

Metaphysics: being, substance-property, necessity, identity, causality, space, time.

Epistemology: knowledge - objectively correct belief held for objectively right kind of reason.

- (a) Every interesting equation is a lie.
- (b) Reappraisal of property, structure, (stuff)
- (c) Using (b) to reconfiguring modal logic
- (d) Notion of complex structures
- (e) Part-whole relations, space.
- (f) Diagrammatics to question “transparency” of logic
- (g) N-cats and models of mind
- (h) The sphere spectrum is/are the true integers.

"I will understand 'foundations' neither as the para-philosophical preoccupation with the nature, accessibility, and reliability of mathematical truth, nor as a set of normative prescriptions like those advocated by finitists or formalists. I will use this word in a loose sense as a general term for the historically variable conglomerate of rules and principles used to organize the already existing and always being created anew body of mathematical knowledge of the relevant epoch. At times, it becomes codified in the form of an authoritative mathematical text as exemplified by Euclid's Elements. In another epoch, it is better expressed by the nervous self-questioning about the meaning of infinitesimals or the precise relationship between real numbers and points of the Euclidean line, or else, the nature of algorithms. In all cases, foundations in this wide sense is something which is relevant to a working mathematician, which refers to some basic principles of his/her trade, but which does not constitute the essence of his/her work." (Manin, *Georg Cantor and His Heritage*: 6, AG/0209244)

Mathematics is not the rigid and rigidity-producing schema as which the layman views it; rather, we find ourselves in it at exactly that crossing point of constraint and freedom which is the very essence of man's nature.

“External experience is indispensable both to mathematics and art, *as their theme*, but to a person prepared to inhabit their framework, mathematics or art convey their own internal thought, and it is for the sake of this internal experience that his mind accepts their framework as its dwelling place.” (Personal Knowledge: 283)

"We should declare ... candidly that we dwell on mathematics and affirm its statements for the sake of its intellectual beauty, which betokens the reality of its conceptions and the truth of its assertions. For if this passion were extinct, we would cease to understand mathematics; its conceptions would dissolve and its proofs carry no conviction. Mathematics would become pointless and would lose itself in a welter of insignificant tautologies and of Heath Robinson operations, from which it could no longer be distinguished."

An (ahistorical, asocial, impersonal) objectivism which can only deal with the values of truth, in the sense of logical correctness, and direct physical instantiation cannot capture fully what is at stake in mathematics.

Our attempts to formulate what we hold important must, like descriptions, strive to be faithful to something. But what they strive to be faithful to is not an independent object with a fixed degree and manner of evidence, but rather a largely inarticulate sense of what is of decisive importance. An articulation of this 'object' tends to make it something different from what it was before.  
(Philosophical Papers I: 38)

What kind of a community which evidently relies on ultimately unformalisable assessment by people who understand only a fraction of the scope and details of its workings, can cherish its tradition, and yet at the same time encourage the kind of work Kuhn labelled revolutionary?

Poincare on laws,  
"...the mathematical facts worthy of being studied are those which, by their analogy with other facts, are capable of leading us to the knowledge of a mathematical law, just as experimental facts lead us to the knowledge of a physical law. They are those which reveal to us unsuspected kinship between other facts, long known, but wrongly believed to be strangers to one another."

Behind every analogy there lies a functor.  
Behind every analogy between analogies there lies a natural transformation.

...

"pure science was a morbid symptom of a class society; under socialism the conception of science pursued for its own sake would disappear, for the interests of scientists would spontaneously turn to the problems of the current five year plan" (The Tacit Dimension, 3)

"The transmission of mathematics has today been rendered more precarious than ever by the fact that no single mathematician can fully understand any longer more than a tiny fraction of mathematics. Modern mathematics can be kept alive only by a large number of mathematicians cultivating different parts of the same system of values: a community which can be kept coherent only by the passionate vigilance of universities, journals and meetings, fostering these values and imposing the same respect for them on all mathematicians. Such a far-flung structure is highly vulnerable and, once broken, impossible to restore. Its ruins would bury modern mathematics in an oblivion more complete and lasting than that which enveloped Greek mathematics twenty-two centuries ago." (PK 192-3)

"The freedom of the subjective person to do as he pleases is overruled by the freedom of the responsible person to act as he must." (PK, 309).

"...the original mind takes a decision on grounds which are insufficient to minds lacking similar powers of creative judgment. The active scientific investigator stakes bit by bit his whole professional life on a series of such decisions and this day-to-day gamble represents his most responsible activity." (PK: 309-10).

