Phenomenological Intuitions and Intuitionistic Grounds

The belief that a defeat of intuitionism would entail a rejection of the phenomenological approach to mathematics was expressed by the German mathematician and philosopher Hermann Weyl in a note delivered to the mathematical seminar at the University of Hamburg in 1927: "If Hilbert's [formalist] view prevails over intuitionism, which in all appearance is the case, *then I see in this a decisive defeat of the philosophical position of pure phenomenology*, which thus proves to be insufficient for the understanding of creative science even in the area of cognition that is most primal and most readily open to evidence – mathematics."

Weyl's argument may be reconstructed in the following way:

1. Hilbert's formalism prevails over intuitionism.
2. If Hilbert's formalism prevails over intuitionism, then pure phenomenology is insufficient to account for mathematics.
3. Thus, pure phenomenology is insufficient to account for mathematics.

Although some intuitionists acknowledge today the defeat of intuitionism, at least on the mathematical battlefield, if not on the philosophical one, many others would dispute the justification of Weyl's first premise by pointing out that what makes it true is sociologically contingent, rather than mathematically necessary. This is what Oskar Becker had emphasized as early as in the 1930s: "It seems to me almost certain that in the public opinion of the mathematicians Hilbert, or presumably a semi-renewal of the old "existential absolutism" will prevail. In general, I would not think very much of this public opinion, which always prefers mediocrity." But this seems to be a strange assessment, since it offers a rather implausible moral psychology of the mathematician: a public, mediocre side which prefers Hilbert's formalism, versus a private, excellent side, which prefers intuitionism.

Weyl's claim has been also challenged more recently by Paolo Mancosu and Thomas Ryckman, who noted, against the second premise in the argument above, that "one may question whether Weyl's ... turning away from intuitionism need have implicated, as he indicated here, 'pure phenomenology,' since there are considerable differences in the two approaches in their respective accounts of intuition as a source or ground of mathematical knowledge." Similarly, they claim, "a defender of Husserl's phenomenology could well argue that the resources of Husserlian phenomenology and the forms of intuition available in it far surpass the limited resources of intuitionistic Anschauung. ... Weyl is implicitly making a rather large assumption that can be resisted already on the basis of Husserl's position." The assumption allegedly made by Weyl is that "intuitionistic Anschauung is the only relevant form of intuition when it comes to mathematics (i.e., there are no other forms of phenomenological intuition that could phenomenologically ground parts of mathematics which go beyond intuitionistic mathematics)."

In my paper, I start by asking what does it mean to say that some forms of phenomenological intuition could ground parts of mathematics which go beyond intuitionistic mathematics? What is the work that the notion of grounding is supposed to do here? I then argue that to say that phenomenological intuition grounds parts of mathematics which go beyond intuitionistic mathematics is to say that it may allow one to believe that, or to understand why, non-intuitionistic theorems are true. Thus, I point out, the assumption that Weyl allegedly made is that there are no forms of phenomenological intuition that could allow one to believe that, or to understand why, non-intuitionistic theorems are true.

If this is true, then Weyl's Hamburg argument can be reconstructed in the following way:

1. Hilbert's formalism prevails over intuitionism.
2. If Hilbert's formalism prevails over intuitionism, then no form of phenomenological intuition is sufficient for believing that, or understanding why, non-intuitionistic theorems are true.
3. Thus, no form of phenomenological intuition is sufficient for believing that, or understanding why, non-intuitionistic theorems are true.

Is this a good reconstruction of Weyl's Hamburg argument? I argue, as against Mancosu and Ryckman, that it is not. I provide logical and textual evidence that a more accurate reconstruction of Weyl's argument is the following:

1. Hilbert's formalism prevails over intuitionism.
2. If Hilbert's formalism prevails over intuitionism, then no form of phenomenological intuition is sufficient for attaining scientific objectivity.
3. Thus, no form of phenomenological intuition is sufficient for attaining scientific objectivity.

I end my paper by discussing Weyl's reasons for believing that intuitionistic Anschauung is not sufficient for attaining scientific objectivity, and that there are no forms of phenomenological intuition that could support scientific objectivity.

References:

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