

Why study Wittgenstein's diagrams?

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This was the title of a seminar that I gave at the Wittgenstein Archives at the University of Bergen in November 1992. The present conference, at which we are undertaking a review of Wittgenstein's works 50 years after his death, would seem to present an opportunity to revisit this title and consider how one might respond in 2001. In 1992 I felt that I did not have a strong argument on which to base my case for a defence of such a study. However, the lack of previous studies seemed surprising,

...based on the observation that more than half of the diagrams in the published works occur as "word substitutes"; that is, they appear within a sentence as though words, and if the diagrams were to be removed and nothing put in their place the grammatical structure of the sentence would be disrupted. (Biggs 1994 200)

Several things have happened since 1992 that either problematize or facilitate the study of the diagrams. Amongst the benefits is, firstly, *the Bergen electronic edition* published by Oxford University Press (Wittgenstein 2000). This contains both a text transcription, including bitmapped graphics in the running text, and a full set of colour facsimiles of the *Nachlass*. As part of the development team I have contributed to the graphical encoding that facilitates combined textual and graphical analysis.

Secondly, I have published a hypertext tool for the retrieval of graphics from the published works, based on a taxonomy of sixteen basic graphical types (Biggs 1998). The graphics may be retrieved on the basis of their form or on the basis of their relationship to five editorially pre-selected keywords with which each graphic is associated in the immediate co-text. The reason for providing retrieval on the apparently trivial basis of form, rather than the more consequential basis of content, is that the hypertext is intended for use as a research tool to investigate the relationship of form and content, rather than to pre-empt it.

Thirdly, and as a result of the research into, and availability of the above, I have undertaken a re-evaluation of the edited graphics that occur in the published works. By edited graphics I mean graphics that have been redrawn by the editors rather than being scanned from the *Nachlass*. The process of editing the graphics is comparable to the process of transferring orthography into typescript, and the *Nachlass* into the published works. It involves decision-making on both form and content. A total of 64 graphics have

been changed with the agreement of the Trustees and are awaiting incorporation into the published corpus. The first example of this graphical revision to be published was *Philosophical Investigations* (1997). In the prefatory note to the so-called "re-issued second edition" I have said that changes have been made on the grounds of "improved legibility, felicity or perspicuity."

There are also problems with the study of the graphics. Although not usually a problem, there are three principal difficulties that can occur during editing: 1) what constitutes a graphic, 2) identifying where in the running text a graphic should occur, (3) is the graphic appropriate in relation to the text as drawn by Wittgenstein? I have discussed problem (1) in an earlier paper at Kirchberg (Biggs 1995). Problem (2) arises because it is Wittgenstein's practice in the Bände to insert a graphic at the beginning of a paragraph and then to wrap the text around it. Unless the text transcription attempts to imitate this page layout, which is not an editorial requirement and is not attempted in the Bergen electronic edition, a decision has to be made about the most effective location of the graphic in the text string. This problem is exacerbated in the notebooks where the structure is even less linear. Finally, (3) there are a few problem cases owing to the limited quality and accuracy of drawing one can expect from Wittgenstein whilst writing. It could be said in some places that Wittgenstein did not draw what he meant. Problems (1) & (2) could be regarded as problems of form while problem (3) could be regarded as a problem of content. The least interventionist editorial approach would seem to be that taken in the Bergen electronic edition, where the graphics are simply scanned and reproduced in monochrome facsimile in the running text. However, this does not in itself solve any of these three problems.

In the case of the published works we have inherited a position in which Wittgenstein's reputation and importance to twentieth century philosophy has been established almost exclusively through posthumously edited works, and the original sources have not hitherto been widely available or consulted. When I discussed the possibility of making changes to the received corpus, G.H. von Wright suggested that any received inaccuracies have not hindered our reception of Wittgenstein's philosophical contribution through the medium of the published works. There is some legitimacy to this objection. One could consider that, like logic, the published work must take care of itself (NB 1). A counter-argument based on the misleading effects of certain graphics would need to be made in order to show that, whilst it might have been sufficient to establish Wittgenstein's reputation as we have it, nonetheless there may be more to be had from a more appropriate representation of the *Nachlass* in the published works (cf. Nedo 1993 84). I shall use the newly available resources above to provide some evidence for this counter-argument.

We can use this distinction between form and content as a theme through which to investigate Wittgenstein's use of graphics. I will take as an example the "impossible machine". It first appears in MS153a 45v, is copied into MS110 286 on 4 July 1931, and published in PG 194. It was eventually succeeded by the more familiar example of the duck-rabbit in MS130 133, dated between 6 May & 22 July 1946. The "impossible machine" is something that looks as though it can function but in practice it cannot and is an analogy to "something that at first sight looks like a sentence and is not one" (PG 194, cf. PI 214). I would like to draw attention to two factors.

Firstly, a visual analogy is made between the machine and a sentence. We are often aspect-blind to meaninglessness in language. It may be easier for us to understand that a machine may be designed in good faith to have a particular function but for us to discover that when it is put to the test it does not perform as we had intended. Our ability to understand this latter problem may be a consequence of our habit of requiring machines to have functions: we do not tolerate functionless machines. It is Wittgenstein's objection that we are less rigorous in our intolerance of functionless sentences, i.e. when language goes on holiday (PI §38). Secondly, the illustrations of machines are representations of rigid mechanisms. We can calculate the performance of a rigid mechanism from its form alone, without the necessity of seeing it move. When we read these graphics we perform a calculus with which we infer the movement of a rigid body in three-dimensions from a representation in two-dimensions.

The machine analogy is a useful paradigm for Wittgenstein's broader use of graphics. Various machines, within which I include balances, slide rules, and other simple machines as well as reciprocating mechanisms, etc., occur from 1929 onwards. The earliest examples are used in connection with the colour exclusion problem (WWK 64, dated 30 December 1929). This is significant because the colour exclusion problem was Wittgenstein's principal reason for rejecting the philosophy of the *Tractatus*. The problem supplies the grounds for refuting the claim that elementary propositions are independent of one another (TLP 6.3751, RLF 167). The elementary proposition that "this is red" excludes the proposition that "this is green" [at the same time and in the same place]. However, elementary propositions, being independent, cannot be mutually exclusive. These early machine graphics show that colour exclusion is not a matter of experience, but of the mode of representation and hence the logic of our colour concepts, and hence our colour language. MS108 54, PR 112 discusses the "slide rule" machine that makes it impossible to set two measurements at the same time. This shows a match between the logical possibility of the representation and the representamen. Our syntax (WWK 65f.) can be exposed by an alternative graphical, rather than linguistic, representation of events. Because Tractarian objects belong to our mode of representation (WWK 43) they cannot be represented from within that system,

hence the rôle of the analogy. It becomes an inference engine for our system of linguistic representation.

There are several occasions in the published works where the graphical construction and hence inferential outcome of a system of objects does not correspond to the meaning of the text. Examples include PR 288 & PG 225 where the movement of the gear wheels is impossible; PG 253 where the ruler cannot be rolled into the various positions without also sliding it; PG 389 where the construction cannot be derived as shown; PG 194 where one reason for non-functionality seems to be the incorrect relative positions of the piston and the crank. Similarly, Nedo's editorial addition of radial lines to the "impossible machine", including a line break suggesting a spatial relationship to the cylinder, (Nedo 1995 325) inadvertently introduces a way in which this machine could function, i.e. as two parallel wheels, one with the cylinder and the other for motion.

Other examples of editorial graphical correction reflect coherence with the *Nachlass*. Such an *übersicht*, as noted in the re-issued second edition of PI, was not possible when the material was first published. For example, Wittgenstein comments on the construction of a spiral and distinguishes between a series of semicircles and a spiral (MS112 29v).

...the spiral is formed from the three semicircles a b c, but the essence of the spiral only comes into existence via the particular manner of their arrangement and therefore a new principle has to be added to the semicircle, in order to let it become a spiral. This comparison is a fairly unfortunate attempt to find the correct/clear representation. (MS112 29v)

"True" spirals therefore need to substituted for PG 301, PR 199, etc., unless attention is to be drawn to examples that seem to be spirals but are not, e.g. PR 241. There is also a connection between the inappropriate use of semicircle-spirals and the general form of the recursive decimal, for which Wittgenstein finds a better mechanical analogy in MS154 86r, MS113 241, PG 430.

In conclusion, the benefit of studying Wittgenstein's diagrams is that they form an integral part of his method for addressing philosophical puzzlement. Their rôle may be summarised as either a therapy for aspect-blindness or for linguistic idleness, i.e. lack of applicability. Changing the mode of representation makes our concepts perspicuous:

A main source of our failure to understand is that we do not command a clear view of the use of our words. - Our grammar is lacking in this sort of perspicuity. A perspicuous representation produces just that understanding which consists in "seeing connections". Hence the importance of finding and inventing intermediate cases. (PI §122)

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This is the rôle of mechanical analogies such as the "impossible machine". It overcomes our aspect-blindness to something that appears to be a sentence but is not one, by substituting an analogy of a mechanism that appears to have a function but does not. Each of these paradigms shows that both language and other forms of representation such as graphics have meaning in relation to an application in the world of objects. Wittgenstein's linguistic and concept model, especially in the early 1930s, was an activity model, e.g. "the activity of inferring" (RFM 43), "of calculating" (RFM 390), "of translating" (BB 99), "of speaking" (PI §23), "of meaning" (PI §665), "of building" (LW-I §340). Making perspicuous the corresponding activity is to

show an easy escape from this obscurity and this glitter of the concepts. (RFM 274)

Ironically, when summarising the aspect-blinding familiarity of language, Wittgenstein uses a graphical metaphor:

A picture held us captive. And we could not get outside it, for it lay in our language and language seemed to repeat it to us inexorably. (PI §115)

Literature

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Abbreviations used for Wittgenstein's published works

BB	<i>The Blue and Brown Books</i> (1958)
NB	<i>Notebooks 1914-16</i> (1961)
PG	<i>Philosophical Grammar</i> (1974)
PI	<i>Philosophical Investigations</i> (1997)
PR	<i>Philosophical Remarks</i> (1975)
RFM	<i>Remarks on the Foundations of Mathematics</i> (1978)
RLF	<i>Some Remarks on Logical Form</i> (1929)
TLP	<i>Tractatus Logico-Philosophicus</i> (1961)
WWK	<i>Ludwig Wittgenstein and the Vienna Circle</i> (1979)