

# Analysing Tacit Knowledge: Response to Henry and Lowney

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ABSTRACT Key Words: tacit knowledge, explicit knowledge, machines, artificial intelligence  
*I respond to the reviews by Henry and Lowney of my book Tacit and Explicit Knowledge. I stress the need to understand explicit knowledge if tacit knowledge is to be understood. Tacit knowledge must be divided into three kinds: relational, somatic and collective. The idea of relational tacit knowledge is key to pulling the three kinds apart.*

I would like to thank my reviewers for spending so much time and thoughtful effort on reviewing my book. I am going to start my response with a bit of autobiography, as it may explain some of what is going on.

The first paper I ever published (in 1974) was about how scientists learned to build a new kind of laser called a ‘TEA-laser’. In the first incarnation of the work, written as a Master’s dissertation in 1971, I described the process as like learning a new language rather than gathering discrete bits of information. My inspiration for this was Kuhn’s ‘paradigms’, which I took to be science’s version of Wittgenstein’s ‘forms of life’, which I knew about having been led there by Peter Winch’s brilliant little book *The Idea of a Social Science*. I had never heard of Polanyi or tacit knowledge until one of the referees of my tardily submitted paper told me that was what I was writing about. So I changed the sub-title of the paper to ‘Tacit Knowledge and Scientific Networks’ and acknowledged Polanyi. This was good because it helped people locate my paper but bad because there is a lot more to Polanyi than I wanted to talk about. In particular, I am a sociologist and my interest lies in the knowledge of groups, how knowledge spreads, how we can acquire different ways of seeing the world, and so on. I have no interest in individual creativity or insight except to say that without the *idea* of individual pioneers we could not have the form of life of science.<sup>1</sup> Mostly, however, Polanyi’s stress on personal knowledge has tended to mislead people about what I was up to when they found the term ‘tacit knowledge’ in my writings.

By default, then, some of what I am doing in the book is continuing a near 40-year process of untangling. What interests me about creativity is how one idea gets picked up and becomes a discovery while another doesn’t; this is a sociological process. How those acts of creativity get done is of no interest to me (my own creativity aside—we all find our own creativity fascinating). Thus my book is not about personal knowledge, it is about the nature and transmission of knowledge—a ‘substance’ which gets passed around. Furthermore, the notion of knowledge which informs the book is based on the Wittgensteinian ‘ask for the use not the meaning’. This means, I believe, that I have no need to get caught up with the much discussed philosophical puzzle about whether something that is tacit can be knowledge (Lowney, 19). If I can ride a bike I *know* how to ride a bike whether or not I know *how* I do it.<sup>2</sup> Of course, animals and machines can also do things but I argue that, nevertheless, we should not speak of them as having knowledge. This, however, has to do with the fact that they do not share our social and intentional life and has nothing to do with self-consciousness in the use of knowledge. Another element of this is that when I say that something has *meaning* I intend to say that it is interpretable in a *usable* way.

Stephen Henry's review makes me very happy because he explains how he can *use* the ideas in the book to enhance understanding of a doctor's relationship with patients, and perhaps improve it; this means that the work has not been in vain. If the book has a use, it has meaning. It is also enormously flattering to be told by Charles Lowney that the book complements and expands on Polanyi's work; it is not an easy thing to add something to the work of an original thinker. Given this, it seems graceless to take issue with some of the reviewers' remarks, but that is the nature of the job when one is given the opportunity to respond.

Before I get to that, for readers of this journal who have not read the book, let me say a little more about it. As a result of writing some much-cited and reprinted articles about tacit knowledge, and having used the idea throughout my various books on scientific practice and on artificial intelligence, I thought I knew all about it; when I started, I told people that the first draft of the book would take about four weeks to write. It wound up taking two agonising years; I worked on it every day and produced dozens of drafts and mostly it felt like ploughing a swamp. Clarity didn't begin to arrive until I realised two things as a consequence of the recalcitrance of the printed page. First, to understand tacit knowledge, I had to understand explicit knowledge and, as far as I can see (though I am a poor scholar), no-one has ever tried to work out what explicit knowledge is. For example, there is no book with that title on Amazon.com, there is no entry in the *Stanford Encyclopedia of Philosophy* (though, oddly, there is no 'tacit knowledge' either—someone should fix that) and there does not seem to be much beyond dictionary definitions on Google. So the first three main chapters of my book are about explicit knowledge.

To me, these three chapters do not comprise a finished work. I think they contain some insights about the meanings of explicit which are good enough to support the second half of the book—which maps out tacit knowledge and divides it into three types. But I think someone who is better equipped than me ought to write a proper book about the explicit. I am just relieved that I seem to have 'got away with' writing these three chapters, out of something close to thin air, as it were and, so far, no one has pointed to any gross stupidity (and a heartfelt thanks to Lowney, who brings a lot more to the table in the way of history of philosophy than I can, for saying it is 'insightful'). Those chapters do, however, rely on the concept of affordance which, as I point out in the book, I use as a 'conceptual bandage'; fortunately, it seems to work for the purpose at hand. Furthermore, my table of four meanings of explicit, which also seems to work pretty well, has been put together with a lot of sweat and a pick and shovel—I would be happier if there was some simple theory underlying it. I think that theory would probably come up with the same categories but it would be nice if it made it obvious why there were four categories rather than three, or five. (I like Lowney's pointing out that building a machine is just another string transformation—that seems to point in the right direction. What he misses because I neglected to say it, is that no one would build a machine unless they could use/interpret it and that is why building a machine is a way of rendering something explicit—it is not *just* string transformation; if there is ever a second edition of the book, that will be in it.)

On the other hand, I'm really happy with the second three main chapters and I will nail my colours to the mast of my three-way classification of tacit knowledge and am ready to go down with the ship. The three-way classification is 'Relational Tacit Knowledge' (RTK); 'Somatic Tacit Knowledge' (STK); and 'Collective Tacit Knowledge' (CTK). I am also pleased that these second three main chapters are much less complicated and convoluted than the first three. The second thing I realised, as the drafts unfolded, was that to understand the notion of tacit knowledge the new but extremely simple concept of Relational Tacit Knowledge was essential. I now realise that all my previous writings on tacit knowledge have the three types confounded but to untangle them RTK had to be pulled out first. The simplest things can be the hardest to see and Polanyi's

tendency to mystify does not help. RTK is just knowledge that is tacit for no deep reason—for example, it might be that secrets are being kept, or maybe someone doesn't realise what you need to know so it doesn't occur to them to tell you—what I call 'mismatched saliences'. RTK can easily be rendered explicit (at least a bit at a time) and there is little in the way of 'cannot' about it. Even so, as long as RTK is not rendered explicit it looks and feels just like the other kinds of tacit knowledge: to 'get it' you need social interaction with the knower (as with the TEA-laser builders, a lot of whose tacit knowledge was RTK). It is probably because all the classes of tacit knowledge look and feel the same way to someone experiencing them, and because they mostly occur together, that they have not been pulled apart before.

Now I move on to the reviews. Let me add that, for me, there is no real philosophical puzzle about the fact that some piece of knowledge that is tacit at one moment can be explicit at another. It is still tacit when it is tacit—with all that this implies about how it can be transmitted—and explicit when it is explicit (cf. Lowney, 19). I believe all these philosophical 'puzzles' can be dissolved if one simply talks about tacit knowledge that can be explicated in in principle (which I claim comprise RTK and STK) and knowledge that cannot be explicated as far as we can foresee (CTK).

Note the qualification 'as far as we can foresee'—that means we won't get there by incremental steps from what we know now. There is no prophecy in the book—tomorrow some genius may come up with a scientific explanation of the social and CTK may become explicable too. That is why the ineffable isn't nonsense (Lowney, 20) so long as it has consequences. And CTK has very evident consequences which are discussed at length in the book. CTK, or, more properly, the idea of the social that underpins it, is like Newton's idea of gravity—you can't see it, touch it or smell it and it is a kind of mysterious action at a distance, but it still has consequences. Maybe we now understand gravity as curved space-time (or maybe we don't) and maybe one day we will understand the social. Not being a genius, I still treat the social as an *explanans* not *explanandum*.<sup>3</sup>

Henry says that I should have done more in the way of linking my concept of strings, which underlies my attempt to analyse the explicit, to the notion of string as found in computing. I think that is wrong but the fault is mine. When I came up with 'string' I was looking for a word that was so general that it meant almost nothing; 'thing', or 'grom' might have been better choices. In my usage, every physical object is a string unless it is completely featureless or completely random—so almost everything is a string. It just happens that most of the things we are interested in when it comes to this subject are of a certain type—such as letters in a book or chunks of air with moving waves—but the idea of the string as I use it much more general: it is anything that has an order that is, or could be, used or construed as information and has the potential to be interpreted. Only at the moment of the final 'heat death of the universe' will there be no strings. The point about strings, as I use the term, is to get away from terms like 'symbol' and 'icon'. Those terms already have the ghost of meaning within them so to try to explain their use in making knowledge explicit is to risk circularity. To avoid circularity, one needs to start with things with all meaning removed. That is the only quasi-negative thing I need to say about Henry's review—as I read it, I simply thought 'that's my book ... that's my book ... that's my book'.

Lowney's review is full of insights, particularly as he relates the first part of the book to the history of philosophy. Nevertheless, as has already begun to be indicated, there was more that I did not recognise and there were places where I thought he might have been a bit more charitable in the interpretation of its strings. For example, on page 23 he says:

So whereas the force of the string-transformation v. meaning-interpretation distinction should inspire Collins to agree with Polanyi's contention that "wholly explicit knowledge is unthinkable" (KB, 144), Collins dissents, suggesting instead that fully explicit knowledge without a tacit underpinning is a matter of course. He will identify "explicit knowledge without tacit knowledge" with "string transformation" (TEK, 70).

Could I really have said that? Note that, as Lowney points out, a few lines later I deny it!

Collins thus feels the need to "fix" Polanyi's formulation by saying "strings must be interpreted before they are meaningful" (TEK, 70).

I rushed to TEK, opened it at page 70, and there *is* something that looks like what Lowney accuses me of:

Polanyi's claim that "a wholly explicit knowledge is unthinkable" bears on the matter. The claim as stated is evidently wrong because explicit knowledge without tacit knowledge—string transformation—is exactly what we are thinking about right now.

But read a little more charitably and I am making a (perhaps ill-advised) joke at Polanyi's expense. I am saying 'here I am thinking about it' in the sense that 'the job of a philosopher is to think three impossible things before breakfast' so it can't be literally 'unthinkable'. I go on to say:

If we replace Polanyi's claim with "strings must be interpreted before they are meaningful" and we forget about the word "unthinkable," a level of mystery disappears: we have strings and we have interpreted strings.

I'm not saying that string transformation is explicit knowledge—I couldn't be saying that—I'm saying it's a pity that Polanyi always has to mystify things when he could use simpler words.

I think Lowney also makes a more serious and systematic mistake in interpreting the book. I was taken aback when he gave as an example of RTK 'e.g., learning the skill of a master craftsman' (Lowney, 20). The mistake is exemplified once more in the following sentences: 'STK looks different if one takes examples from fighting arts, where, yes, the goal is to defeat your opponent, but one's body might respond to a strike not encountered before in a creative, adaptive and *right* manner' (Lowney, 28). In both cases Lowney is taking it that my view is that a certain kind of tacit knowledge can be exemplified in the activity of a certain kind of craftsman, artist, or other actor. But this is quite wrong. As I stress throughout the book, all the three kinds of tacit knowledge are usually found together and Lowney's criticism of my supposed analysis of the master craftsman or the martial arts exponent is misplaced. He is pointing to the fact that in both cases some CTK is involved—of course it is. The point is made crystal clear if it wasn't already in Appendix 1 of the book where the work of the master baker is analysed. We see that though a great deal of the master-baker's activities can be mechanised, judgement of the acceptable level of tolerance of the finished product cannot—it is CTK. I believe this example maps nicely onto the examples that puzzle Lowney and there are many others throughout the book. Let us take the martial artist: one way to win would be to smash the opponent's head with a baseball bat, but that would not be a *right* move, the criteria are collective (one should extend the argument to less crude examples).

Lowney's penultimate sections refer back again to 'personal knowledge' and I have already tried to explain why that is not a focus of my work. I keep saying that it is a mistake to try to understand knowledge by focussing on human experience because human experience is a contingency of the nature of our bodies. That seems to me undeniable as the example of cycling on the Moon shows. But then I say that we should be analysing knowledge as 'stuff', not human experience, but I also say that the only knowers are human. There is something not quite squared-away there – my instinct tells me it is right but I don't think I have yet found the way to say it quite right. So I am not in a good position to demolish my critics. It's nice that academic life is open-ended.

Though I have been critical of some of its aspects, I enjoyed Lowney's review and gained much from it, both in terms of substance and reassurance. That Henry, the clinical practitioner, can use the ideas is an absolute delight to discover. I also enjoyed writing my response and hope my reviewers will agree that we have seen an excellent example of productive academic interchange—not so easy to find in the competitive atmosphere of contemporary academe.

### Endnotes

<sup>1</sup>There may not be much in the way of individual pioneering in science as it is practised given that what is vital is how new ideas are accepted or rejected – and the vast majority are rejected — but *the idea* of the individual hero is still a vital element in science's form-of-life.

<sup>2</sup>I think it is time that philosophical puzzle was put to bed. It arises because many philosophers start with an unhelpful definition of what it is to know something that has its roots in the explicit. If they began with the idea that to *know* something is to *know how to do something*, the puzzle could be forgotten about.

<sup>3</sup>An approach that, in my view, ought to be the quintessence of sociological thinking but mostly isn't.

## Submissions for Publication

Articles, meeting notices and notes likely to be of interest to persons interested in the thought of Michael Polanyi are welcomed. Review suggestions and book reviews should be sent to Walter Gulick (see addresses listed below). Manuscripts, notices and notes should be sent to Phil Mullins. Manuscripts should be double-spaced type with notes at the end; writers are encouraged to employ simple citations within the text when possible. MLA or APA style is preferred. Because the journal serves English writers across the world, we do not require anybody's "standard English." Abbreviate frequently cited book titles, particularly books by Polanyi (e.g., *Personal Knowledge* becomes PK). Shorter articles (10-15 pages) are preferred, although longer manuscripts (20-24 pages) will be considered. Consistency and clear writing are expected. Manuscripts normally will be sent out for blind review. Authors are expected to provide an electronic copy as an e-mail attachment.

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