

1 The Logicians of Kant's School

(Or, If Logic Has Been Complete Since Aristotle, What's Left For a Logician To Do?)

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One of the most infamous claims in Kant's *Critique of Pure Reason* concerns the completeness of formal logic:

[S]ince the time of Aristotle [formal logic] has not had to go a single step backwards, unless we count the abolition of a few dispensable subtleties or the more distinct determination of its presentation, which improvements belong more to the elegance than to the security of that science. What is further remarkable about logic is that until now it has also been unable to take a single step forward, and therefore seems to all appearance to be finished and complete.¹

(Bviii)

This infamous claim was subject to severe criticism in the early part of the 19th century from figures as diverse as Bolzano, De Morgan, Hegel, and Fries.² Of course, it is not surprising that figures such as these would be critical of Kant's claim, since their conception of the scope and content of logic differed fundamentally from his. What's more surprising is that there arose starting already in the 1790s and into the 19th century a group of logicians who self-consciously thought of themselves as orthodox Kantians and who wrote extensive and original works in formal logic. Not only did these logicians show an affinity with Kant's conception of logic, but their contemporaries and later logicians thought of them as forming a kind of school – what Friedrich Ueberweg, in his

1 Citations to Kant 1781/7 are according to the pagination in the first (“A”) and second (“B”) edition. Page references to Kant's other works are to the pagination in the Akademie [Ak] edition: Kant 1902–. References to the body of Kant 1800 (The “Jäsche Logik” or *JL*) are frequently to paragraph (§) number.

2 Cf. Heis 2012, 95–7.

history of logic in the 19th century, calls the “logic of Kant’s school.”³ Ueberweg himself, who was very critical of the school, listed as members “Jakob, Kiesewetter, Hoffbauer, Maas, Krug, etc.”

What made these logicians ‘Kantian’ is that they held to Kant’s conception of logic as formal. This distinctive conception of logic had four parts. First, formal logic was distinguished from transcendental logic. Second, formal logic was considered the science of thinking, not of cognizing. Third, it was asserted that formal logic abstracts from all relation to an object. Fourth, formal logic was held to be independent of psychology and metaphysics.

Logicians in this school included Kant’s students, such as Schultz and Kiesewetter, but also later logicians who wrote after Kant’s death, such as Krug and Esser. Here is an undoubtedly incomplete list of some of the logicians in this Kantian school, along with some of their major works.⁴

- Schultz, Johann. 1789. *Prüfung der Kantischen Critik der reinen Vernunft*. Vol. 1.
- Jakob, Ludwig Heinrich. 1791. *Grundriss der allgemeinen Logik*. 2nd ed.
- Kiesewetter, J.G.C. 1791. *Grundriss einer allgemeinen Logik nach Kantischen Grundsätzen*.
- Hoffbauer, J.C. 1792. *Analytik der Urtheile und Schlüße*.
- Maass, J.G.E. 1793. *Grundriss der Logik*.
- Kant, I. 1800. *Logik*. Ed. Jäsche.
- Krug, Wilhelm Traugott. 1806. *Denklehre oder Logik*.
- Herbart, Johann Friedrich. 1813. *Lehrbuch zur Einleitung in die Philosophie. Zweiter Abschnitt. Die Logik*.
- Esser, Wilhelm. 1823. *System der Logik*.
- Drobisch, Moritz. 1836. *Neue Darstellung der Logik*. ²1851, ³1863.
- Hamilton, William. 1860. *Lectures on Logic*. (Delivered 1837–8.)
- Mansel, Henry Longueville. 1851. *Prolegomena Logica: An Inquiry into the Psychological Character of Logical Processes*.

³ Cf. Ueberweg [1857] 1871, §29.

⁴ This list of logicians of Kant’s school is no doubt incomplete and open to debate. In putting together this list, I have more or less followed Ueberweg. In particular, among the German logicians, I list all of the logicians whom Ueberweg identifies as among “The Logic of Kant’s School.” This list admittedly omits logicians who plausibly belong, such as Mehmel and Krause. Ueberweg also lists other logicians whose works are “more or less related to this formal view-point”: Christian Twisten, Ernst Reinhold, Carl Friedrich Bachmann and Friedrich Fischer. I don’t discuss these “more or less related” works in this chapter, partly because my expertise is limited, and partly because I am trusting Ueberweg’s opinion that they depart in one way or the other from the conception of logic definitive of Kant’s school.

To Ueberweg’s list, I have added the British logicians Hamilton and Mansel, for reasons I will shortly explain.

One omission of note: I exclude Fries, since he does not hold the distinctly Kantian view that formal logic is independent of psychology (cf. Fries [1811] 1837, 4–5).

Not surprisingly, most of these logicians were German and wrote in the few decades after the publication of the first *Critique*. However, the last two logicians on the list were British, and that requires some explanation. But first some background about the history of logic in Britain in the early 19th century. In 1826, Archbishop Whatley ([1826] 1866) restored the fortunes of logic in Britain by arguing that logic is a science, not an art. As a science, logic contains a law, namely the *dictum de omni et nullo*, that explains the validity of the figures of the syllogism. And since logic is not an art, it's not meant to be a tool of discovery, nor a "medicine of the mind." Whatley used this conception of logic to defend logic against its detractors, who pointed to the alleged sterility and lack of utility of the study of logic. A few years later, William Hamilton defended Whatley's view of logic, but argued that in fact Whatley's point of view had already been expressed 50 years earlier by Kant in the *Critique of Pure Reason*. Hamilton ([1833] 1861) argued that Kant had already maintained that formal logic is a science; that the logical laws explain the validity of forms of inference; that, as a canon and not an organon, it is not a tool of discovery; and lastly, that it was not designed to cure errors in reasoning. These points about Kant's conception of formal logic were captured in Kant's distinguishing formal logic from special logic and applied logic, respectively. Hamilton, having defended Kant's conception of logic, in the following years lectured extensively on formal logic using the texts of the German Kantian logicians Krug and Esser. These lectures were formally published many decades later, after a wide circulation, in 1860 (cf. Hamilton [1860] 1874). Among Hamilton's students was Henry Mansel, who wrote *Prolegomena Logica* in 1851, defending a kind of Kantian conception of formal logic.

The very existence of a Kantian school seems surprising, since it's not clear, from our point of view, what exactly the Kantian school took itself to be doing. After all, if logic has been complete since Aristotle, what's left for a logician to do? In this chapter I want to answer this question. I'm going to identify four representative questions or issues that the logicians in this school considered and debated. In each case I'll argue that this was a question that a reasonable reader of Kant might think Kant had left unsettled, and then I'll give a representative sample of the kinds of answers that logicians in this school gave to these questions. My goal in this chapter is not to be exhaustive, but to introduce the reader to the kinds of questions, debates, and philosophy that were done by logicians in the Kantian school – a school that at least in the last century or so has been more or less absent from the historiography of logic. Since my goal in this chapter is to give the reader a sense of the questions asked by the Kantian logicians and to give the reader a sense of the kinds of answers that they gave, my goal in this chapter will not be to evaluate the answers given, either as interpretations of Kant or as philosophically

defensible positions in their own right. Though I will occasionally editorialize, my goal here is simply to present the various views and not to evaluate them. I'll identify four questions that the Kantian logicians attempted to answer.

- 1 What is the relationship between formal logic and analyticity?
- 2 What are the logical laws and how are they related?
- 3 What does it mean to say that logic is formal?
- 4 Are all concepts formed through comparison, reflection, and abstraction?

I'll address each of these questions in turn in the following four sections of this chapter.

What Is the Relationship between Formal Logic and Analyticity?

It's clear from Kant's characterizations of analytic judgments that every analytic judgment is meant to be knowable through logical laws alone. At various points he asserts that analytic judgments are "thought through identity" (A7/B10), that "their certainty rests on identity of concepts" (*JL*, §36), and that they are knowable through the principle of contradiction alone.

For, if the judgment is analytic, whether negative or affirmative, its truth can always be adequately known in accordance with the principle of contradiction. The reverse of that which as concept is contained and is thought in the knowledge of the object, is always rightly denied. But since the opposite of the concept would contradict the object, the concept itself must necessarily be affirmed of it. The principle of contradiction must therefore be recognized as being the universal and completely sufficient principle of all analytic knowledge.

(A151/B190–1)

Since the principles of identity and non-contradiction are logical laws, and are sufficient for knowing all analytic judgments, it follows of course that, on Kant's conception, all analytic judgments are derivable from logical laws alone. But is the converse true? Is it true that every judgment knowable through logical laws alone is an analytic judgment?

Kant does not say so, at least not directly. This may seem surprising. At least since Frege, analytic judgments have often been characterized as those that are provable from logical laws plus definitions. From this conception of analyticity, it of course follows that all logical propositions are themselves analytic.

The problem becomes, in fact, that of finding the proof of the proposition, and of following it up right back to the primitive truths. If, in carrying out this process, we come only on general logical laws and on definitions, then the truth is an analytic one.

(Frege [1884] 1950, §3)

However, this conception of analyticity not only differs from Kant's, but was presented a full century after the *Critique of Pure Reason*. What's more, this conception of analyticity seems to have been novel with Frege. I have been unable to find any source before Frege who asserts that analytic truths are those provable from logical laws plus definitions.

Of course, absence of evidence is not evidence of absence. But there is a further piece of convincing evidence here. Couturat in his *Les Principes des Mathématiques*, in 1905, includes an appendix on Kant's philosophy of mathematics and his conception of analyticity. Couturat surveys various conceptions of analyticity and asserts that Frege's definition was original with him. He writes:

One should therefore say, in order to remain true to the spirit, if not the letter of Kantian doctrine: a judgment is analytic, if it can be proved from definitions and laws of logic alone.

(Couturat 1905, 246)

In a footnote Couturat cites Frege's *Grundlagen* and a paper by Gerardus Heymans from later in the 1880s (cf. Heymans 1889; cf. also Heymans 1886). Concerning Frege's *Grundlagen*, he writes:

This latter work is one of the few in which the Kantian theory of arithmetic is handled with the greatest energy and depth...But it is also the only one which gets no mention in the bibliographies related to Kant. How useless are bibliographies!

(Couturat 1905, 246)

Frege's characterization of analyticity, he admits, is not true to the letter of the Kantian definition. He gives two arguments for why post-Kantian developments were necessary in order to make this friendly amendment possible. First, it had to be clearly recognized that there are many other logical laws besides the principle of non-contradiction (PNC), and that there are other logical relations among concepts besides conceptual containment. Second, "what is thought in a concept" needed to be de-psychologized. Understood psychologically, this is a notion that is relative to a subject and a time; but, he argues, the definition of a concept is an objective matter, not relative to a subject. It is only these later developments in logic and philosophy, Couturat argues, that allow Frege's definition to seem like the friendly amendment to Kant's definition that it is.

One can dispute whether or not Frege's definition really is an improvement over Kant's, but I think the historical point is convincing: the conception of analyticity that makes it immediate that analytic truths are logical truths and *vice versa* did not arise until almost a century after Kant's own writing. Given the fact, then, that Kant never asserts that all logical truths are analytic, the question then becomes whether or not his followers took him that way. Was it obvious to those in the Kantian school that all logical truths are analytic? Now, it's true that some logical laws are clearly analytic in Kant's view. In particular, he argues that the PNC itself is analytic (cf. A152). But is it the case that all of the logical laws are analytic? Or are all the propositions of pure general logic analytic?

Among the first two generations of Kantian logicians, which included Kant's students and those writing in the first few decades of the 19th century, I found only one philosopher who asserts that all of formal logic is analytic. This is not in a logic text but in a passing remark in Schultz's *Prüfung* from the 1780s. Schultz writes:

In general logic there is a pure part, which consists in propositions that are obviously a priori, but which are not synthetic, but rather are all analytic.

(Schultz 1789, 45)

This is as clear a statement as you're going to find. However, Schultz's argument for this claim unfortunately shows a serious misinterpretation of Kant's view. The passage continues

Insofar as it determines the necessary rules of all thinking theoretically, without regard to its actual execution or application in particular cases, the understanding is concerned neither with any objects, nor with our sensibility, but merely only with itself, and the analysis of its form; consequently, the theoretical part of general logic as mere analysis of our form of understanding, is an entirely pure science, to which nothing empirical must be mixed, and whose rules are obviously a priori, but not synthetic, but rather analytic.

(Schultz 1789, 45–6, emph. added)

Schultz is certainly picking up on a real theme in Kant's writings on logic. Kant believes that formal logic results from an analysis, namely, of the actions [*Handlungen*] of our faculty of the understanding.

Since merely formal logic, so conceived, abstracts from all content of cognition (whether it be pure or empirical), and concerns itself merely with the form of thinking (of discursive cognition) in general, it can also include in its analytic part, a canon for reason, the form

of which has its secure precept, into which there can be *a priori* insight through mere analysis of the actions of reason into their moments, without taking into consideration the particular nature of the cognition about which it is employed.

(A131/B170, *emph. added*)

So Schultz is clearly correct that formal logic is ‘analytic’ in the sense that it arises through an analysis of our faculty. However, this emphatically does not show that the propositions of formal logic are themselves analytic truths, any more than it shows that the propositions of the “Transcendental Analytic” in the *Critique of Pure Reason* are all analytic.

Indeed, in the *Jäsche Logic* (Ak 9: 16), Kant makes clear that this notion of ‘analytic’ contrasts not with ‘synthetic’ but with ‘dialectic.’ And he claims that logic is an analytic in the sense that it’s a “canon,” as opposed to a dialectic, which would be an “organon” for this or that science. Pure general logic or formal logic is an analytic or a canon; a special logic or dialectic is an organon. This same kind of contrast was picked up by later Kantian logicians. For instance, Jakob Esser (Esser 1823) divides pure logic into two parts: the analytic, which he calls the doctrine of elements, and the synthetic, which he calls the doctrine of method. In this way, he follows the distinction in the *Jäsche Logic* between an analytic, which is a canon, and a dialectic, which is an organon. However, it does not seem that Esser makes the additional (mistaken) step to claim that the doctrine of elements is composed of analytic truths and the doctrine of method is composed of synthetic truths.⁵

Besides this one-off and frankly confused statement from Schultz in the 1780s, a sustained statement in defense of the claim that the propositions of logic are all analytic doesn’t appear, as far as I know, until 70 years after the publication of the *Critique* in the work of Henry Mansel. He argues that every law of logic is analytic or identical, since they are laws of the mind’s conformity with itself.

[The fact that] the fundamental principles of pure thinking are, as they seem to be, analytical or identical... points to the important fact that these principles are laws of mind... These [laws] are the highest and simplest forms of identical judgments, to one of

⁵ Indeed, the contrast between logic as an analytic and logic as an organon is reflected in the very titles of other early 19th-century German texts of ‘formal’ logic: Hoffbauer’s *Analytik der Urtheile und Schlüsse*; Mehmel’s *Versuch einer vollständigen analytischen Denklehre*; Twisten’s *Die Logik, insbesondere die Analytik* and *Grundriß der analytischen Logik*; and Krause’s *Vorlesungen über die analytische logik und Enzyklopädie der Philosophie*. But, again, this contrast is emphatically not to be confused with the contrast between analytic and synthetic judgments. (Thanks to Sandra Lapointe for pointing out these titles to me.)

which all analytical thinking may ultimately be referred: and all pure thinking may be shown, on psychological grounds, to be of strictly analytical character. The necessity arising from these laws is that of harmony of thought with itself, – of its conformity to its own nature.

(Mansel [1851] 1860, 159–60, 202)

Mansel's argument here is interesting. Since logical laws are grounded in the nature of the understanding itself, this means that the propositions of formal logic express the mind's conformity with itself; thus, he claims, these expressions of self-identity should themselves be identical or analytic judgments.

Though there were only a few Kantian logicians who argued explicitly that all propositions of formal logic are analytic, this does not mean that 19th-century 'Kantian' logicians did not reflect in other ways on the relationship between logic and analyticity. Instead [such](#) logicians asked a different kind of question: is formal logic concerned with the forms of all judgments or only the forms of analytic judgments? This question may be surprising to Kant's contemporary readers, since (I believe) few if any readers now question that Kant intended formal logic to be a canon for all judging regardless of subject matter. Fries in 1824 seems to be the first person to express the contrary view:

Philosophy is partially formal (namely Logic, the doctrine of the understanding), partially material (which we should call metaphysics, or following Kant, doctrine of the understanding). Philosophical logic is the system of analytic judgments, that is, to it belongs all those philosophical cognitions that contain only the laws of the thinkability of things for themselves, without regard for any special kind of objects that we think about. Metaphysics on the other hand is the system of synthetic judgments, of which we become conscious only through thinking (Fries, *System of Metaphysics*, 1824, §10; cf. also Fries, *System der Logik*. 1811/37, §40).⁶

Now Fries was not quite a logician of Kant's school in my sense, since he criticized Kant for too strongly separating formal logic from psychology. However, a few decades later, Mansel gave an explicit argument that formal logic concerns the forms of only analytic judgments. He began

⁶ Fries's statement here, as well as in 1811/37, §40, does not seem unambiguous to me. Perhaps he means that all the propositions of logic are analytic and all of the propositions of metaphysics are synthetic – a plausible plain reading of his words, but an implausible conception of metaphysics. The better reading of Fries, I contend, is that he means that the propositions of logic are *about* analytic judging, and the propositions of metaphysics are *about* synthetic judging.

this argument by first claiming that logic is the “science of the laws and products of pure or formal thinking.” He then defines pure or formal thinking in this way:

Pure judgments are those in which the given concepts are of such a character that their mutual relation of agreement or disagreement can be determined by an act of thought alone.

([1851] 1860, 220)

These pure judgments are, then, precisely the analytic ones, and so logic becomes the science of the laws and products of analytic judgment. This view, though it has few defenders now, had a surprising number of defenders in the mid- to late 19th century. Ueberweg defends it (cf. Ueberweg, [1857] 1871, §2), as does Hermann Cohen in his *Kants Theorie der Erfahrung* (cf. Cohen 1885, 242). Cohen argues that formal logic, as Kant understands it, abstracts from all relation to an object. And analytic judgments, he claims, are not actually about objects but about concepts. So, formal logic can only tell us about analytic judgments, not about synthetic ones.

What Are the Logical Laws? How Are They Related?

A distinctive feature of Kant’s conception of logic is his rejection of Wolff’s reductionism. Wolff had a reductive program that reduced all forms of judgment to categorical ones, all kinds of truth to containment, all inferences to syllogistic, and all laws of logic to the PNC. Kant rejected this reductionism. In this way, he introduced a pluralist program into logic. Indeed, the Kantian school was a middle way between reductionist programs, such as Wolff’s, and ‘derivationist’ programs, such as Hegel’s and Fichte’s. In this respect, the Kantian school stood between the better known philosophers writing logics in the German idealist tradition, on the one hand, and the British tradition in the 19th century, on the other hand, which tended to be reductionist. This conception introduced a kind of program into formal logic to identify the fundamental laws of logic, without reducing them or deriving them all from one another, and to explain how they interrelate with one another.⁷

Concerning the most basic point, enumerating the fundamental principles of logic, the *Jäsche Logic* is ambiguous. In one place, *JL* lists three fundamental principles of logic:

⁷ An interesting exception here is Herbart, who seems to deny that the principles of identity, contradiction, excluded middle, and sufficient reason have any substantive role in formal logic. Indeed, he criticizes Kant for moving the PNC and PI into logic, “where they are useless” (Herbart [1813] 1850, 82).

Thus we will be able to advance three principles here as universal, merely formal or logical criteria of truth; these are

- 1 the principle of contradiction and of identity (*principium contradictionis and identitatis*), through which the internal possibility of a cognition is determined for problematic judgments;
- 2 the principle of sufficient reason (*principium rationis sufficientis*), on which rests the (logical) actuality of a cognition, the fact that it is grounded, as material for assertoric judgments;
- 3 the principle of the excluded middle (*principium exclusi medii inter duo contradictoria*), on which the (logical) necessity of a cognition is grounded – that we must necessarily judge thus and not otherwise, i.e. that the opposite is false for apodeictic judgments.

(Ak 9: 52–3)

To begin with, this quotation – along with passages in the first *Critique* where analytic judgments are said sometimes to be grounded on identity (A7/B10) and sometimes on contradiction (A151) – raises the question of the relationship between the principles of contradiction and of identity: Are they the same principle or different principles? What's more, this list of the laws of logic doesn't include Kant's replacement for the *dictum de omni et nullo*. That principle is articulated in this way in the *Jäsche Logic*:

What belongs to the mark of a thing belongs also to the thing itself; and what contradicts the mark of a thing contradicts also the thing itself.

(*JL*, §63)

Kant believes that this dictum explains the validity of the figures of the syllogism (*Heschel Logic*: Kant 1992, 97), but he's unclear here and elsewhere whether it's an independent principle or whether it is derived from these other laws.

These are the sorts of questions that logicians in the Kantian tradition had to tackle. To give a sense of this, I begin by listing the various characterizations of the laws of logic given by Krug and Esser, who agree that there should be four fundamental laws of logic but disagree in significant ways on how these laws of logic should be formulated. Here are Krug's four laws of logic (Krug 1806, §§13–22):

- 1 The principle of absolute identity: "Everything is identical to itself," or "The concept of a thing is identical to the sum of its marks."
- 2 The principle of thesis: "Posit nothing contradictory but rather only what agrees!"

- 3 The principle of antithesis: “Only posit one among opposing determinations of a thing, and if one is posited, you must withdraw the others.”
- 4 The principle of synthesis: “Posit nothing without ground.”

Note the interesting feature that laws 2, 3, and 4 have an imperatival form. Esser’s formulation of the laws of logic is different (Esser [1823] 1830, §§14–30):

- 1 “All that is identical to an object must be attributed to it.”
- 2 “To every object must be denied all that is opposed [Gegentheil] to it.”
- 3 “To every fully determinate object every possible mark either belongs or does not.”
- 4 “If one of two opposing marks should be affirmed or denied of an object, then there must be a sufficient ground on account of which this is attributed or denied of it.”

Note that Esser’s laws do not have an imperatival form, but rather all concern the marks that belong to or don’t belong to an object.

A look at various formulations of the PNC will again bring out the variety of ways in which the laws of logic were formulated in this tradition.

- Jakob: “Contradictory representations cannot be united in one consciousness” (Jakob 1790, §121).
- Kiesewetter: “Manifolds that are contradictory cannot be united in a unity of consciousness” (Kiesewetter 1791, ad §97).
- Krug: “Posit nothing contradictory but rather only what agrees!” (Krug 1806, §18).
- Herbart: “What is opposed [*Entgegengesetztes*] is not identical” (Herbart [1813] 1850, §39).
- Esser: “To every object must be denied all that is opposed [Gegentheil] to it” (Esser [1823] 1830, §§18).

I mentioned earlier that Kant sometimes formulates the principles of identity and non-contradiction as one principle, sometimes as two. There was no consensus among the Kantian logicians on this question either. Jakob, for instance, holds that the principle of identity (PI) is in fact derivable from the PNC (cf. Jakob 1790, §121), as does [Hamilton](#) (cf. [1813] 1850, §39). Esser (cf. [1823] 1830, §21) and Krug, on the other hand, held that the PNC follows from the PI. Here is Krug’s argument:

Because the concept and its marks are identical, if someone were to think an object through its mark, this thinking would be impossible,...if one wanted to add to its concept an opposing mark.

(Krug 1806, §17)

Herbart, for his part, claims that the PNC and PI are equivalent [gleichgeltend] and imply the principle of excluded middle (cf. Herbart [1813] 1850, §39). Still other Kantian logicians, such as Hoffbauer (cf. 1792, §23) and Mansel (cf. [1851] 1860, 168), argued that the PNC and the PI are not derivable from one another.

We saw earlier that Kant's official list of logical laws sometimes does not include the *dictum de omni et nullo*, leaving open the question of its relationship to the other logical laws. For instance, the *Jäsche Logic* (§§63, 76, 78) argues that the rules of syllogistic follow from the dictum (while the rules of hypothetical inference – modus ponens and modus tollens – follow from the principle of sufficient ground, and the rules of disjunctive inferences follow from the law of excluded middle). This then gives the dictum an independent status within logic. But in logic lectures delivered in the 1780s (cf. The Dohna-Wundlacken Logic, Ak 24: 773), it is claimed explicitly that the dictum is a consequence of the PNC. In other logic lectures, this seems to be denied. In the Heschel Logic, we find:

A proposition that is to become the possibility of inferences of reason cannot in turn be proved, ...for one would have to presuppose it in order to prove it. The highest *principium* of categorical inferences is this: *nota notae est nota ipsius*.

(Kant 1992, 98)

Indeed in the Heschel Logic (Kant 1992, 97), he argues that the PNC holds for propositions only and not for inferences of reason; thus, it could not imply the *dictum* since the *dictum* is a principle for inferences of reason.

How do the Kantian logicians address this question? Esser, for instance ([1823] 1830, §88), has an interesting argument that the *dictum* is derived from the PI, together with the PNC and a further principle that identity is transitive.

The question of the relationship of the PNC and the *dictum* leads to a more general question: is ~~that~~ PNC the highest principle of formal logic, as it were, a first among equals? There are some places where Kant can be read in this way. For instance, at A55/B79–80, Kant argues

But concerning the mere form of cognition (setting aside all content), it is equally clear that a logic, so far as it expounds the general and necessary rules of understanding, must present criteria of truth in these very rules. For that which contradicts these is false, since the understanding thereby contradicts its general rules of thinking and thus contradicts itself. But these criteria concern only the form of truth, i.e. of thinking in general, and are to that extent entirely correct but not sufficient. For although a cognition

may be in complete accord with logical form, i.e., not contradict itself, yet it can still always contradict the object. The merely logical criterion of truth, namely the agreement of a cognition with the general and formal laws of understanding and reason, is therefore certainly the *conditio sine qua non* and thus the negative condition of all truth; further, however, logic cannot go, and the error that concerns not form but content cannot be discovered by any touchstone of logic.

Here Kant argues that logic presents a criterion of truth. This criterion of truth amounts only to the negative requirement that a cognition be in complete accord with its logical form, i.e. that it not contradict itself. This suggests that the PNC is in a sense the master principle of formal logic.

Krug considers a similar kind of question, but comes to a different conclusion, namely that the PI is the first among equals.

Identity is properly indicated by the formula: $A = A$. In this formula, the thing *posited* through the concept is *opposed* to itself and *posited as equal* in this opposition. One can therefore resolve this formula into the proposition: *everything is identical to itself*, and this is called the principle of absolute identity. It is the principle of *thesis*, *antithesis*, and *synthesis* in thinking in general.

(1806, §17)

Recall from earlier that Krug calls the second, third, and fourth laws of logic the principles of “thesis,” “antithesis,” and “synthesis.” Krug’s argument for this claim has a strongly Fichtean flavor. The “fact of consciousness” is the certain material starting point of philosophy: “the philosophizing subject itself, that is, the I looking away (abstracting) from the outer (the given) and looking into the inner (reflecting)” (Krug 1806, p. viii). Because Krug believes that the fact of consciousness is the material starting point of philosophy, Krug also thinks that the starting point for logic should be the ‘I think.’ So we begin with the ‘I think.’ Now, that which I think must be thinkable. Thinking aims for truth and truth is fundamentally, he argues, self-agreement. So the highest principle of logic is $A = A$: (*ibid.*, §§13–14).

A surprising feature in Kant’s list of logical laws is the appearance of the logical principle of sufficient reason. He characterizes the logical principle of sufficient reason in various ways. For instance, in the *Jäsche Logic*:

But one cannot infer conversely that if no false consequence flows from a cognition, then it is true; for one can infer true consequences from a false ground.

If all the consequences of a cognition are true, then the cognition is true too. For if there were something false in the cognition, then there would have to be a false consequence too.

(*JL*, §52)

Given the general lack of clarity as to what exactly the logical principle of sufficient reason amounts to, what exactly its position is within formal logic remained unclear as well. Mansel, for instance, argued that the principle of sufficient reason is not formal but material and so not a part of formal logic after all (cf. Mansel [1851] 1860, 182). Unfortunately, Kant argued that the principle of sufficient reason is the ground for the validity of *modus ponens* and *modus tollens*. Mansel bites the bullet here and argues that *modus ponens* and *modus tollens* are not inferences of formal logic (cf. *ibid*, 194). A less extreme position is taken by Esser, who argues that the logical principle of sufficient reason is a part of formal logic, but has a special status inasmuch as it belongs in the doctrine of method (or the “synthetic,” cf. Esser [1823] 1830, §26), not in the doctrine of elements (to which belong all the other logical laws). Herbart – ever skeptical of substantive uses of logical laws – is unconvinced that there is a “logical” principle of sufficient reason (cf. Esser [1813] 1850, §39, Anmerkung) and makes no use of it in explaining the validity of *modus tollens* and *modus ponens* (cf. *ibid*, §64ff.).

What Does It Mean to Say That Logic Is Formal?

The central and distinctive claim of Kant's philosophy of logic is that logic is formal.

[Pure] general logic abstracts from all content of cognition, i.e., from any relation of it to the object, and considers only the logical form in the relation of cognitions to one another.

(A55/B79)

This claim gives rise to many philosophical and interpretive questions. For example, is logic formal because it concerns only a certain kind of thinking, formal thinking? Or is it concerned with all thinking but only with respect to its form? And what exactly are forms of thinking? In what precise sense does logic abstract from any relation of a thought to an object?

In this section I want to look at how Krug, Esser, Mansel, and Hamilton approach these topics. (I'll also discuss Drobisch's and Herbart's understanding of formality in the beginning of the next section.) Let's start with the first question: does logic concern thinking in abstraction from its relation to objects, or does it concern a certain kind of thinking, namely formal thinking? The first view, which I believe is now the common

reading, was defended by Esser ([1823] 1830, §§9–11), who argued in this way. Logic concerns all thinking, but taken in abstraction. There are no pure thought-acts open to observation that have only form and do not in any way concern objects. Instead, all thinking is about objects, even if those objects are merely possible objects. So the proper procedure in logic is to consider some act of thinking – and any thinking about any object will do – but abstract away from the objects of the thought.

The contrary view was given by Krug, who argues that logic concerns a certain kind of thinking, namely formal thinking.

This function [i.e. thinking] can be considered ... as a mere thinking, by means of which given representations are related only to one another, to become conscious of their particularities and relations, without further reflecting on the object, to which they may be related.

(1806, §8)

Krug thus isolates “formal,” “analytical,” or “logical” thinking, which he distinguishes from “material,” “synthetic,” or “metaphysical” thinking, which “determines an object.” The idea is that there are certain thought-acts through which given representations are related only to one another, and there is another kind of thought-act that relates representations to the objects themselves. Logic concerns only the former kind; it is abstract in the sense that it considers only a proper subset of the acts of thinking. A few decades later, as we saw in the previous section, Mansel takes up this idea, equating formal thinking with analytic judgment and thus arriving at the view that logic concerns only analytic judgement.

Kant claims that logic concerns only the logical form of thinking. What precisely are these forms of thinking? Krug glosses forms of thinking as original modes of activity (*Handlungsweise*) of the I “through the nature of the capacity to think in general” (Krug 1806, §11). This idea – that forms of thinking are modes or manners of the act of thinking – is taken up and expanded by Esser.

Logic is customarily called a formal science; obviously this does not mean that logic has only a form and not an object; obviously the form of human thinking is the object of logic.

([1823] 1830, §3)

The form of thinking is the proper subject matter of logic. Now what, specifically, are these forms? Since logic is a priori, Esser argues, its object must be the general and necessary form of human thinking. Now, he argues, necessity is grounded in laws. So the necessity of the form of thinking must be grounded in laws of the faculty of thought itself, and not laws of anything outside of thought. Moreover, laws, he claims, are

general rules by which powers are brought into activity. Putting this all together, thinking must be a power or capacity with laws that flow from its own nature. Forms of thinking, then, are these internal laws of the activity of thinking (cf. Esser [1823] 1830, §§5–6). (Sometimes he makes the point slightly differently, treating forms of thinking not as laws for thinking, but as lawlike activities of thinking.)

Esser argues that the existence of laws explains both the generality and the formality of logic.

Every law relates in no way to single or particular objects of thinking, but rather to all objects without distinction. They can only determine the way and manner (the form), in which the thinking mind [*Geist*] takes up according to its original direction the particular objects without distinction.

(Esser [1823] 1830, §6)

Esser here is elaborating on the idea we canvassed just a few paragraphs back: that logic concerns all thinking, not just “formal thinking.” Though all acts of thinking concern objects, he claims, since thinking has its own internal laws, these laws can explain the generality and formality of logic. Laws are general, and the internal, necessary laws of thinking are its form.

Since Esser emphasizes that logic concerns all thinking and that all thinking concerns an object, this makes it important for him to elaborate on what exactly abstraction amounts to. In what sense do we abstract from relation to an object? Esser explains the possibility of abstracting by distinguishing between two aspects of thinking.

By thinking we understand any designation of an object [*Gegenstand*] through a mark, that is, through a concept. And in this designation of an object through a mark, that is, in this thinking we distinguish by means of abstraction two things from one another: 1. The object [*Objekt*], which is thought (the matter), and 2. The way and manner [*Art und Weise*] in which it is thought (the form) of our thinking.

(Esser [1823] 1830, §3)

Logic is abstract because it concerns only the manner in which the object is thought and not in any way the particular object that is thought.

This distinction is expanded and ramified in Hamilton's lectures, which in fact explicitly draw on Esser's account. Hamilton claims that within thinking we can distinguish three aspects: first, the thinking subject itself; second, the object about which we think; and third, “a relation between subject and object of which we are conscious – a relation always manifested in some determinate mode or manner” (Hamilton [1860] 1874, 73). Hamilton calls this third aspect the “form of thought.” Hamilton

thus differs from Esser in thinking of the form of thought not as a law of thinking (which Esser sometimes glosses as a mode or way of thinking), but as a certain kind of relation between the subject and the object. Within this relation, he argues, one can distinguish two sides: “an act, operation, or energy” and the “product of such an act” (*ibid*, 74). He claims that only the latter belongs to logic. Logic therefore achieves its abstract character from abstracting away consideration of the act of thought itself, leaving the logician to consider only the product of that act.

Are All Concepts Formed through Comparison, Reflection, and Abstraction?

It is an historical fact that, especially after Hegel’s attack on the theory,⁸ the account of concept formation by comparison, reflection, and abstraction was very strongly associated with self-styled “formal logicians” – especially formal logicians of the Kantian school. This association was central in 1840, when Adolf Trendelenburg – as part of his forceful attack on the very idea of formal logic in the Kantian sense⁹ – identified the theory of concept formation by comparison, reflection, and abstraction as a paradigmatic error of formal logic in the Kantian sense. Trendelenburg directed his attack against Moritz Drobisch, who had articulated in 1836 a Kantian theory of logic and defended the theory of concept formation by comparison, reflection, and abstraction. Trendelenburg identified Drobisch’s *Neue Darstellung der Logik* as perhaps the clearest and most sophisticated presentation of formal logic in the Kantian sense (Trendelenburg 1840, 7). For Trendelenburg, then, a successful attack on Drobisch’s theory of concept formation amounted to a refutation of the very idea of formal logic in Kant’s sense. In this last section I’ll give a brief overview of the Trendelenburg-Drobisch debate, which was one of the most important episodes in logic in mid-century Germany.

Let’s begin by looking at the official theory of concept formation, articulated in Kant’s *Jäsche Logic* and elsewhere as well.¹⁰

To make concepts out of representations one must thus be able to compare, to reflect, and to abstract, for these three logical operations of the understanding are the essential and universal conditions

⁸ For details, see Heis 2014, 282–5.

⁹ Trendelenburg believed that the very idea of formal logic depended on objectionable features of Kant’s philosophy: “For the first time in *Kant’s* critical philosophy, in which the distinction of matter and form is robustly conceived, *formal logic* clearly emerges and actually stands and falls with Kant” (Trendelenburg 1870, 15; cf. Trendelenburg 1840, 4). By ‘formal logic,’ Trendelenburg has in mind all four characteristic features of the Kantian school, which I listed earlier in the second paragraph of this chapter.

¹⁰ See, for example, the first Introduction to *Critique of Judgment*, Ak 20: 212n.

for generation of every concept whatsoever. I see, e.g., a spruce, a willow, and a linden. By first comparing these objects with one another I note that they differ from one another in regard to the trunk, the branches, the leaves, etc.; but next I reflect on what they have in common among themselves, trunk, branches, and leaves themselves, and I abstract from the quantity, the figure, etc., of these; thus I acquire a concept of a tree.

(*JL*, §6)

Now there are three important but puzzling features of this account – puzzling features that will be relevant for the dispute between Trendelenburg and Drobisch. First, concepts can be formed by comparison, reflection, and abstraction not only from other concepts but also from intuitions.¹¹ When a concept is formed from an intuition, the concept formed thus differs in its logical form from the representation it is formed from: the concept is general but the intuition is singular. But this poses a puzzle: *how could taking a singular representation and leaving out part of it make it general?* Call this ‘the generality puzzle.’

Second, in Kant’s view, abstraction is merely negative and it does not create content.

General logic abstracts from all content of cognition, and expects that representations will be given to it from elsewhere, wherever this may be, in order for it to transform them into concepts analytically. ...Prior to all analysis of our representations [space and time] must first be given, and no concepts can arise analytically as far as the content is concerned.

(A76–8/B102–3; cf. *JL*, §6, note 2)

Kant’s idea is that concept formation can change the logical form in which content is represented, but it cannot introduce new content itself. Now this raises a second puzzle: *where then does this content come from?* Doesn’t this admission leave the official theory of concept formation radically incomplete? Call this ‘the content puzzle.’

Third, in the first introduction to the *Critique of Judgment*, Kant identifies a priori but subjective principles that make concept formation possible. These are principles for what Kant calls “reflective judgment,” which he defines as “an ability to reflect in terms of a certain principle on a given representation so as to make a concept possible” (Kant 2000, Ak 20: 211). One such subjective principle is the principle of the purposiveness of nature, which asserts, roughly, that a system of concepts can be formed that is parsimonious, comprehensive, and gap-free. But this

11 See Kant, *What Progress?*, Ak 20: 273–4.

subjective maxim that guides our concept formation, since it is a principle for the systematicity of science, should belong to the doctrine of method of formal logic. However, the account of concept formation by comparison, reflection, and abstraction is located in a different part of logic, the doctrine of elements. This again poses a puzzle: *how do these methodological principles for concept formation interact with the ‘official account’?* Are they equivalent to it? Do they replace it, or perhaps supplement it? Call this ‘the methodology puzzle.’

The Trendelenburg-Drobisch debate was carried out over three editions of Drobisch’s *Neue Darstellung der Logik* (1836, 1851, and 1863) and the three editions of Trendelenburg’s *Logische Untersuchungen* (1840, 1862, 1870).¹²

In his *Neue Darstellung*, Drobisch defends a distinct version of the Kantian view of logic – a version of Kantianism that was first sketched in Herbart’s *Lehrbuch zur Einleitung in die Philosophie* (cf. Herbart [1813] 1850). In particular, Drobisch follows Herbart in articulating two aspects of the Kantian conception of logic – two aspects that will be relevant to the debate over concept formation.

First, he claims that logic is formal, which he defends in a distinctive way. In his view, philosophy in general is concerned with concepts and not with objects. In Herbart’s slogan, philosophy is the “working out” [Bearbeitung] of concepts (cf. Herbart [1813] 1850, 57). Philosophy “presupposes the object as already known” and so considers only our concepts of objects (Drobisch 1836, §3); in Herbart’s words, “logic presupposes the concepts as known” ([1813] 1850, 42; cf. [1808] 1850, 467). Logic as formal philosophy is then concerned with “the most *general relations*” among concepts (Herbart [1813] 1850, 33) and not with their matter or “particular content” (cf. Herbart [1813] 1850, 42). As Drobisch puts it,

The relations [of concepts] are either those which belong to all concepts, independently of the special [conditions] by which they are thought, thus relations that belong to all concepts, or they are those relations which are dependent on those special [conditions] and so are limited to certain classes of concepts. The former general conceptual relations are the subject of *logic*, as the first part of philosophy. It is also called *formal philosophy*, because it is directed to the consideration [not] of the matter that the concept contains and therefore only to the formal differences between them.

(Drobisch 1836, §5)

12 In order to make it easier to locate references across the various editions of Trendelenburg’s and Drobisch’s books, I cite their works by section number, which (unlike page numbers) tend to be constant across the three editions of their works.

Second, Drobisch, like Kant (1800, Ak 9: 14, 16) and Herbart (1825, 173), believes that logic is normative and not descriptive.

[Logic gives] the conditions of law-like connections among concepts. ... But it is no description of thinking as it actually is, but rather a prescription [Vorschrift], how it *should* be; no natural laws of thinking, but rather a law book for thinking. Logic must *postulate* the formation and comparing of concepts. It avails itself of *actual* thinking as a fact, in order to cognize the conditions of its law-likeness; in no way does it come to be from a mere observation of one's own thinking.

(Drobisch 1836, §9)

Logic, as normative but not descriptive, accepts the fact that concepts can be formed and compared; it doesn't investigate into the causal psychological laws that make this possible.¹³ The normativity of logic is thus part of Herbart's and Drobisch's anti-psychologism about logic. As Herbart insists, "in logic it is necessary to ignore everything psychological" ([1813] 1850, §34).

Indeed, Drobisch's and Herbart's anti-psychologism goes one step further. They claim that logic, unlike psychology, is concerned only with the unchanging contents of concepts and their unchanging relations – and not in any way with the mental conditions of the temporal acts of forming these concepts.

All our thinking can be considered from two sides: partly as activities [Thätigkeiten] of our mind [Geist], partly in view of *what* is thought through them. In the latter relation, they are called *concepts*, which word, inasmuch as it indicates that which is *conceived*, requires that we abstract from the manner and way that we may discover, produce, or reproduce the thoughts.

(Herbart [1813] 1850, §34;
cf. Herbart [1808] 1850, 467)

Our thoughts are called *concepts*, insofar as we, abstracting from the way they came to be, attend only to *what* is thought in them. This what is called its content (complexus) [Inhalt]. It lies already in the explanation of the concept, that its content is independent of

13 In similar terms, Herbart denies the logic is concerned with mental [geistlich] laws ([1813] 1850, §34) or natural laws (§35, Anmerkung) of the mind; it is not concerned with thinking as an *event* (§34) and does not give a "natural history" (§35) of thinking.

the changing mental conditions of the subject by whom it is thought, and that it therefore bears within itself the character of something abiding and unchanging.

(Drobisch 1836, §11)

As Drobisch puts it, quoting Herbart's memorable phrase (cf. [1808] 1860, 467), "concepts as such are present only once."¹⁴

In addition to defending the roughly Kantian view that logic is formal and normative, Drobisch also defends the orthodox Kantian view that concepts are formed by abstraction.

In every compound concept one can think away, *abstract* [abstrahiren] individual marks. The concept, which is then still left over, is called, in relation to the concept from which it came to be by abstraction, the *next highest* [i.e. the genus]. Every concept has as many next highest concepts as it has marks.

(Drobisch 1836, §14)

Putting this passage next to *Jäsche Logic* §6 makes clear just how similar this view is to the Kantian one.

Trendelenburg initiated his polemic against the theory of concept formation from Drobisch's book in the first edition of his *Logische Untersuchungen*. An overarching goal of Trendelenburg's was to refute the very idea of formal logic in the Kantian sense and return to a pre-Kantian (and indeed Aristotelian) conception of logic: not as formal, but as an investigation into the metaphysical structure of the world that makes it possible for us to make judgments, form inferences, and develop sciences about it. This metaphysical structure, roughly, Trendelenburg found in Aristotle's metaphysics. Trendelenburg believed that Drobisch and the other formal logicians in fact had no theory of concept formation, despite what they claimed. Indeed, he found it revealing that Drobisch seemed to admit that he had to presuppose the very thing that, in Trendelenburg's view, logic is supposed to explain.

Formal logic from the beginning presupposes the concept as given [in footnote, Trendelenburg cites Drobisch 1836, §3, §11, and §14]. If we would understand a concept in its full meaning as that representation of a thing that discloses the ground of the thing, then in fact everything actually would be presupposed: we would take as given in the beginning what science has to first achieve as its final goal.

(Trendelenburg 1840, Ch. I, §4)

¹⁴ Herbart further clarifies that concepts, though they have a fixed character and fixed relations to other concepts, are neither real objects [reale Gegenstände] nor actual acts [wirkliche Acte] of thinking (cf. Herbart [1813] 1850, §35 Anmerkung).

Trendelenburg's idea is that philosophy is supposed to explain how we form concepts and what it is about our thought and the world that makes it possible for us to form concepts that capture the structure of the world. And though Drobisch claims that we form concepts by comparison, reflection, and abstraction, Trendelenburg finds this theory empty and at best misleading.

According to this way of thinking, families, genus, species come to be only through omitting marks. They are arbitrary constructs [Gebilde] of the abstracting, that is, evaporating, thinking; but never does there appear a law of this process, from within or from without.

(Ch. I, §4)

In Trendelenburg's view, it's the job of the logician to articulate laws for how we should compare, reflect, and abstract. After all, *contra* Drobisch, it is not indifferent which marks one abstracts from a given concept. We cannot just abstract any marks willy-nilly and expect to arrive at concepts fit for science.

Are the marks of the concepts so indifferent [of equal value] to one another, do they stand in this way in one line, that it is all the same which mark one abstracts first? What then is the significance of the expression of subordination of concepts?

(Trendelenburg 1840 Ch. XIII, §7;
1862 and 1870, Ch. XV, §7)

Of course, in a roughly Aristotelian view, concepts are not just an unordered list of marks: some of those marks specify the genus, some of those marks specify differentia, and determining which is which is no more and no less than determining what laws govern the things we're thinking about. Indeed, Trendelenburg thinks it incredible that Drobisch does not face the puzzles concerning content, generality, and methodology that I mentioned earlier. For Trendelenburg, our capacity to form general representations that have content depends on the deep correspondence between thought and being, between our capacity to form concepts and to make judgments and the world's metaphysical nature as composed of substances that carry out certain activities.

Towards the end of his book, Trendelenburg sketches an alternative methodology of concept formation that highlights the role of judgments in forming concepts.

The concept arises in a similar way from the first judgment of mere activity, as the substance arises from formative activity [gestaltenden Tätigkeit]; and as substance is expressed in activity, so too

is the subject in the predicate, the concept alive in the judgment. (Trendelenburg 1840, Ch. XII, §3, 145; 1862, Ch. XIV, § 3, 236; 1870, Ch. XIV, § 3, 234)

His claim is that we first form judgments and then derive concepts from them. With these we can form new judgments, from which we can then derive new concepts, etc.

In this way, the subjectless judgment is the first (e.g. It is lightning). By fixing the concept (e.g. lightning), it grounds the complete judgment (e.g. the lightning is conducted by iron), and the complete judgment comprehends its result anew in a concept (e.g. lightning conductor). (Trendelenburg 1840 Ch. XII, §3, 148–9; 1862, Ch. XIV, § 3, 238; 1870, Ch. XIV, § 3, 238)

Trendelenburg's idea is that our first knowledge concerns activities [Tätigkeiten] – that is, things that substances do. Through forming judgments about these activities (e.g. it is lightning), we come to fix on a concept (e.g. the concept of lightning), which is itself a kind of substance. Once we do that, we can then attribute to this substance new accidents, such as being conducted by iron, from which we can form yet further compound concepts (i.e. of substances together with their accidents). In this brief way, Trendelenburg highlights the interplay between judging and concept formation, and the relationships between concept formation and the formation of natural laws. These connections, he believes, are missing from Drobisch's theory of concept formation. Indeed, they have to be, as long as Drobisch adheres to the mistaken Kantian view that logic is formal.

The 1851 second edition of Drobisch's *Neue Darstellung* contains significant additions and clarifications, many of which were explicitly in reply to Trendelenburg's criticisms. These new additions are also Drobisch's attempts to confront the three puzzles with Kant's account of concept formation that I highlighted earlier in this section. To begin, Drobisch gives a clarified and expanded account of concept formation. First, he grants Trendelenburg's basic point that concept formation is not independent of forming judgments, but in fact concepts are formed through forming judgments.

Thinking forms concepts from the representations, by bringing to consciousness that which belongs to the What of the represented and abstracting [absondern] what does not belong to it. This happens in judgments, which are therefore partly affirmative, partly negative. Insofar as the concept contains a manifold of what is represented, the concept is the unity of this manifold, and the form of combination of the manifold is the form of the concept itself. But

the judgments substantiate this combination as one coming to be gradually for thinking, and are therefore the forms of genesis of the concept in thought. So it is now certain that the formation of concepts and the grasping of their form would be impossible without the thought activities of judging; and so the judgments doing the forming must precede the formed concepts.

(Drobisch 1851, §10)

In addition to granting Trendelenburg's point that the formation of a concept depends on a prior judgment, he also acknowledges that the theory of definition must constitute part of the story of concept formation as well.

When logic finds in the judgment the form of the genesis of the concept, and teaches to compose it from its elements through the definition, it concerns itself with the correct formation of concepts.

(Drobisch 1851, p. x)

Of course, the theory of definition in Kant's view is part of the doctrine of method of logic, and so we see Drobisch recognizing that the process of forming concepts depends on conforming to the norms for the formation of scientific theories. These two additions then constitute Drobisch's answer to what we earlier called the methodology puzzle.

Trendelenburg had argued that Drobisch's account of concept formation treats concepts as effectively already given. We also saw earlier a certain puzzle about content: how is it that concepts can come to have their content, if not by abstraction? Drobisch faces this puzzle straight on in the second edition, biting the bullet and admitting that some concepts are simply given and not in any way generated by thought. "Of course, the genus is generated by thought. But the immediately given concepts of objects are not generated by thought" (Drobisch 1851, note to §17). This means that the theory of concept formation cannot explain how concepts come to have content to begin with, and thus the account of concept formation in logic is not meant to explain the possibility of content. Indeed, it presupposes it, by presupposing certain immediately given concepts from which higher concepts can be generated.¹⁵

However, this raises a further puzzle: how to articulate the notion of 'generality' or 'abstraction' that is at work in the theory of concept formation by comparison, reflection, and abstraction. Is this notion of

15 Herbart says little to nothing about concept formation by comparison, abstraction, and formation. However, he does seem to hold the view that Drobisch settles on in the second edition: that logic presupposes some given, determinately contentful concepts from which other concepts can be formed. "Concepts are always presupposed as ready to hand and finished [vorhanden und fertig], from whose combination new concepts are to arise" (Herbart [1808] 1850, 468).

generality or abstraction the same notion at work in his claim, made already in the first edition, that all concepts are ‘abstract’ in the sense that their content is objective and can be grasped through many acts of thinking by many distinct thinkers? In the second edition he clearly says that the answer is “No.” The abstract generality brought about by concept formation through abstraction is distinct from the kind of objectivity of content that belongs to all concepts, whether they be given or generated by thought. He more clearly characterizes the generality characteristic of a concept in terms of its repeatability, graspability, and constant character, even as it is brought into relation to other concepts in repeated representations. He contrasts this notion of generality with a notion of generality that’s “generated through abstraction” (Drobisch 1851, §9). For example, the representation of sky blue can be found in flowers, paintings, or clothing. If the representation of sky blue is isolated from all these relations, we obtain the general representation or concept <sky blue>. But this representation is in no way abstract, but it is instead fully individual and particular. The combinations that it occurs in (for example, my representation of this flower, of this painting, or of this clothing) are then not species of <sky blue>. <Sky blue> is not the genus of which my representation of this flower is a species.

Drobisch in this way makes clear a distinction that was not clear in the first edition of his work. In fact, Hamilton, whose lectures on logic cite the first edition of Drobisch’s *Neue Darstellung* on this very point (Drobisch 1836, §14), does not clearly distinguish the act/content distinction from the species/genus distinction.

We are conscious to ourselves that we can repeat our acts of consciousness; that we can think the same thought over and over... This relation of absolute similarity which subsists between the repetitions of the same thought, is found to hold between our representations of the resembling qualities of objects. ... Now, in so far as we exclusively attend to the resembling qualities, we, in the first place, obscure or remove out of view their non-resembling characters i, o, u, while we remain exclusively conscious of their resembling qualities y, y, y. ... In other words, we classify B, C, and D under y; y is the genus, B, C, and D are its individuals or species.

(Hamilton [1860] 1874, Lecture VII, 124)

This clearly demonstrates the kind of confusion that Drobisch, incited by Trendelenburg, tries to ward off in the second edition of his work. Hamilton begins by noting the objectivity of content – the fact that many distinct acts of thinking are of the same thought. But he immediately confuses this objectivity with the way in which a more abstract concept is formed from a lower concept.

In this chapter, I've posed the question, "If logic has been complete since Aristotle, what's left for a logician to do?" One would think that the answer to this question would be "Nothing," in which case the mere existence of the logicians of the Kantian school, as Ueberweg calls them, would seem utterly mysterious. But in fact we've seen that Kant left behind a great number of open questions, the answering of which provided important work for later logicians – even logicians who attempted to be orthodox Kantians. What's more, in some of these cases, for instance, in the articulation of the logical laws, these new projects were stimulated by Kant's innovations within formal logic. In other cases, such as concerning the formality of logic and the nature of concept formation, later logicians tried to clarify and fill in the details left open by Kant's work. In this chapter, I have refrained from evaluating the contributions of the Kantian logicians. Nevertheless, this chapter has clearly demonstrated the historical fact that there existed a vibrant tradition of logic in the Kantian tradition – a tradition that has been more or less forgotten and absent from historiography of logic. I have also shown, I believe, that the logicians of this school did far more than simply repeat the sayings of the Master, but were alert to the formal and philosophical issues left behind in Kant's wake.

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