it is required that knowledge be inscribed in a manner that ensures the means by which it was arrived at is qualifiable and quantifiable by others. The larger part of contemporary academic research infrastructure is dedicated to this evaluative process.

However, as some have observed, perhaps most acutely Stephen Scrivener (at a conference convened here at Hertfordshire in 2002), the requirements of academia and those of the creative arts are not so readily reconcilable. Scrivener asks why "has knowledge become such a hot topic? At least part of the answer can be found in the very idea of research, which is generally understood as an original investigation undertaken in order to gain knowledge and understanding" (Scrivener 2002). As Scrivener points out, if the creative arts are to function within an academic epistemology then art, when undertaken as research, "must contribute to knowledge". However, is the primary objective of creative practice to achieve a contribution to knowledge? Conventionally the answer to this question would be in the negative. Arts practitioners have not been historically required to develop or propose new knowledge. The creative practitioner's role has generally been quite distinct to this.

However, creative practitioners work within and do develop their own knowledge frameworks and to engage with the outcome of a creative process, whether as author or reader, requires knowledge about the subject and its context as well as the artifact and the relevant discourses of the culture the artifact is produced within. Thus, whilst it might be the case that creative practice rarely engages the propositional character of scientific knowledge production it nevertheless does depend upon, participate in and represent a form of highly contextualised and shared critical knowledge.

On the other hand, as observed above, even the most rigorous of pursuits of knowledge will involve a degree of tacit knowledge and intuition in its realisation. Scientists, if they are to fulfill one of the key criteria of their activities, that of originality, and whilst they might undertake their activities with extreme diligence to documentation and critical reflection, would seem to need to engage the "workmanship of risk". By definition they must go beyond the limits of their practice and knowledge if they are to satisfy such a key objective and they can only do so when they rely on processes of judgment and mental or technical dexterity that are born of the long exercise of a set of skills such that they have become second nature. In this sense the scientist, like the artisan, exercises tacit knowledge, almost

unconsciously, operating beyond the evaluative processes of scientific rigor. It is in this condition that the eureka moment can unexpectedly emerge. Indeed, science incorporates the unpredictable and improvisory into its fundamental methods, valuing the unpredictable negative outcome as equal to the positive affirmation of a hypothesis whilst appreciating that such an unpredictable outcome counters the epistemologically foundational processes of conjecture and refutation. Artists and scientists can thus be considered to share an interest in something more fundamental than a particular form or method of knowing; that is, wonder. In this context the artist Paul Klee's observation (Klee 1961) that artists and scientists often start from the same source and arrive at the same destination, but do so via different means, has particular resonance.

Charles Peirce argued that artists can arrive at choices through a hunch, a form of reasoning he termed abductive (Peirce 1958). Within this epistemological model elements of knowledge might be considered of uncertain status but nevertheless able to be reasonably employed on the basis of an intuitive sense that something might be so. The argument here is that what is the case for creative practitioners, in the exercise of their pursuit of insight and affinity (a kind of knowing), is also the case for those working within those domains concerned with the rigorous pursuit of knowledge.

Peirce identified three methods of reasoning: deduction, induction and abduction. He regarded all three as integral to the scientific method. Peirce suggested that scientific method starts with abduction, an hypothesis where a conjecture is postulated, seeking to explain a phenomenon. The method then proceeds to deduction where, through a series of inferences, conclusions can be drawn from the provisional hypothesis and further conclusions reached about other phenomena that must be so if the hypothesis is true. Finally, the method proceeds to the stage of induction, where experiments are carried out to test the provisional hypothesis by ascertaining whether the deduced results do or do not obtain. Peirce did not regard this as a strictly linear process as he proposed various feedback loops between such methods so that various entry and exit points at the various stages could be employed, thus allowing for a non-linear apprehension of knowledge creation. In this model knowledge is often in a contingent and uncertain state but nevertheless the methodological framework can be pursued and outcomes arrived at. Thus, as we have already observed at the outset of this text, knowledge can exist in a variable

and uncertain state and yet still function as useable and applicable knowledge upon which action can be based

Another example of reasoning that is less than black and white in its methods is found in computing theory. The notion of fuzzy logic, derived from fuzzy set theory (Zadeh 1965), has gained popularity in data analysis applications designed for dealing with complex real-world data-sets. This is a method of algorithmically modeling decision making processes where much of the data required to make a choice is in an unknown state, neither a zero nor a one but something in-between.

Lofti Zadeh (1973) has argued that "the conventional quantitative techniques of system analysis are intrinsically unsuited for dealing with humanistic systems or, for that matter, any system whose complexity is comparable to that of humanistic systems". He has postulated that "as the complexity of a system increases, our ability to make precise and yet significant statements about its behavior diminishes until a threshold is reached beyond which precision and significance ... become almost mutually exclusive characteristics". He has suggested an approach to understanding human thinking as a process not founded on the key elements of numbers but "labels of fuzzy sets ... classes of objects in which the transition from membership to non-membership is gradual rather than abrupt". Zadeh has proposed that human reasoning is not binary, or even multi-valued, but a "logic of fuzzy truths, fuzzy connectives, and fuzzy rules of inference". Whilst Zadeh's language is quite distinct there are uncanny echoes of Peirce's theories at play in an approach to computing that has become very influential in the areas of artificial intelligence and specifically in language and voice recognition systems. It is therefore perhaps not surprising that both Peirce, with his work on semiosis, and Zadeh, who proposes a linguistically rather than numerically based system of logic, both can be seen to regard language as key to understanding how knowledge is made and valued as a human activity.

It is possible, indeed likely given the large class of potential signs, that what is the case for language is also the case for images. The image is a powerful means for determining and describing classes of things. The image can be simultaneously concise and general, precise but vague, in its status. This is perhaps the poetic property of all signs, regardless of the sign system to which they belong; the polyvalence of the sign exhibiting the fuzzy and uncertain characteristics of things that both Peirce and Zadeh explore and thus able to sustain multiple states and sets of relations with other things. This would seem to be the natural territory of the artist

and poet and thus we can suggest that if what Zadeh proposes is a system of knowledge then what creative practitioners routinely do, as they play with the indeterminate multilayered and dimensioned relations in the elements of their creative work, is a form of knowledge creation as well, not only in the sense of exercising a tacit knowledge associated with their skill-set, as observed in the observations of Pye, but through the essaying of a knowledge-representation which evidences Pierces three key elements of reasoning - abduction, induction and deduction - in the dynamics of the interplay of the components of the creative work.

This returns us to Hallam and Ingold's conception of improvisation, not only as a form of creativity but a form of problem solving, where the creative practitioner is constantly adjusting their activity as they pursue their "workmanship of risk". This might be regarded as the exercise of the abductive and fuzzy in practice. Through this approach we might consider a humanist reformulation of Heisenberg's uncertainty principle (Heisenberg 1927), proposing that the more precisely one thing is known then the less precisely the other be known.

Perhaps we can consider whether there is value in seeking to determine what the "unknown knows" might be and in what sense they are, and remain, unknown? In attempting to shift the register of our logical knowledge matrix, in order to render the "unknown known" a "known known", the intrinsic value of this form of knowing might be compromised. In uncertainty knowledge can be considered to retain a certain value. Indeed, the uncertain might be regarded as of a very particular value that only this particular kind of knowledge can contain. Thus, in contrast to the conclusion drawn in Zizek's re-reading of Rumsfeld, if we do seek to erase the "unknown knows" and replace them with the "known knows" we, arguably, risk losing a way of knowing that could be of significant value. Without wishing to support a false social dichotomy, implicit in Zizek's proposal, that the task of the intellectual is to "unearth the "unknown knows"", perhaps the task of the artist is to nurture the imminent seed that is the "unknown known"?

However, if we accept this then the problem emerges that we risk indulging the romantic ideal of the artist as one with a capacity to access a form of proto-knowledge which might be compromised if we hold its source up to the light of critical analysis. The resolution to this problem is, however, not a question of epistemology but ontology, for we now need to ask what, in this context, the artist might be? If we choose to employ a model of the artist founded upon the ideal of the solitary genius,

whose creativity is a function of, and finds value in, its difference to the body of society, then the problem becomes intractable. However, if instead we accept Ingold's proposition of creative practice as a pervasive and defining quality of communities and societies, where the foundational creative act is the making of people through the dynamic inter-relations of people, we can then regard the performative value of individual instances of creative practice as emblematic of those processes.

This arguably allows us to more fully appreciate the contribution of the individual creative act, or its outcome, whilst recognising that its value is a function of the social, not something established in oppositional isolation to it. Such an understanding has echoes of Michel Foucault's conception of knowledge as a pervasive social quality, as he outlined in his foundational work addressing discipline (1975) and sexuality (1976). This is an economy of knowledge where all members of society are implicit in the creation, and destruction, of value. In this context the value of the "unknown known" can be regarded as politically significant and perhaps this suggests why Rumsfeld did not, or could not, consider the full range of possibilities in his incomplete knowledge matrix. To have done so would have required Rumsfeld to accept the social value of the "unknown known", a pervasive and tacit route to knowledge that stands in contradistinction to the top-down and centrally determined models of knowledge he would most likely be comfortable with. In this respect Zizek is correct to propose that it is the "unknown knowns" that form the background to our values and that these should be subject to critical evaluation if we are to avoid forever repeating ourselves.

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