Apriorism and Scientific Cooperation in Hegel
Hegel Congress: The Self-understanding of Philosophy and Its Relation to the (Other) Sciences
Stuttgart, Friday, June 9, 2023
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1. **Introduction**

- Hegel's commentators often attribute to his system some form of apriorism, the view that the system's content or its justification (or both) are independent of experience and empirical science. But I argue that apriorism conflicts with Hegel's commitment to *cooperation* between the philosophical and empirical sciences, as outlined in §§1–18 of the 1830 *Encyclopedia*.
- Two theses:
  i. *Scientific Cooperation*: philosophical and empirical sciences do and must cooperate with one another in producing genuine knowledge. Knowledge requires not only that philosophy take up and reconstruct the results of the empirical sciences but, equally, that empirical science adjust its research programs in light of philosophy's concept modification. The relationship between the empirical and philosophical sciences is a two-way street.
  ii. *Incompatibility*: scientific cooperation is incompatible with apriorism. This incompatibility is robust, persisting across a range of ways of conceiving of apriority. Hegel holding scientific cooperation is therefore strong indirect evidence that he rejects apriorism.
- Two upshots:
  i. *Naturalism*: advances in empirical science demand philosophy revise its concepts (empirical revisability).
  ii. *Philosophical critique of finite cognition*: exposition (*Darstellung*), not debunking.
- Focus: logic

2. **Apriorism**

- Most commentators take Hegel's logic to be a priori.
  A. Pippin 2019, 4--5: "a priori knowledge of the world […] is possible—knowledge about that world, but achieved independently of empirical experience"; "that the *Logic* is a work of a priori philosophy is hardly controversial."
  B. Houlgate 2006, 430, 90: "I agree with Pippin [1989] that Hegel does, indeed, argue that certain a priori categories structure our thought and experience"; "[The *Logic*] provides a logical 'reconstruction' of our ordinary categories […] by deriving [their] true structure […] immanently and purely a priori from the empty thought of pure, indeterminate being." (See also Pinkard 1979, 417–18; Winfield 2012: 210–11.)
- For some commentators (but not all), apriorism entails a negative evaluation of empirical science.
  C. Bowman 2013, 136: Because of his apriorism, Hegel holds a "dim view of empirical science" (cf. 156–7).
  D. Longuenesse 2007, 37–8: "Hegel's goal is not modestly to follow the development of particular sciences. […] Hegel proposes so little to ground scientific discourses that on the contrary, his purpose is to dissolve their claim to objective validity, and thus to open the space for speculative philosophy."
  E. Stone 2005, 30: Because of his apriorism, "Hegel [elaborates] a *sui generis* theory of nature and thereby [articulates] a forceful critique of science with positive ecological implications." (However, Stone denies antiscientism on 27, 89.)
- But these views are wrong. This can be demonstrated in two ways:
- *Direct route*: Hegel rejects the apriori/aposteriori distinction, almost never co-opting it to describe his own position (unlike most other philosophical distinctions).
  - Passages indicating Hegel rejects apriorism:
  F. SL 42/GW 21:48–9: The objective logic thus takes the place rather of the former *metaphysics* which was supposed to be the scientific edifice of the world as constructed by *thoughts* alone. […] But objective logic comprises within itself also the rest of metaphysics, the metaphysics which sought to comprehend with the pure forms of thought such particular substrata, originally drawn from the imagination, as the soul, the world, and God, and in this type of consideration the *determinations of thought* constituted the *essential factor*. Logic, however, considers these forms free of those substrata, which are the subjects *of figurative representation*, considers their nature and value in and for themselves. That metaphysics neglected to do this, and it therefore incurred the just reproach that it employed the pure forms of thought *without critique*, without previously

investigating whether and how they could be the determinations of the thing-in-itself, to use Kant's expression – or more precisely, of the rational. – The objective logic is therefore the true critique of such determinations – a critique that considers them, not according to the abstract form of the *a priori* against the *a posteriori* [abstracten Form der Apriorität gegen das Aposteriorische], but in themselves according to their particular content.

G. SL 173/GW 21:199: Just as vacuous as the expression "to synthesize," is to say that this synthesizing takes place *a priori*. Counting is of course not a determination of the senses, which, according to Kant's definition of intuition, is all that is left over for the *a posteriori*, and it certainly is an affair conducted on the basis of abstract intuition, that is, one which is determined by the category of the one and where abstraction is made from all other sense determinations and no less so also from concepts. The *a priori* is something altogether all too vague; feeling, determined as drive, sense, and so on, has in it the moment of *apriority*, just as much as space and time, in the concrete shapes of temporal and spatial existence, is determined *a posteriori*.

- *Objection*: Hegel doesn't abandon apriorism as such, but merely Kant's formulation of it; Hegel develops a *concrete* apriori/aposteriori distinction, as opposed to Kant's merely abstract one. Hegel's logic is thus a priori, but in a different, more concrete sense than in Kant.
- Passages (seemingly) indicating Hegel accepts apriorism

H. *Eternity*. SL 29/GW 21:33–4: Pure science thus presupposes the liberation from the opposition of consciousness. It contains *thought in so far as this thought is equally the fact [die Sache] as it is in itself*; or *the fact in itself* in so far as this is *equally pure thought*. […] This objective thinking is thus the *content* of pure science. Consequently, far from being formal, far from lacking the matter required for an actual and true cognition, it is its content which alone has absolute truth, or, if one still wanted to make use of the word "matter," which alone is the veritable matter – a matter for which the form is nothing external, because this matter is rather pure thought and hence the absolute form itself. Accordingly, logic is to be understood as the system of pure reason, as the realm of pure thought. *This realm is truth unveiled, truth as it is in and for itself*. It can therefore be said that this content is *the exposition of God as he is in his eternal essence before the creation of nature and of a finite spirit* (cf. SL 463/GW 11:367; SL 674/GW 12:177; EL §235/GW 20:228).

I. *Kant affiliation*. SL 40/GW 21:46–7: Recently *Kant* has opposed to what has usually been called logic another, namely a *transcendental logic*. What has been called *objective logic* here would correspond in part to what for him is *transcendental logic*. Kant distinguishes it from what he calls general logic because (a) it deals with concepts that refer *a priori* to *objects*, and hence does not abstract from all the *content* of objective cognition, or in that it contains the rules of the pure thinking of an *object*; and because (b) it thereby goes to the source of our cognition so far as this cognition cannot be attributed to the intended objects (cf. SL 524/GW 12:27).

J. *Direct affirmation*. EL §12A/GW 20:53: However, the *immediacy* that belongs properly to thinking and that is reflected into itself and thus mediated in itself (the *a priori* [das Apriorische]) is *universality*, its being-at-home-with-itself in general. In this universality, it finds satisfaction within itself, and in this respect the indifference against *particularization* [Gleichgültigkeit gegen die *Besonderung*], and hence against its development, is innate (cf. EL §40/GW 20:78.

K. *Making explicit*. EL §88/GW 20:125: "[I]n general the whole progression in philosophizing […] is nothing other than merely the *positing* of what is already contained in a concept."

- *Indirect route*: Work backwards from scientific cooperation to rejection of apriorism (via incompatibility).
- Stances towards empirical science: insulation; reconstruction; cooperation. See Figure 1: Apriorism & Relations to the "Other" Sciences
- Construed aprioristically, philosophy must either adopt an *insulationist* standpoint by separating itself from empirical science (about which it can now proffer dismissive critique); or it must resign itself to a *reconstructivist* position from which it merely rationally organizes the findings of empirical science, never adding to these findings new categories of its own making. But, according to Hegel, philosophy both "uses" and enlarges the set of categories articulated by the empirical sciences. Moreover, missing in both these

standpoints is the possibility of real collaboration between the philosophical and empirical sciences, one in which the philosopher and the scientist would be required in principle to concern themselves with each other's work.

3. **Scientific Cooperation**

- Point of departure: *conceptual transformation*.

L. EL §9A/GW 20:49: To that extent, the relationship of the speculative to the other sciences is merely this, namely that the former does not simply set aside the empirical content of the latter, but instead recognizes [anerkennt] and uses it; that it likewise recognizes and utilizes as its own content the universal produced by these sciences, such as their laws, genera, etc.; and furthermore that it introduces into those categories others as well and validates them. In this respect, the difference between them concerns solely this modification [Veränderung] of the categories. Speculative logic contains the former logic and metaphysics, preserves the same thought-forms [Gedankenformen], the same laws and objects, but at the same time in doing so it develops them further and transforms them with the help of additional categories.

- Two relevant sets of texts
  - i. *Encyclopedia's* Introduction (§§1–18) – pertains univocally to all philosophical sciences
  - ii. *Encyclopedia Logic's Vorbegriff* (§§19–83), esp. "Second Position of Thought towards Objectivity" (§§37–60)
- Hegel's "philosophy of science" (§§1–18). See Figure 2.
  - i. Denken: "it is through thinking [Denken] that human beings distinguish themselves from the *animals*"; "everything human is a result of and only as a result of thinking" (§2).
  - ii. Forms: Representations, thoughts, and concepts are forms of the determinate content that fill consciousness, i.e., the particular forms of thinking (§3). "In any one of these forms, or as a mixture of several of them, the content is the *object* of consciousness" (ibid).
  - iii. Moments: Not mental substrata; "*in itself* there is only *one* thinking" (§2); content "remains *one and the same*" across forms (§3).
  - iv. Transformation: "only by passing through representation and by turning towards it, does thinking spirit progress to knowing by way of thinking and to comprehending" (§1); "it can be said quite generally that philosophy replaces representations with *thoughts* and *categories*, but more specifically with *concepts*" (§3A).
  - v. Nachdenken: "the true content of our consciousness is preserved in its translation to the form of thought [Gedankens] and the concept, and indeed only then placed in its proper light. […] *Nachdenken* has at least this effect, namely, that of transforming the feelings, representations, etc. into thoughts" (§5); "[Philosophy's] *Nachdenken* is both the *same* as and *different* from the former *Nachdenken* [of empirical science] and, as such, it possesses in addition to the shared ones *its own peculiar forms*, of which the *concept* is the general form" (§9).
- Concepts make two improvements over thoughts (§§7–10)
  - i. Infinite concepts (because infinite, *not* because supersensible):

M. §8/GW 20:48: As satisfactory as this [empirical] knowledge may initially be in its sphere, there is, *in the first place*, yet another domain of *objects* that are not contained therein, namely freedom, spirit, and God. The reason why they cannot be found in that sphere is not that they are supposedly not a part of experience; they are not experienced by way of the senses, it is true, but whatever is present in consciousness is being experienced – this is even a tautological sentence. Rather, they are not found in that sphere, because in terms of their *content* these objects immediately present themselves as infinite.

  - ii. Form of necessity (§9).
- Scientific cooperation (negatively approached)
  - Nowhere in EL does Hegel concretely demonstrate the process of scientific cooperation in any detail.

N. EL §60A/GW 20:98: This *further remark* may be added about the result concerning cognition, namely that the Kantian philosophy could not have had an influence [Einfluß] on the treatment [Behandlung] of the sciences. *It leaves the categories and the method of ordinary cognition [gewöhnlichen Erkennens] completely unchallenged*. In scientific writings of the same, when they now and then start with sentences of the Kantian philosophy, the treatise shows in the sequel that those sentences

were merely superfluous embellishment, and that the same empirical contents would have appeared, if those several initial pages had been dropped. (n)

O. Ibid.: (n) Even in the *Handbook of Metres* [1799] by [Gottfried] Hermann the beginning is made with paragraphs of the Kantian philosophy. Indeed, in §8 it is concluded that the law of rhythm must be (1) *objective*, (2) *formal*, (3) a law *determined* a priori. The reader ought to compare with these requirements and the subsequent principles of causality and reciprocity the treatment of the metres themselves, on which those formal principles have no influence [Einfluß] at all.

- Philosophy should influence the *research programs* of the empirical sciences (i.e., their *method* and *content*). It does so by providing them justification, substantial non-formal principles, and clarification regarding the meaning of their categories, thereby preventing their misuse and resulting confusion. The relationship between the philosophical and empirical sciences is neither exclusively top-down (debunking) nor bottom-up (reconstructive), but bilateral (cooperative).
- Looping effect: Philosophy's conceptual transformation "uses" results from empirical science, which in turn "influence" the research programs of the empirical sciences, leading to new results; this in turn requires further conceptual transformation by philosophy …
- Empirical revisability: Since the concepts to be modified by philosophy arise partially from empirical science (and so, from abstraction from experience), philosophy's concepts must be in part empirically revisable. Philosophy contributes to the necessity of its own revision. This contradicts apriorism.
    - Reconstructive views overlook empirical revisability because they have an overly *static* conception of empirical science; they fail to see its *dynamism*, in part spurred by philosophy
- Univocity: These consequence of Hegel's philosophy of science hold univocally for logic just as much as for nature and spirit.

4. **The Infinitesimal**

- Text: three remarks on infinitesimal (SL 204-70/GW 21:236-309); my interest is *methodological*, not substantive.
- Debates over infinitesimal are part of empirical science because they concern the proof of physical laws (SL 234/GW 21:272–73)

P. SL 204/GW 21:236–37: The *mathematical infinite* is of interest because of the expansion and the great results which its introduction into mathematics has produced in it, but also because of the oddity that this science has to date still been unable to justify [rechtfertigen] its use of this concept ("concept" being taken here in a strict sense). Ultimately, the justifications [Richtigkeit] are made to rest on the *correctness* of the *results* obtained with the help of this infinite *as demonstrated on other grounds*, not on the clarity of the object and of the operation by which the results are obtained; indeed, the operation itself is even admitted as incorrect. […] As long as mathematics does not know the nature of its instrument by failing to master the metaphysics and critique of the infinite, it cannot determine the scope of its application and cannot secure itself against the misuse of it.

Q. SL 260/GW 21:299: We have shown how, with Lagrange, the separation of the so-called application from the procedure of the general part which takes its start from the series serves precisely to bring to light the *proper subject-matter* [Sache] of differential calculus. However, it is strange that the author, despite entertaining the interesting view that it is precisely the so-called *applications* that constitute the *object* of differential calculus *proper*, would then himself deviate into the formal metaphysics of *continuous magnitudes*, *becoming*, *flow*, etc., and would want to add new ballast to old. These determinations are *formal*, in the sense that they are only universal categories which fail to give precisely *that which is specific to the Sache*. But this is what was to be recognized in, and be abstracted from, the concrete propositions, the applications.

R. SL 269/GW 21:308–9: It has been the aim of these remarks to bring attention to the *affirmative* determinations that remain in the background, so to speak, in the various uses that are made of the infinitesimal in mathematics, and to extract them from the nebulosity in which they are shrouded when that category is held merely negatively. [...] It is this [negative] determination that occasions the difficulty, a difficulty which can be resolved by an insight into its peculiarity and the simple nature of the *Sache*, but which, when the attempt is made to eliminate it by the aid of the infinite, only degenerates unresolved into confusion.

Figure 1: Apriorism & its Relation to the "Other" Sciences

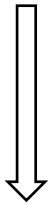
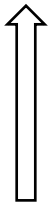
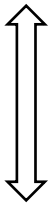
	Scientific <u>insulation</u> (Stone's "strong apriorism")	**Scientific <u>reconstruction</u>** (Stone's "weak apriorism")	**Scientific <u>cooperation</u>** (rejection of apriorism)
Proponents	Stone 2005; Bowman 2013; Longuenesse 2007; Houlgate 2006/2022; McNulty 2023	Hartmann 1972; Pippin 2018; Brandom 2005; Pinkard 1979; Sala & Kabeshkin 2022	Rand 2017; Renault 2019; Pinkard 2012 (?); Kreines 2015 (?)
Philosophical critique (i.e., philosophy's relation finite cognition)	corrective (or debunking, denunciatory)	vindicatory	expository
Revisability of logic	irrevisable	self-revising (Pippin, Hartmann) or irrevisable (Brandom)	*empirically revisable*: revisable due to advances in empirical science
Philosophical science	none or unilaterally downward philosophical science empirical science 	unilaterally upward philosophical science empirical science 	bilateral (two-way street) philosophical science empirical science 

Figure 2: Hegel's Philosophy of Science (1830 *Enzyklopädie*: §§1–18)

	Thinking-form ("Weise des Denkens"; "Denken als Form" [§2])	**Cognition-form** ("Erkenntnißweise" [§4])	**Examples**	**Relation to experience**
Nachdenken (thinking over, reflexion [§ 2A])	Concepts (*Begriffe*), true thought-determinations	philosophical science	freedom, spirit, God (§8); causality	*developmental*: "development [of empirical content] out of itself" (§12), "spirit coming to itself" (§11)
	Thoughts (*Gedanken*), the universal (*das Allgemeine*); finite thought-determinations (§25; §24A)	empirical science	genera, species, laws, forces, matter, faculties, activities, theories, universal propositions, universal representations, thoughts of what there is (§7; §9; §38; §80Z; VBDG 47/GW 18:237)	*analytical*: analysis, separation, abstraction, splitting up (*zerlegen*) of immediate experience (§38Z)
	Representations (*Vorstellungen*)	sensation	perceptions (*Wahrnehmungen*), feelings (*Gefühle*), intuitions (*Anschauungen*), images (*Bilder*) (§2): color, hardness, etc.	*immediate:* "immediate consciousness of this content" (§6)

Nachdenken (§2A): "*reflective* thinking which has *thoughts* as such for its content and brings them as such to consciousness."

Empirical science (§7A): "We designate those sciences that have been called *philosophies* as *empirical* sciences due to their taking their point of departure from experience. But what in essence they aim at and produce are *laws*, *general propositions*, a *theory*, i.e. the *thoughts* of what there is. Thus *Newton's* physics has been called a philosophy of nature, while *Hugo Grotius*, for instance, by cataloguing the historical interactions of peoples among themselves, and by relying on ordinary reasoning, has developed general principles, a theory that could be called a philosophy of international law."

Unity of science (§16A): "[T]he whole of philosophy constitutes truly *one* science, but it may also be viewed as a whole made up of several particular sciences" (cf. §§14–18).