WITTGENSTEIN
and Norway

Kjell S. Johannessen,
Rolf Larsen,
Knut Olav Åmås (eds.)

David G. Stern

The Wittgenstein Papers as
Text and Hypertext: Cambridge,
Bergen and Beyond

1. From text to hypertext

Within the last five years, many of the most important texts in the history of philosophy have become widely available in electronic editions, in the form of files that can be displayed, searched and analyzed using a personal computer. Plato, Aristotle, Aquinas, Descartes, Leibniz, Spinoza, Locke, Hobbes, Berkeley, Hume, Kant, Hegel, Mill, Sidgwick, Peirce, Kierkegaard, and Wittgenstein are all well represented on the list of electronic texts in philosophy on the American Philosophical Association's electronic bulletin board; in many cases, an electronic edition of the author's complete works is already available.

While philosophers have already begun to routinely use these resources in their research and teaching to automate such time-honoured activities as providing accurate quotations, finding references, and searching for passages where an author makes use of key terms, there has been relatively little discussion of the radical implications of the new medium. Electronic text can also lead to the creation of new editions of classical texts, hypertexts in which the sequence of published pages is only one of many possible selections from a potentially infinite set of alternatives, generated by tracing different links between the portions of the text. In hypertext, each paragraph or screenful of text can be multiply interlinked with many other paragraphs of text, connected not only by the numerical sequence of published pages in a particular edition, but also with different editions of the same text, variant drafts and footnotes inserted by the author on a number of occasions, editorial information, previous drafts of the sentences in question, a translation into another language, relevant passages in other parts of the corpus, glossaries, dictionaries, a concordance for every term in the text, references to relevant secondary literature, pictures of illustrations or problematic passages in the original manuscript draft, and so forth. In addition to these links between texts, one can also move between different presentations of the same text: for instance, one can move between photographic facsimiles of a manuscript in detailed color, or rapidly accessible black and white images, a «diplomatically» edited text that displays every textual variant and every semantically significant mark on the page that was recorded by the transcribers, and a variety of more or less simplified displays that leave out, for instance, deleted words or variant readings.

While the links that animate hypertext are familiar, the sheer extent of the material that they will make available, and the opportunities they will provide for new ways of reading, writing and producing texts, will certainly change the way canonical texts are read and delimited. Until now, only those who have spent years reading and rereading the relevant texts, making notes of cross-references, concordances, and lists of correspondences have had the intimate acquaintance with the text required to see how an author's work developed, changed, and grew. Soon, anyone who can use a computer will be able to read the work of a canonical philosopher within the cyberspace of hypertext, instantly creating concordances, examining different strata of a series of revisions, systematically scanning for uses of key terms. These new research methods will ultimately have a substantial impact on the nature of scholarship in the history of philosophy, making it possible to answer in a matter of minutes questions that would previously have taken a prohibitively large investment of time and effort to answer. Readers will approach texts in new ways, exploring connections and relationships that have received little attention in the past.

It will be helpful to begin by considering a concrete example of the limitations of text-based scholarship. In 1990, Colin McGinn wrote a review of A. J. Ayer's *The Meaning of Life* in which McGinn made the point that «postulating the existence of an afterlife to confer meaning on our mortal life is viciously regressive, since the question must arise as to the meaning of this alleged afterlife; and similarly for postulating God» (McGinn, 1990). As the author of a book on Wittgenstein on meaning (McGinn, 1984), it was natural for him to point out the close parallel with Wittgenstein's argument in the *Philosophical Investigations* that postulating the existence of linguistic meanings cannot explain the meaning of words. Each argument depends on seeing that the proffered «explanations» begin a vicious regress, as one can still ask what gives them their meaning. After writing the review, he noticed that Wittgenstein had also argued against the idea that an afterlife could possibly solve the problem of the meaning of life:

Not only is there no guarantee of the temporal immortality of

the human soul, that is to say of its eternal survival after death; but, in any case, this assumption completely fails to accomplish the purpose for which it has always been intended. Or is some riddle solved by my surviving for ever? Is not this eternal life itself as much of a riddle as our present life? The solution of the riddle of life in space and time lies *outside* space and time (Wittgenstein, 1922, 6.4312.)

McGinn then wrote to the letters page of the *London Review of Books*, asking whether Wittgenstein was aware of the homology. Had he had a copy of the electronic text of Wittgenstein's published works, he could have searched for uses of the key words in the original passage and would have found that in the *Philosophical Grammar*, Wittgenstein did repeatedly discuss the contrast between a «living» meaningful sign and «dead» meaningless marks and considers a variety of answers to the question: «What gives the sign its life?» Just as Wittgenstein denied that an immortal soul could explain the meaning of a person's life, he also denied that the life of the sign can be explained by invoking a soul, an object which gives it meaning: «The meaning [*Sinn*] of a proposition (or a thought) isn't anything spiritual, it's what is given as an answer to a request for an explanation of the meaning ... The meaning of a proposition is not a soul» (1969, § 84.) He also drew parallels between arguments that are closely related to the ones McGinn discusses, comparing the demand for a final explanation of the meaning of a word with the conviction that the world must have a creator. There, he points out that any chart one might draw up which correlated words with their meanings is itself open to more than one interpretation, observing that:

> The chart doesn't guarantee that I shall pass from one part of it to another in a uniform manner. It doesn't compel me to use it always in the same way. It's there, like a field, with paths leading through it: but I can also cut across. ...
>
> (What kinds of propositions are these? — They are like the observation that explanations of signs come to an end somewhere. And that is rather like saying «How does it help you to postulate a

creator, it only pushes back the problem of the beginning of the world.» This observation brings out an aspect of my explanation that I perhaps hadn't noticed. One might also say: «Look at your explanation in *this* way—now are you still satisfied with it») (Wittgenstein, 1969 § 52; cf. § 68 and 1953 I § 143.)

This example not only illustrates how electronic text might have enabled someone to track down these references; it also indicates significant thematic connections that McGinn might well have explored had these resources been available to him when he wrote his book. The impact of electronic text will not simply be limited to the automation of certain kinds of scholarly research: it will weaken the lines of demarcation that separate one text from another, and will facilitate the exploration of connections that have previously gone unnoticed.

But it is also possible that this new technology will serve to divert attention from the primary task of understanding, interpreting and evaluating the work of the principal figures in the history of philosophy. In a recent article on the current state of the Wittgenstein papers, Jaakko Hintikka has argued that the importance of electronic text and other such automated research tools has been overestimated. While conceding that they will make important information readily accessible, he suggests that they will at most serve as an auxiliary service, «whose main role perhaps lies in verifying results rather than in reaching them» (Hintikka 1991, 197). In addition, he expresses the fear that whatever benefits they do generate will be outweighed by the «clear danger that Wittgenstein research, or part of it, will be directed by the increased reliance on computers into philosophically unimportant directions» (ibid). Certainly, this new technology cannot be a substitute for the ability to frame a worthwhile research project, nor is it likely to supersede the primary texts that normally line the walls of a philosopher's study. But scholars who use those texts are increasingly likely to read them next to a computer capable of instantly making connections that would previously have taken hours or weeks to establish. Still, Hintikka is right to insist there can be no substitute for «a sensitivity to the philosophical and conceptual issues involved,» and so no guarantee that computer-based research will lead to better scho-

larship. However, it should be clear that this question cannot be settled a priori, and that it is far too soon to be able to tell whether these developments will genuinely enrich scholarship or only lead to the substitution of statistics for creative research. Instead, we need to consider how best such resources can be used and what can be done to ensure that they will make a positive contribution. While the primary focus of this paper is on the current state of the electronic editions of Wittgenstein's published and unpublished papers, and on assessing the prospects for future developments in this area, many of the morals that I draw are equally applicable to the work of other authors.

2. Wittgenstein's published writings

When he died in 1951, Ludwig Wittgenstein left his huge literary estate to G. E. M. Anscombe, Rush Rhees, and G. H. von Wright, with the exception of his writings in Austria, as his will only applied to his possessions outside Austria. It took some years before his literary trustees realized the full scale of this legacy. In 1969, von Wright published a catalogue of 78 manuscripts and 34 typescripts; since then, a further four manuscripts and 11 typescripts have been added to the catalog (see von Wright, 1993). This literary corpus contains approximately 12,000 pages of handwritten text and 8,000 pages of type. The vast majority of it is kept in the Wren Library, Trinity College, Cambridge; the remainder is in the Austrian National Library, Vienna, and the Bodleian Library, Oxford.

To date, less than a quarter of Wittgenstein's writing has been published, almost all of it with the bare minimum of editorial apparatus or indications of the relationship of the published text to the manuscript and typescript sources. An electronic edition of most of the published Wittgenstein, first released in 1990, originally occupied about 8 megabytes, or a little over a million words. The *Tractatus* and *Investigations* take up just over a megabyte between them, or an eighth of the published corpus. Each text is supplied in the language in which it was written (seven eighths in German and the remainder in English.)

The Intelex edition of the published Wittgenstein papers, based on the transcriptions by Kaal and McKinnon used in the previous electronic edition, was released in 1993 (Wittgenstein, 1993b.) The texts are prepackaged with Folio Views, a program that allows the user to carry out quite sophisticated searches of any or all texts it contains and display or print the results with impressive ease and speed, displaying the result of complex searches almost as fast as one can type the words. The program, which can be installed on any PC with a hard drive, will already be familiar to anyone who has used any of the other Past Masters editions, which include many of the canonical figures in the history of philosophy, from Plato to Sidgwick. Folio Views presupposes very little computer literacy. It takes only a few minutes to learn how to navigate around the database and conduct simple searches; the more advanced features, such as searching for logical combinations of terms, or adjusting the format of the display, are clearly explained, both in the manual and in on-line assistance. Unfortunately, the present electronic edition is seriously flawed: a number of Wittgenstein's published works are missing, it incorporates hundreds of mistakes that were removed from the most recent German editions and is not a reliable transcription of the texts that were used (for details, see Stern, 1994b.)

The principal advantage of such an electronic edition is that it can provide a comprehensive concordance and index, allowing the reader to move instantly to whichever results of a search for a term or logical combination of terms requires further examination. For instance, a search for every occurence of the terms «criterion» and «criteria» (41 paragraphs) «Kriterien», «Kriterium», and «Kriteriums», (197 paragraphs), and the various forms of «symptom» (25 paragraphs) takes less then a minute; one simply presses the space bar to start a search, types the first few letters of the term one is interested in, and chooses it and its cognates from a comprehensive list. A reader can then rapidly browse a concordance-style «focussed» list in which each occurence of the chosen terms is highlighted, expand the display so that the whole paragraph is displayed, or explore the context of individual passages in more detail. One can only wish that the authors of previous discussions of these terms could have had such easy access to the wide range of both mathematical and psychological examples that Wittgen-

stein used, or been able to systematically review the evidence that shows how his use of these terms changed after his often-cited explanation of the terms in the *Blue Book.* Queries about Wittgenstein's use of particular terms that would previously have taken many hours of searching can now be answered as a matter of course. And the results of any search can be saved on disk or printed.

The electronic edition can facilitate many different kinds of research. In view of the inter-related character of Wittgenstein's remarks and his elaboration of central terms in a wide variety of different contexts, often in a variety of different drafts, electronic searching is particularly valuable, as it makes it possible to compare and contrast Wittgenstein's use of key terms. For instance, one can search for all uses of such terms as *«Lebensform»* (form of life) and its cognates. While it is well known that Wittgenstein only uses the term rarely, an electronic search makes it possible to establish that it only occurs in five places in the *Investigations* and three other places in the published corpus. (Wittgenstein, 1953, Part I, § 19, § 23, § 241, and Part II, pp. 174 and 226; Wittgenstein, 1969a, § 358; and 1993, p. 396 (twice.)) But this is only a beginning: one can also look at Wittgenstein's other uses of «Leben» and identify the use of «pattern of life,» an expression that is clearly closely related. Further exploration of related passages indicates that there was considerable discussion of the notion of «life» or «soul» of a proposition in Wittgenstein's work in the 1930's, e.g. in his discussion in the *Blue Book* of the view that mere signs are «dead» unless our use gives them life: «Without a sense, or without the thought, a proposition would be an utterly dead and trivial thing. ... The conclusion one draws from this is that what must be added to the dead signs in order to make a live proposition is something immaterial, with properties different from all mere signs. But if we had to name anything which is the life of the sign, we should have to say it was its *use»* (Wittgenstein, 1958, p. 4.) It would take an entire paper to properly explore these connections; I invoke this example here to suggest the kind of connections that one can easily explore using electronic text, but would be almost impossible to track down using an ordinary index. For forther discussion, see Stern, 1994, 102-109, 117-120).

Another such example is Wittgenstein's changing use of a contro-

versial term such as *«Kalkül»* (calculus). In *The Later Wittgenstein* (1987), S. Stephen Hilmy, who has made extensive use of the microcopy edition of the unpublished Wittgenstein papers, argues that his remarks about philosophical method from the early 1930s, part of the earliest stratum of drafts for the *Philosophical Investigations,* show that his «later method» emerged during the 1920s. He documents the presence of a closely related nexus of supposedly «late» views and themes in Wittgenstein's 1929-1931 manuscripts, including his criticism of the idea that meaning consists in mental or causal processes, the use of the term «language game» and the central role of ordinary language. But Hilmy does not recognize that Wittgenstein's positive statements are very programmatic, or that his conception of «our moves in the realm of the grammar of ordinary language» changed substantially after the early 1930s. He rightly dismisses the view that the meaning of any particular instance of a remark of Wittgenstein's is completely determined by the surrounding remarks. But the force of Wittgenstein's remarks that «what *we* do is to bring words back from their metaphysical to their everyday use» (1953 I § 116; 1989, p. 183) and that «the work of the philosopher consists in assembling reminders for a particular purpose,» (1953, I § 127; 1989, p. 186), repeated in the *Big Typescript* and the *Investigations,* is largely a product of their contexts. In other words, Wittgenstein's «method» in the *Investigations* cannot be separated from his treatment of specific cases, which did change greatly after 1932. For instance, in the early 1930s, Wittgenstein did frequently compare language to a calculus, a formal system of rules. In his subsequent writing, there is not only much less use of the term, and new uses of the term are either to highlight the *dis*analogies between ordinary language and a calculus, or simply to talk about a formal calculus. Hilmy (1987) contends that Wittgenstein uses «calculus» and «language-game» virtually interchangeably from 1929 onward. However, most of his evidence for this reading comes from the early 1930s, when Wittgenstein did regard the two as closely related. But in the *Philosophical Investigations,* there are far fewer occurences of «calculus» than «language-game,» (8 and 98, respectively; by contrast, *«Kalkül»* and its cognates occur 325 times in the published texts; *«Sprachspiel»* occurs 505 times.) Furthermore, the two terms are

never equated. Most uses of «calculus» in that book are almost incidental, except for I § 81, where Wittgenstein discusses how conceiving of language as a calculus can mislead us into treating meaning as if it were a matter of «operating a calculus according to definite rules,» a view he now rejects.

Obviously, one of the dangers presented by these new tools is that of allowing the available computer-based research methods to determine one's methodology, so that one's technical resources determine the character of one's scholarship. New tools permit new questions to be asked, but they are no substitute for the kind of careful study that enables the scholar to identify the appropriate questions. There is a real danger that these new resources will only engender a pseudo-scientific manipulation of word frequencies and a cabbalistic search for underlying numerical patterns. For instance, in «Mapping the dimensions of a literary corpus,» McKinnon (1989) describes the application of an analytical technique to a literary corpus that is supposed to identify its «dimensions». This technique compares the frequency of each of the most common nouns and proper names in each of the texts within the corpus, searching for sets of words with complementary patterns of occurence. «Profiles», parameters that reflect the percentage of each word's occurrences in each text under analysis, are calculated. The program identifies the two sets of words with the most dissimilar profiles and makes them its first dimension; the next most dissimilar pair are made the end points of the second dimension, and so forth. In other words, one finds a set of terms that occur particularly frequently in one group of texts and particularly rarely in a second group of texts, and a second set of terms that occur particularly frequently in the second group of texts and particularly rarely in the first set of texts. In the published article, he applies this technique to Kierkegaard, identifying eight «dimensions» to Kierkegaard's thought.

McKinnon (unpublished, personal correspondence) has recently sent me the results of a «dimensional analysis» of the electronic Wittgenstein corpus, which has confirmed my suspicions about the limitations of such a methodology. This approach tacitly assumes that grouping the distribution of the most common terms over the author's published works into opposed pairs provides the key to the

structure of the author's thought. But often the most important terms are ones that are used very rarely and, as Wittgenstein was well aware, the meaning of a word is not a discrete entity that can be separated from the contexts in which it occurs. There are particular difficulties in using such a method on a posthumous corpus, where the boundaries of the «works» are the product of editorial, rather than authorial decisions. Finally, as most of the corpus was composed in German, but about an eighth is in English, this method actually yields two quite different dimensional analyses, one for the English and one for the German texts. All that such an analysis can show is that certain terms are used frequently in some texts and not in others, a result that should have been obvious before the analysis began.

3. Wittgenstein's unpublished writings

Wittgenstein's voluminous and extremely informative unpublished writings are available on microfilm or in bound photocopies (Wittgenstein, 1968), but the copies leave much to be desired. Although the majority of the pages are legible, many frames are unclear or even missing, and on most copies, his «coded» writings (material written in a simple letter substitution code) have been covered up.

The Norwegian Wittgenstein Project aimed at a complete electronic version of the Wittgenstein papers, but was discontinued in 1987; it is described in more detail in Huitfeldt and Rossvær (1989). The work is being continued by the Wittgenstein Archives at the University of Bergen, which was started in 1990 with the approval of the Wittgenstein trustees. Huitfeldt and Rossvær (1989) estimated that their electronic complete works would occupy about 40 megabytes, or well over 5 million words. While a substantial fraction of this would consist of drafts of published remarks and the coding needed to represent every variant draft, erasure and rearrangement, there is at least as much material that does not fall into these categories. The entire *Nachlaß* will be published in electronic facsimile and transcription by Oxford University Press, in the near future; according to current plans, the full transcription will be available by the end of 1997. Further discussion of the work of the Wittgenstein Archives at Bergen can

be found in Huitfeldt (1991, 1991a, 1992, 1992a, 1993, and his article in this volume).

In view of the huge quantity of material, the frequent revisions and alterations, and the intimate and complex relationship between different drafts, a comprehensive electronic edition of the Wittgenstein papers will be an exceptionally valuable tool: it can offer the kind of sophisticated concordance and indexing capabilities which will allow the reader to make full use of a printed complete works. While the electronic edition could provide the basis for a print edition, this would be a far from trivial task, calling for a great deal of editorial work, most of which apparently remains undone. An electronic edition of everything in von Wright's catalogue of the Wittgenstein papers is a particularly attractive prospect, in view not only of the sheer scale of the material, but also because of the many multiply interlinked layers of revision. Because of these revisions, the Wittgenstein *Nachlaß* is more like a garden of forking paths than a traditional book or sequence of books. This is not simply because of the vast number of revisions, deletions, alternative wordings and the like, to be found on most pages of the *Nachlaß*, but also because so many passages have a complex genealogy, as they are copied and revised from one text to another. As a result, the idea of a single canonical transcription, the goal of most traditional scholarly editing, begins to seem as chimerical as the idea of a fully analysed language.

Approximately eighty manuscript volumes, notebooks and papers, or over 12,000 manuscript pages, covering most of the years from 1929 to 1951, amount to a line by line record of much of Wittgenstein's later work in progress. Two sequences of volumes, the first numbered from I to XVIII, covering 1929 to 1940, the second lettered up to S, covering the 1940s, comprise the bulk of the manuscript material; the other third includes his last writings, some preparatory material connected with the two main series of volumes, and a number of miscellaneous items. It seems likely that most of the diary entries in the MS volumes were based on preliminary notebooks, but only a few such notebooks have survived; this may well account for stories about how Wittgenstein destroyed much of his writing. The surviving *Nachlaß* does not simply consist of the material that Wittgenstein did not get around to burning, but is rather a collection of material that he saved and ultimately decided to leave to posterity, leaving it to Rhees, Anscombe and von Wright, intending and desiring that they «publish as many of my unpublished writings as they think fit» (Wittgenstein's will, cited in Huitfeldt and Rossvær, 1989, 1).

Wittgenstein's manuscript volumes, as yet almost entirely unpublished, contain a record of the inner dialogue that was the driving force in the development of his philosophical work. Wittgenstein's inner dialogue often took the form of a struggle between conflicting intuitions, in which the final result is a telegraphic recapitulation of his train of thought. For instance, his discussion of solipsism, a central thread in the development of his philosophy, and a topic that receives extensive discussion in the manuscripts and typescripts from the 1930s, only takes up a few extremely compressed remarks in the *Investigations* (1953, I §§ 398ff.) He expected a great deal of his readers: «Anything your reader can do for himself, leave to him», as he once put it (1977, p. 77). Concentrating his attention on a limited number of topics at any one time, Wittgenstein would write short remarks, sometimes a single paragraph in length, sometimes a few pages long. Many of these volumes are a record of first draft writing that might be used or revised in subsequent work. Each remark was tagged with a sign to show his opinion of it; many were subsequently revised or rewritten. Selections were typed up, revised, rearranged, and typed up once again. Over forty typescripts record the repeated revisions and rearrangements that led from the manuscript volumes to his most polished work. Entries in the manuscript volumes show us Wittgenstein at work, raising questions, rejecting old ideas and developing new ones; the revisions and the typescripts show which parts he accepted and the uses he made of them.

Just as the publication of Wittgenstein's 1914-16 notebooks opened up new approaches to his early philosophy and made others seem much less plausible, the post-1929 manuscripts are starting to have a comparable impact on our understanding of Wittgenstein's later philosophy (See Baker & Hacker, Hacker, Hallett, Maury and work by the author, for further discussion of the manuscripts.) But at present, these texts are only accessible to a few determined and patient

scholars, with no means of systematically surveying them. An electronic edition will make it possible to trace the genealogy of Wittgenstein's variant drafts and rearrangements, exploring the emergence of the published texts from the typescripts and manuscript notes.

Wittgenstein's insistence in the preface to the *Investigations* that he was unable to write a book as a seamless whole, proceeding in an orderly way from topic to topic, has rarely been heeded. Considered as an isolated text, it can seem self-contained. But the published *Investigations* is only one of a number of possible arrangements Wittgenstein proposed, many of which extend, amplify or cast light on the remarks in the published book. The *Nachlaß* contains multiple drafts of previous versions of most of the remarks in the *Investigations*, including several attempts to put those remarks into a publishable format. The way of writing and thinking that Wittgenstein describes in his Preface led him to continually rewrite and rearrange his work, so that it can be extremely difficult to separate one piece of writing from another. The *Investigations* is itself is an excellent example of this problem. His editors state in their introductory note to the book that had Wittgenstein published his work himself, he would have replaced many of the last 200 remarks in Part I with a revised version of Part II. More recently, von Wright has suggested that Wittgenstein had planned to use *Zettel* as a way of «'bridging the gap' between the present Part I and Part II of the *Investigations*» (1982, p. 136). But the final preface, dated January 1945, was written before Part II was even drafted. Baker and Hacker reject the view that Wittgenstein considered it to be part of the *Investigations*. They point out that «there is no published evidence, nor any indication in the *Nachlaß*, that Part II was conceived as either a continuation of Part I or as material to be worked into it» and that as late as 1949, Wittgenstein referred to his work on mathematics as the second part of his book (Baker and Hacker, 1980, p. 19). While Wittgenstein's editors may well have described and published the *Investigations* as he would have wanted, the fact remains that the relationship between the published Parts I and II and the rest of the *Nachlaß* is highly problematic.

Much of the work on the final stages of the composition of the *Philosophical Investigations* has already been done, but so far remains

unpublished. During the 1970s and early 1980s, von Wright, assisted by Nyman and Maury, investigated the connections between the *Philosophical Investigations* and its sources in the Wittgenstein papers. Their work on a number of carefully edited typescripts of successive versions of the *Philosophical Investigations* is outlined in the preface to von Wright's book (1982, pp. 6-10). The early, intermediate and final versions of the *Investigations*, as von Wright calls them, were constructed circa 1936-39, 1942-44, and 1945-49, respectively. The early version is divided into two parts: the first is closely related to §§ 1-188 of the final version; the second is the basis for TS 222, published as Part I of the *Remarks on the Foundations of Mathematics*. The intermediate version consists of a slight revision and rearrangement of the material in the first part of the Early Investigations, followed by roughly half of the material in *Philosophical Investigations* I §§ 189-425. Part I of the late version was constructed circa 1945, primarily by adding remarks from *Bemerkungen I* (TS 228), a typescript containing remarks selected from his previous work; Part II was composed in 1946-8 and probably reached its final form in 1949.

As a result of von Wright's research on the origins of the *Philosophical Investigations*, thousands of pages of carefully edited and commented typescripts of previous drafts of the book, including TSS 220, 221, 225, 227, 239, all drafts for Part I, together with a similarly edited typescript of MS 144, the only surviving draft of the published Part II (the typescript on which the published book was based is lost, cf. Hintikka 1991, pp. 187-88) are available in Helsinki, Bergen, Oxford, Cambridge, and Cornell. The edited typescripts consist of a main text accompanied by an editorial apparatus detailing variant readings and the closest typescript and manuscript sources of the remarks. This apparatus, together with a copy of the relevant parts of the *Nachlaß*, makes it possible to look at some of the successive formulations and rearrangements of Wittgenstein's remarks, although it does not attempt to trace the full genealogy of each remark.

Thanks to a number of lists of correspondences between the different typescripts and the published material, it is relatively easy to survey the differences between the voluminous edited typescripts, the microcopies of Wittgenstein's typescripts, and the published texts. For

instance, there are tables listing the sources of the remarks in the *Investigations* (Maury, 1994) and *Zettel* (Maury, 1981). *Zettel*, a collection Wittgenstein made of cuttings from his typescripts, draws on a wide range of sources, but most of the cuttings were drafted during 1945-1948 and are from the typescripts published as the *Remarks on the Philosophy of Psychology* vols 1 & 2 (1980a & b). For each remark, the list cites the last occurence of that passage in a source typescript and manuscript, if possible. The *Zettel* list enables the reader to identify where each slip of paper, usually containing a sequence of a number of remarks, begins and ends, and which remarks were added by hand, thus reconstructing Wittgenstein's original fragments from the editors' seamless arrangement. These lists provide a detailed map of some of the main strata in the final stages of Wittgenstein's revision and rearrangement of his work; but it will take an electronic edition for the ordinary reader to be able to survey them.

While most of this section has been concerned with indicating how the unpublished papers are related to the published material, it would be a mistake to draw the conclusion that all of the most interesting material has been in print for some time and that the unpublished papers will only be of interest to scholars studying the development of Wittgenstein's work. As a small example that can serve to suggest what may yet be uncovered in the archives, consider manuscript 166 in von Wright's catalogue, known as Wittgenstein's «Notes for the 'Philosophical Lecture'» (Wittgenstein, 1993). This set of notes, written for the British Academy's «Philosophical Lecture», an annual public lecture on a philosophical topic, offer a much more clear-cut and accessible exposition of his treatment of the notion of a private language than the published «Notes for Lectures on 'Sense Data' and 'Private Experience'» (Wittgenstein, 1968a. For further discussion of this material, see Stern 1994, chapter 6, §3, and Stern, 1994c).

4. Text and hypertext: Cambridge, Bergen, and beyond

The electronic edition of the Wittgenstein papers will make it possible to look at his writing as an interconnected whole, rather than as a discrete number of self-contained texts. Electronic text is not merely a

new way of reading traditional texts; as a hypertext, it belongs to a new medium that is as dissimilar from printed text as printed text is to a manuscript or conversation. The solid physical boundaries of a printed volume that separate one text from another in the traditional library become just one way of organizing information within the fluid world of hypertext.

One of the most interesting features of the Bergen edition of the Wittgenstein papers is that the editors do not propose to produce anything resembling a traditional collected works. Instead, the end result will be a CD-ROM edition, that will contain not only a comprehensive set of photographic facsimiles of the original text, but also a transcription of the text, coded in a specially developed language, accompanied by software permitting the transcription to be displayed in a number of formats, each representing a different trade-off between a clean text and a fully comprehensive transcription. CDs, best known at present for hifi digital recordings of up to 75 minutes of stereo music, can also be used to store over 600 megabytes of text or images. Each page of the *Nachlaß* will be reproduced in both a low definition black and white image (albeit considerably better than the images on the Cornell microfilm) and a medium definition colour image, which will show far more detail but will require a proportionally longer processing time before it can be displayed. All the black and white images will fit on one CD, permitting rapid display of any part of the papers, while the colour images will be arranged on a four CD set, facilitating closer examination when needed. When the electronic edition is available, which should be in a couple of years from now, a CD drive will be a standard option on new computers, and multiple-CD changers should be readily available (as they are already for home CD players.)

Huitfeldt and Rossvær, in their report on the Norwegian Wittgenstein Project (1989), give careful and thoughtful consideration to the question of what should be recorded in a transcription of the text, so that as much semantically relevant information as possible is encoded. Their discussion of the resources and limitations of their program is an exemplary recognition of the trade-offs involved in designing a workable electronic edition: a «dream» system that offered maximum

flexibility and ease of use might take so much labour to prepare and require such sophisticated hardware that it might be too expensive and labour-intensive to be practically feasible.

When this paper was sent to press, a printed edition of most of Wittgenstein's manuscripts and typescripts for the period from 1929 to 1934 had been announced, but I had not yet seen the first two volumes of the projected fifteen volume series (Wittgenstein, 1993-4). While it will find a home in a number of university libraries, this small selection from the *Nachlaß* will cost far more than the entire electronic edition, and will contain far less information. A user of the electronic edition will be able to print out a number of different editions of whatever text interests him or her—either a complete diplomatic edition, or a variety of less complete formats, tailored to the level of detail that seems appropriate to the research in hand. While the current generation of scholars still regard the printed word as the standard locus of reference, the next generation is likely to regard our attachment to print as an anachronism, just as illuminated manuscripts were relegated to the antiquarian's library by the post Gutenberg generation.

Perhaps one of the most important morals that the later Wittgenstein drew from his critique of his own earlier work is that there is a great danger in philosophy of taking a particular way of seeing things as though it were the only way things could be. His editors' decisions as how to best present his work, which apart from the *Tractatus* and a very short paper on logical form, he never saw to the press, have shaped our perceptions of his writing to an extent that is hard to appreciate until one looks at his alternative drafts and other arrangements of the published material. The same danger, that of mistakenly privileging a particular form of presentation, is also present in a printed complete works.*

Note

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