Logic and Critical Thinking: Living Philosophy in Contemporary Times

HOW DO WE REASON?

IS REASON REASONABLE?

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Much of traditional philosophy keeps spinning around the dynamic of reason and passion, as has been discussed in the previous sessions. We need to step back and have a look at what we are doing in philosophy. Is it a form of logic or critical thinking?

THE ESSAY

(The works listed are not a complete coverage of the contemporary field but to provide the best known and most significant in contemporary discussions. Apologies if anything important has been missed)

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Traditional philosophy is usually viewed as a territory on thinking, so, if there is a core to western philosophy it is the sub-fields of epistemology and logic. We had a look at epistemology in December 2019. It is worth reconsidering the summary of that survey:

- Psychological Naturalism (Quine)
- Defeat or Defence of the JTB account (Gettier);
- A historicist conversation (Rorty);
- Reinterpretation of the Cartesian model (Burge) or Neo-Kantian
- Reinterpretation of Foundationalism (Lewis)
- Reinterpretation of Coherentism (Davidson, Bonjour)
- Reliablism (Goldman)
- Internal Reasoning (Williams)
- External Reasoning (Sosa)
- Juggling Object and Subject (Nagel)

- Returning to the Knowing Subject (Johansson, contra Popper)
- Traditional Christian belief as knowledge (Plantinga)

The wide and complex array of contemporary epistemology could be reduced to the question on the sufficiency of reason. The contemporary view is that reason is not as sufficient as once assumed, but the debates shift frequently between a high and low view of reasoning. Logic is the mechanics of reasoning, and there are two forms – formal and informal. Formal logic lies in the purity of the structure in reasoning. It is usually highly mathematical, and mostly symbolic. Informal logic is what has become called 'critical thinking'. Too often the language of the logicians is beyond the grasp of even the rest of the philosophers. Critical thinking is an applied logic for general use outside of the community of logicians; provided by those logician gods for us mere mortals.

Socrates is a man,

All men are mortal,

Therefore Socrates is mortal.

Critical thinking focuses on where reasoning fails in its logical structure. As a general application, the logical failure is known as a fallacy. It is a misstep in the basic structure of reasoning, what we call the 'Syllogism', as demonstrated above as the good reasoning without the fallacy, on Socrates' mortality. Logicians have continued to debate the nature of fallacies, and even on whether fallacies are necessarily an incorrect 'move' in reasoning, however, as applied philosophy, a set of known fallacies are taken as the guidebook on what to avoid; a proof-sheet, as it were. There are two types of fallacies which have emerged in contemporary times. A formal fallacy, deductive fallacy, logical fallacy or *non sequitur* (Latin for "it does not follow") is a flaw in the structure of a deductive argument which renders the argument invalid. The flaw can neatly be expressed in standard system of logic. In contrast to a formal fallacy, an informal fallacy originates in a reasoning error other than a flaw in the logical form of the argument. Fallacies of this type are the mistakes in reasoning that arise from the mishandling of the content of the propositions constituting the argument. The list and classification of fallacies are extensive and a fuller description can be found here.

Generally, in the humanities and social science, there is a wide support for the contemporary Critical Thinking movement. The tool of informal logic does lead to the identification of prejudice, bias, propaganda, self-deception, distortion, misinformation, and so forth, which cause confusion. It is, though, not the only consideration for reasoning. Alongside critical thinking, are capacities for independent judgement (the question of agency in the trust or doubt for belief; a wider scoping in philosophical skepticism), and ethical reasoning (the question of the good or value; a wider scoping in the semantics). Hence, there are also philosophical forces that come against critical thinking. It largely stems from Martin Heidegger (1889 –1976) and his phenomenological criticism of logocentrism. The concept goes back to Ludwig Klages (1872 –1956) who coined the term and anticipated Heidegger's existential phenomenology.

The criticism of logocentrism – it has never been used other than as an attack term – is the rejection of the view that words and language as a fundamental expression of an external reality. The phenomenologists took offence at the view that the *logos* ("ground", "plea", "opinion", "expectation", "word", "speech", "account", "reason", "proportion", and "discourse") be placed epistemologically superior, and also offence towards the claim that there is an original, irreducible object which the logos represent. The offence to the phenomenologists' sensibilities goes to their view that pure experience is epistemologically superior. The Critical Thinker merely points out that such a claim on experience is logically flawed. The phenomenologists merely retreat to an argument of criticizing 'logocentrism'. Heidegger's rejection of western philosophy from Aristotle and Plato onwards is at its basis. Heidegger's argument is that that the tradition overlooked the insufficiency of reason and needed to embrace the irrationality of the Pre-Socratic philosophers. Politically in the Heideggerian thinking is an anti-progressivist view, a rejection of modernity, and a retreat to the paganism and the Nazi's Homeric celebration of violent death.

This critique does not let Critical Thinkers off the hook for similar celebration of violent death in a self-interested and uncritical rationalism. The problem of insufficiency of reason exists, but more confusion has been added in the debate between Ferdinand de Saussure's (1857–1913) 'logocentric' and structuralist semiotics and Jacques Derrida's (1930–2004) grammarian anti-logic, 'apparent inner', phonological system of language, where the chain of signification becomes the trace of presence-absence. At this point, the Critical Thinker concludes that the concept of representation has been stated in a host of confusing fallacies, as if (falsely):

1. Experience (phonology) can be cut from logic, whether in symbolic signifiers or other language forms, and still existentially be known;
2. Internal reasoning (experience; the 'apparent inner') can be cut from logic, as if description is sufficient as a form of reasoning, and explanation is never required;
3. Representation is morally reprehensible as it has limits of the logic;
4. There are no presence any more, only something called 'trace';
5. Absence is morally and epistemologically superior.

It is not surprising that, in the year 2020, the radical or Derridain form of postmodernity has collapsed in its apparent and practical illogicalness. The followers of Derrida continue their beliefs as a form of religiosity; a leap of faith, and not logic.

Although Derrida may be right in stating his objections in relation to the insufficiency of reason and logic, he lost the plot, compared in mapping a host of other contemporary philosophers who addressed the problem in different directions. There is still a strong school of contemporary formal logic in the Anglo-American world. Irrespective of the French deconstructionist attack, philosophers such as Michael Dummett (1925–2011) and Saul Kripke (1940–) built mathematical logic out into a larger analytic understanding of language and reality. Dummett, Wykeham Professor of Logic at the University of Oxford, was an interpreter of Gottlob Frege (1848–1925). Dummett saw Frege's logic as the 'Linguistic Turn', the shift into linguistic philosophy, where there is a primacy on the relations between language, language users, and the world. Frege had invoked his 'context principle', which held that only in the context of a proposition do words have meaning. The principle is a form of Semantic Holism, which holds that a certain part of language (be it a term or a complete sentence) can only be understood through its relations to a (previously understood) larger segment of language. Dummett argued that the fundamental disagreement between realist and anti-realist was over the nature of truth, and introduced semantic anti-realism, the view that truth cannot serve as the central notion in the theory of meaning and must be replaced by verifiability.

Semantic anti-realism is sometimes related to semantic inferentialism, the theory of meaning that identifies the meaning of an expression with its relationship to other expressions (typically its inferential relations with other expressions). Georg Wilhelm Friedrich Hegel (1770–1831) was an early proponent of inferentialism, and it originated as its current form from the later work of Ludwig Wittgenstein (1889–1951). Its development was also influenced by the account of inference given by Wilfrid Sellars (1912–1989), and the wider work of Sellars led to the school of Critical Realism, which holds that some of our

sense-data (for example, those of primary qualities) can and do accurately represent external objects, properties, and events, while other of our sense-data (for example, those of secondary qualities and perceptual illusions) do not accurately represent any external objects, properties, and events. In contrast to semantic anti-realism, there is, for this version of realism, a view that mind-dependent aspect of the world can reach the understanding for the mind-independent world. Robert Brandom (1950–) is a contemporary proponents of semantic inferentialism. Brandom's work explained the meaning of linguistic items in terms of their socially norm-governed use ('meaning as use', in the Wittgensteinian phrase), and as such was a non-representationalist account of the intentionality of thought and the rationality of action. Brandom had done the most to bridge expression and practice.

Like Dummett, Saul Kripke extended out mathematic logic (model logic, intuitionistic logic) into the areas of language and reality. In *Naming and Necessity* (1980) a major step had been taken for debates in language and semantics. Frege, Bertrand Russell, Wittgenstein and John Searle had developed descriptivist theories, where proper names either are synonymous with descriptions, or have their reference determined by virtue of the name's being associated with a description or cluster of descriptions that an object uniquely satisfies. Kripke believed that descriptivism was implausible in how names get their references determined. An odd example given was that Aristotle could have died at age two and so not satisfied any of the descriptions we associate with his name, but it would seem wrong to deny that he was still Aristotle. Instead, Kripke argued that a causal theory of reference would meet the requirement. In this theory a name refers to an object by virtue of a causal connection with the object as mediated through communities of speakers. Kripke achieves this theory in the difference between rigid designators (a proper name refers to the named object in every possible world in which the object exists) and contingent events (descriptions designate different objects in different possible worlds). So, as another odd example, 'Richard Nixon' (a proper name) refers to the same person in every possible world in which Nixon exists, while 'the person who won the United States presidential election of 1968' (contingent event) could refer to Nixon, Hubert Humphrey, or others in different possible worlds.

Crispin Wright (1942–) took a different pathway, by going back to Frege, and developing Neo-Fregeanism (sometimes called neo-logicism). Crispin argued that Frege's logicist project could be revived by removing the axiom schema of unrestricted comprehension (sometimes referred to as Basic Law V) from the formal system. He made use of Hume's principle or HP (the terms were coined by George Boolos 1940–1996) which says that the number of Fs is equal to the number of Gs if and only if there is a one-to-one correspondence (a bijection) between the Fs and the Gs. HP can be stated formally in systems of second-order logic. This is a technical language beyond most of us, but in ordinary language it is merely a revival of

Frege's logicism, which very simply means that mathematics is an extension of logic, some or all of mathematics is reducible to logic, or some or all of mathematics may be modelled in logic. It was championed by Bertrand Russell (1872–1970) and Alfred North Whitehead (1861–1947), particularly as the *Principia Mathematica* (1910). This is no doubt what Klages and Heidegger were thinking in their attack term of 'logocentrism'.

Wright extended his thinking into epistemology; a variant of Ludwig Wittgenstein's hinge epistemology, introduced in Wittgenstein's *On Certainty* (posthumous, 1969). Accordingly, Wright defends the view that there are assumptions or presuppositions of any enquiry (hinge propositions) that cannot themselves be rationally doubted, challenged, established or defended. Hinge propositions can actually be rationally held because there exists a type of non-evidential, a priori warrant – which Wright calls 'epistemic entitlement' – for accepting them as true. Epistemology has been greatly defended from postmodernist critics by Susan Haack (1945–). In contrast to Wright, Haack takes the stance of Evidentialism, a thesis that one is justified to believe something if and only if that person has evidence which supports his or her belief. Evidentialism is largely the groundwork for the Critical Thinking movement, alongside inferentialism. Added to the idea of the inference is the practice of judgement. In the case of Haack, there is a long tradition of American pragmatism on which she draws upon for her arguments, particularly from Charles Sanders Peirce's (1839–1914) semiotics. As a Professor of Jurisprudence (a dual role), Oliver Wendell Holmes, Jr. (1841-1935) also has a particular role to play for Haack.

Whereas most of the philosophers mentioned in this essay write in a highly technical language of formal logic, Haack is renowned for her ordinary language works for the meta-philosophical understanding of Critical Thinking. Haack's education at Oxford demonstrated groundwork for such clarity and accuracy across a very wide spectrum of philosophical belief. Haack studied logic with Dummett, Plato with Gilbert Ryle (1900–1976, one of the clearest representative of British ordinary language philosophy), and ethics with Philippa Foot (1920-2010, an Aristotelian ethicist). David Pears (1921–2009, a leading Wittgensteinian) supervised her B.Phil. dissertation on ambiguity. At Cambridge, she wrote her Ph.D. under the supervision of Timothy Smiley (1930–, a professor of mathematics and logic), which was published as the book, *Deviant Logic* (1974). Haack's major contribution was foundherentism, a theory of justification that combines foundationalism and coherentism while taking out their principle epistemic weakness (arbitrariness and circularity respectively). In Bertrand Russell's epistemology, empirical foundations and coherence are components of justification. For Haack, the analogy of the crossword puzzle serves as a way of understanding how there can be mutual support among beliefs (as there is mutual support among crossword entries) without vicious circularity.

In drawing towards a conclusion, there are two Australian philosophers who also created two different directions, one for formal logic and the other for informal logic. Graham Priest (1948–) is well-known for his work in paraconsistent logic and other non-classical logics. Paraconsistent logic is a logical system that attempts to deal with contradictions in a discriminating way. Non-classical logics are formal systems that differ in a significant way from standard logical systems (e.g. propositional and predicate logic), often through the use of extensions, deviations, and variations. Specifically, Priest has made in-depth analyses of the logical paradoxes. He significantly made a defence of dialetheism, the view that there are statements which are both true and false; or more precisely, that there can be a true statement whose negation is also true. Such statements are called 'true contradictions', dialetheia, or nondualisms. As informal logic, one would talk about dilemmas.

Tim van Gelder is a philosopher coming to his work in informal reasoning and critical thinking from the grounding in systems and cognitive science theory. He has been one of the foremost proponents of the dynamical approach, which is for cognitive science an area of mathematics used to describe the behaviour, usually by employing differential equations or difference equations. In his most well-known paper, 'What Might Cognition Be If Not Computation' (1995) van Gelder used the Watt Governor as a model to contrast with the Turing Machine. From the mid-1990s van Gelder used this knowledge to develop applied argument mapping for Critical Thinking courses at the University of Melbourne. With Andy Bulka, van Gelder developed the argument mapping software packages Reason!Able (2000) and Rationale (2006). The Critical Thinking movement had become a 'digital reality'. A key principle in this work is that argument structure can be visualised and represented.

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