

MICHAEL POLANYI'S THEORY OF TACIT KNOWING

Appropriating technological means to appropriate technological ends

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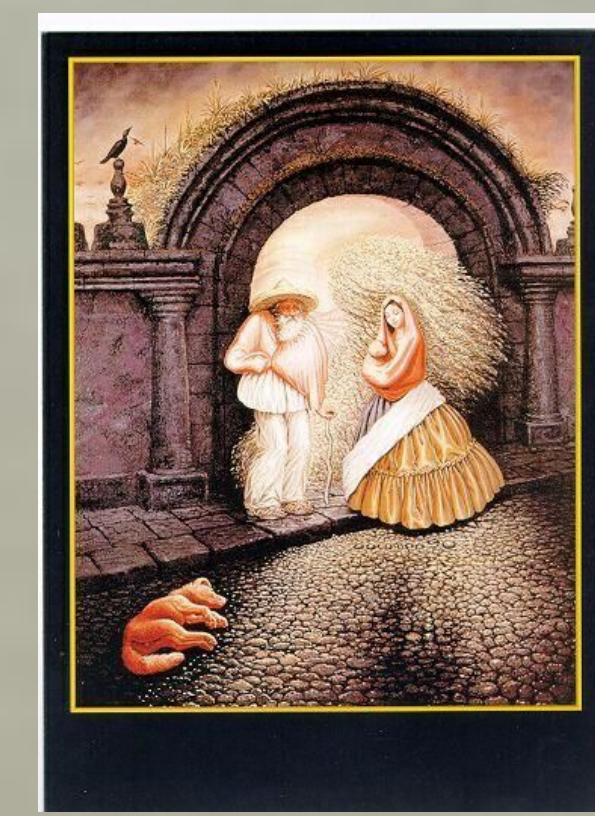
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“We know more than we can tell.”

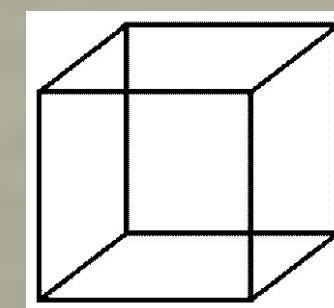
Tacit knowledge

Michael Polanyi's theory of tacit knowledge is a careful reconsideration of what constitutes human knowledge and how understanding works. Consider the following quote: “we know more than we can tell”. This immediately dichotomizes our knowledge into being that which we can articulate (focal) and that which we cannot (subsidiary). It is this inarticulate dimension that is the tacit dimension.



2 types of awareness

This is meant to begin to illustrate two types of awareness that comprise Polanyi's theory of tacit knowing: *focal* and *subsidiary awareness*. *Focal awareness* is that which we are acutely focused on and aware of and *subsidiary awareness* is what we are aware of but not to the same degree.



The focal is “knowledge by attending to” and the subsidiary is “knowledge by relying on.” In short, the distinction is that all cognitive processes (learning, discovery, developed knowledge) have a from-to structure. “What is fundamental about the from-to relation, in fact, is the way in which I have *bodily* assimilated not only visual ‘images’ or other perceptual clues, but even the most general ‘intellectual’ beliefs” (Grene, 1977, p. 170-171). “Polanyi's distinction between subsidiary and focal awareness permitted the enunciation and elaboration of the thesis that all knowledge, however precise and however impersonal in its formulation, is grounded in clues that the knower must have already have assimilated and of which he can be at best only subsidiarily aware (Grene, 1977, p. 168).

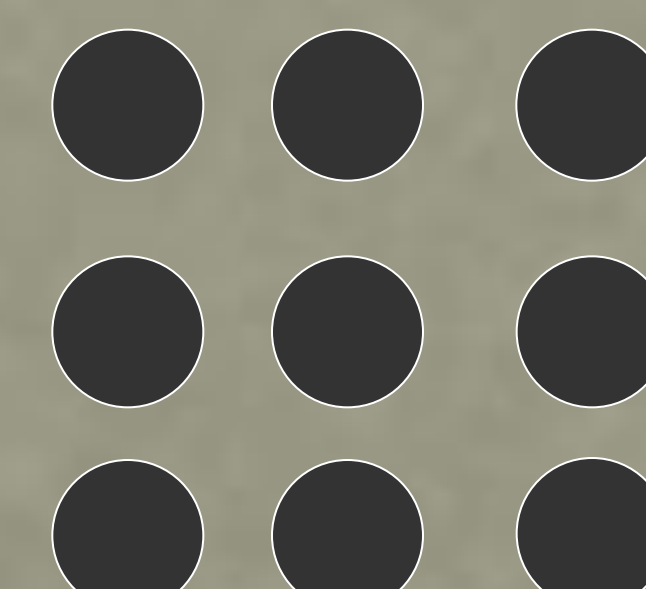
In elucidating his theory, it is necessary to use examples. Polanyi's favorite examples were skills, especially that of using a hammer (a technology):



When we use a hammer to drive in a nail, we attend to both nail and hammer, but in a different way. We watch the effect of our strokes on the nail and try to wield the hammer so as to hit the nail most effectively. When we bring down the hammer we do not feel that its handle has struck our palm but that its head has struck the nail. Yet in a sense we are certainly alert to the feelings in our palm and the fingers that hold the hammer. They guide us in handling it effectively, and the degree of attention that we give to the nail is given to the same extent but in a different way to these feelings. The difference may be stated by saying that the latter are not, like the nail, objects of our attention, but instruments of it. They are not watched in themselves; we watch something else while keeping intensely aware of them. I have a subsidiary awareness of the feeling in the palm of my hand which is merged into my focal awareness of my driving in the nail (Polanyi, 1962, p. 55)

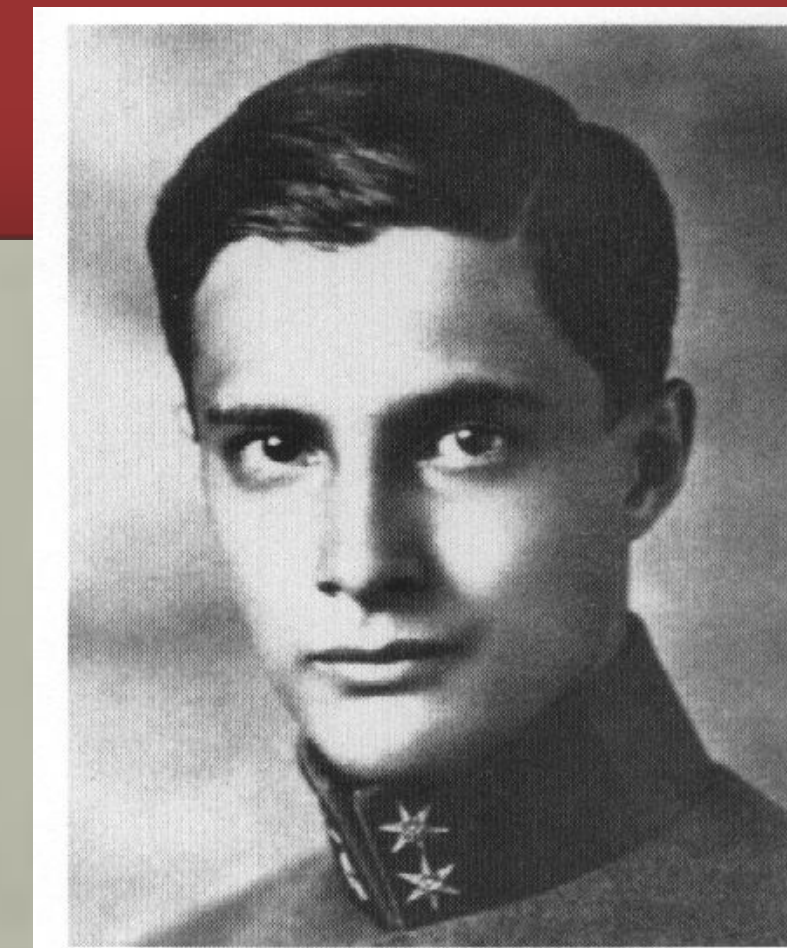


The focal is comprised of *joint particulars* which reside in one's subsidiary awareness, in this way the subsidiary supports the focal. Skills cannot be fully accounted for in terms of their particulars because the nature of particulars is that they are *unspecifiable* (not necessarily in the sense of being ignorant of them). They are necessary though because the particulars must be jointly comprehended in order to have a focal awareness of something (i.e. the dalmation below) for if you observe them separately they form no pattern (i.e. if you were just to focus on the dots up close you wouldn't be able to identify the image in the picture below).



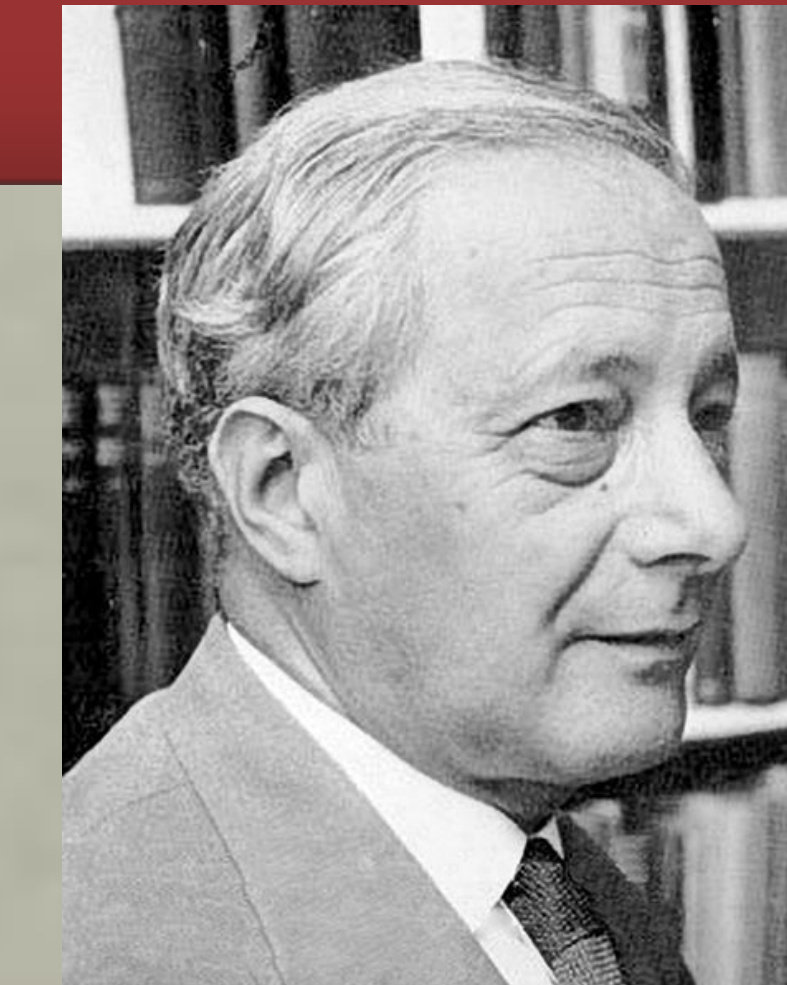
Q: Without lifting your pen off the page, and using a single line, can you connect all the dots?

Biography



Michael Polanyi

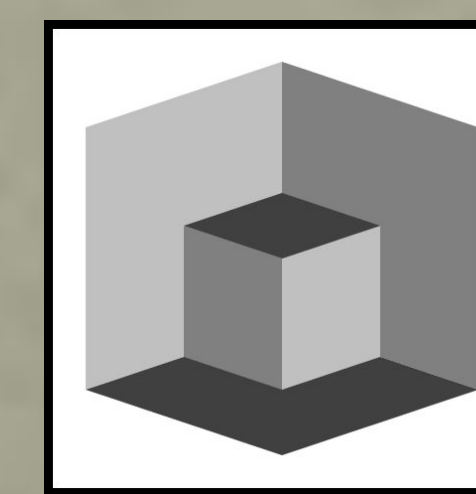
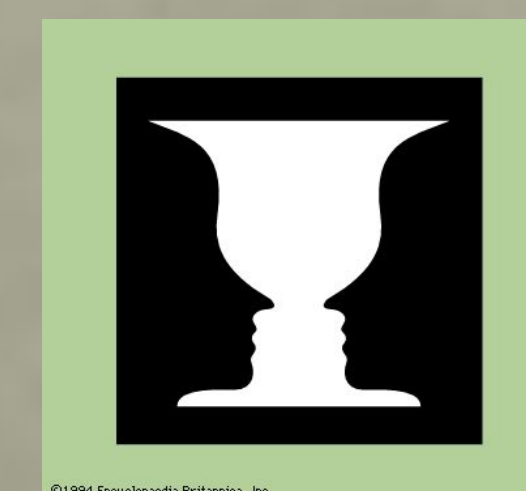
1891 –born Mihaly Lazar Polacsek in Uzgorod, Austro-Hungary
 1908-1913 –studies medicine at the University of Budapest
 1914-1915 –works as a medical officer in the Austro-Hungarian Army
 1919 –obtains his Ph.D. in physical chemistry
Germany (1918-1933)
 1919-1920 –conducts research at the Technische Hochschule, Karlsruhe
 1920-1923 –works in the Institute for Fiber Chemistry at the Kaiser Wilhelm Institute (later renamed the Max Planck Institute)
 1922 –named acting division leader of the newly formed physical chemistry section
 1923-1933 –works at the Institute for Physical Chemistry
 1923 –appointed a scientific member of Fritz Haber's institute, the Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry on September 1st
Manchester (1933-1959)
 1933-1937 –Works as a Professor of Physical Chemistry at the University of Manchester
 1944 – March 16, elected a Fellow of the Royal Society
 1946 –leaves science for social philosophy, in so doing gives up the possibility of ever receiving the Nobel Prize (which would've been very likely had he not left physical chemistry)
 –gives the Riddell Lectures at the University of Durham and publishes them in *Science, Faith, & Society*
 1948 – becomes chair of Social Studies in the Faculty of Economics and Social Studies at Manchester
 1950 –accepts the Alexander White Visiting Professorship for a spring term at the University of Chicago
 1951-1952 –gives Gifford Lectures at the University of Aberdeen
 1952 – helps set up the Conference on Science and Freedom
 1958 –retires from the University of Manchester
Oxford (1959-1961)
 1959-1961 –Senior Research Fellow at Merton College, Oxford University
 1962 –gives the Terry lectures at Yale which later became *The tacit dimension*
 1976 –Polanyi passes away on February 22nd



List of major publications*

- Polanyi, M. (1940). *The contempt of freedom*. London: Watts and Co.
- Polanyi, M. (1946). *Science, faith, and society*. Chicago: University of Chicago Press.
- Polanyi, M. (1951). *The logic of liberty: Reflections and rejoinders*. London: Routledge and Kegan Paul.
- Polanyi, M. (1958). *Personal knowledge: Towards a post-critical philosophy*. Chicago: University of Chicago Press.
- Polanyi, M. (1959). *The study of man*. Chicago: University of Chicago Press.
- Polanyi, M. (1966). *The tacit dimension*. New York: Doubleday and Company.
- Polanyi, M. (1969). *Knowing and being*. Chicago: University of Chicago Press.
- Polanyi, M & Prosch, H. (1975). *Meaning*. Chicago: University Of Chicago Press.

* (Selected List of Publications, he also published many articles in scientific journals)



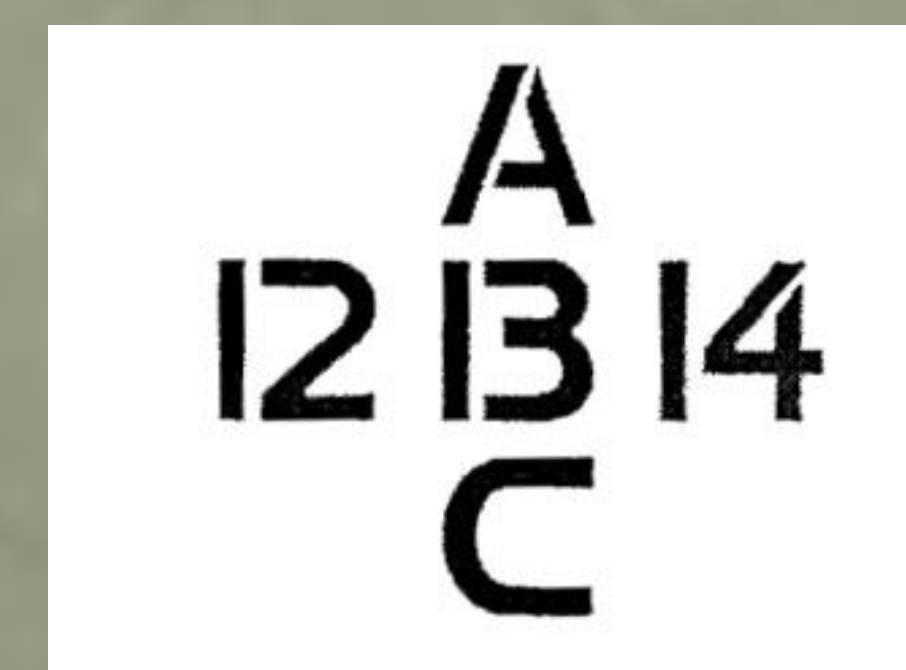
Focal awareness and subsidiary awareness coexist at all times.

It is a matter of shifting what is in focus (the foreground, the focal) and what is out of focus (the background, the subsidiary).

- Two profiles or a goblet?
- A woman or a saxophonist?
- a missing corner of a cube or a smaller cube in front of a larger one?

Destructive analysis

Destructive analysis is the alternation between the focal and subsidiary so that by shifting one's attention from what was focal to the subsidiary, the subsidiary (inexplicit) becomes focal (explicit) and the focal becomes subsidiary.



Implications for technology

Embodiment and Commitment

“Polanyi's utilization of the Gestalt dynamics of figure/ground leads to the crucially important implication that, as background, those existential, embodied commitments that make up this background are simultaneously occluded and overlooked” (Peet, 2002, p. 78).

□ A way in which one could evaluate technology (and to expose what commitments are being made when a particular technology is used) is to use a *dialectical process* or what Polanyi calls “*destructive analysis*.” This would be a reflection on the integration of technologies into focal awareness.

□ In applying Polanyi's theory of tacit knowing to technology, *any technology is shown to be assimilated into one's subsidiary awareness*. It is no longer perceived as external, rather when we use a technology there is an extension of our body. In the case of tools, which are technologies, there is extension via indwelling

□ Technologies function as extensions of our bodies and so are deemed not mere objects because of the purpose with which they are endowed and our resultant reliance on them in attaining that purpose. They are assigned a meaning in respect to something that has our focal attention. “*This reliance is a personal commitment which is involved in all acts of intelligence by which we integrate some things subsidiarily to the centre of our focal attention*” (Polanyi, 1962, p.61).

□ Hence, whenever a technology is used, they are incorporated into one's body and one has made an acritical act of commitment, or faith. “The corollary to this existential committing, which Polanyi describes variously as ‘pouring ourselves’ into things, ‘assimilating’ them, ‘dwelling in’ them, and so forth, is emotional and moral: there is a risking of one's self for what one has committed oneself to cannot be determined prior to the commitment” (Peet, 2002, p. 77).

□ *Unfortunately*, Polanyi's theory cannot be applied to the development of not-yet-existent technologies; you can't make certain predictions in advance. *His theory does not permit an a priori analysis of appropriate technologies* rather it permits reflection on technologies that have already been developed. Ideally, with the aid of destructive analysis, you would want to make everything explicit about a particular technology but this is impossible because as Polanyi points out, a “wholly explicit knowledge is unthinkable” (1962, p.144).

□ However, through such analysis, insight would still be attained especially in regards to the moral and ethical implications of using a particular technology and one's awareness would be increased. In shifting your focal awareness from one entity to another, this is mimicking what technology does already because in using technologies, it always brings something into the foreground (often this is what the technology is marketed for) while simultaneously pushing something else into the background. The implication being that, in using a technology the background changes and there might be something important that is lost.

“While tacit knowledge can be possessed by itself, explicit knowledge must rely on being tacitly understood and applied. Hence, all knowledge is *either tacit or rooted in tacit knowledge*. A *wholly explicit knowledge is unthinkable*” (Polanyi, 1969, p.144).

References

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*For a list of URL's corresponding to the images used in the poster, please contact the first author.

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