

Chapter 18. The Meditations

At the beginning of the year 1979, Grothendieck's intellectual life arrived at a major turning point, although this change was not perceptible at first. It began with the writing of the first of his numerous “meditations”. There is no doubt that Grothendieck had always written a lot, even early on, for example the innumerable articles in the *Survivre* newsletter, as well as a considerable correspondence. But for more than ten years he had not composed essays of any length, whether on mathematics or any other subject. Now the writing of these meditations became the main goal of his life, and there is reason to believe that until his passing this never changed.

Let us remind the reader that for Grothendieck, a “meditation” is the written result of a lengthy thought process, a reflection on oneself and one's place in this world. He employed the word *réflexion* extremely frequently. One must bear in mind that for him, “thinking” meant “writing”. He often emphasized the particular nature of his method of work. For example, in a letter to Ronnie Brown dated September 29, 1984 (during the writing of *Récoltes et Semailles*) he wrote:

The speed of handwriting on a sheet of paper, or typing on a typewriter which does the “writing” - this speed and rhythm are just the same as the mind's looking up things and getting hold of them through the use of words. It isn't just a question of “speed” anyhow, but the written word (by hand directly, or by typewriter) is for me essential “material support” in the thinking process. It would be quite a strain for me to get along without such support, if I was compelled to by circumstances - and I am not even sure I would succeed!

The genesis, documentation and reception of the “meditations” is confused; none of them were published in the usual manner. There is already a wealth of secondary literature concerning the most well-known and perhaps most important text, *Récoltes et Semailles*, of which it is difficult to give a real overview. Other meditations are known much less or not at all, some are ready to be edited, and some that he mentioned appear to be lost. Starting around 2004, many of the known meditations were put online and made available, for example by the Grothendieck Circle website¹. At present, very few people have seen what Grothendieck wrote in the years following his “disappearance” in 1991.

To give an idea of the scope of the meditations, let us begin by making a list, with a few details concerning their genesis, content and distribution. These texts will be discussed in more detail in later chapters.

L'Eloge de l' Inceste

This text was written between January and July of 1979. It holds a special position in that Grothendieck himself regarded it as a poetic work. He referred to it as a *chant*, or, in letters to a German friend, as a “*Sang*”. As far as we know (as of 2009) most of this

¹ Later, following Grothendieck's public objections in 2010, they were removed, and now form the subject of ongoing negotiations with Grothendieck's inheritors.

text must be considered lost; for the moment we have only the table of contents and one chapter.

[Grothendieck's Parents]

From a letter to Ursula Heydorn from the year 1979, it emerges that Grothendieck had at that point already written some two thousand pages “in order to follow the trail of his parents”, and that he was expecting to write at least another thousand in the following two months. Apart from this mention, there do not seem to be any other clues about this text, which was probably destroyed in 1990 along with his parents' correspondence².

La Longue Marche à travers la Théorie de Galois

This purely mathematical text was written in the first half of the year 1981 and comprises around one thousand six hundred pages, plus about the same amount in commentary and appendices.

Pursuing Stacks = A la Poursuite des Champs

Originally this 93-page mathematical text was conceived as a letter to Daniel Quillen; it was written in English, was begun on February 19 and finished on November 4, 1983. The editing overlapped somewhat with that of *Récoltes et Semailles*. There exists a substantial correspondence associated with this text, mainly with Ronald Brown and Tim Porter, but also with other mathematicians. In the libraries of certain institutions one can find two versions, an “original version” and a second one that differs from the first mainly by commentaries added to the first fifty pages.

Esquisse d'un Programme

This text of about sixty pages was written in January of 1984 on the occasion of an application for a research position at the *CNRS*. The text was published in its original language, French, as well as in an English translation³.

Récoltes et Semailles, Réflexions et Témoignage sur un Passé de Mathématicien

Récoltes et Semailles is Grothendieck's most famous “personal account”, and was written between June 1983 and May 1986. It was originally intended to be a preface for *Pursuing Stacks*, but quickly took on a life of its own. The actual text comprises

² On March 27, 2010 Grothendieck informed the author that “In July 1990 I destroyed all the manuscripts of my parents and also all of my handwritten non-mathematical manuscripts (with the exception of *Récoltes et Semailles* and *La Clef des Songes*); [...] Also all photographs were burned”. The last is actually not true; the photographs still existed as of April 2010. A few pages of a long letter concerning the meditation on his parents also survive in his correspondence with his sister Maudi.

³ See the footnote at the beginning of Chapter 22.1.

one thousand two hundred and fifty-two pages, plus two hundred pages including the introduction, commentary, summary and table of contents. The text was printed by the mathematics department in Montpellier, and about two hundred copies of the text were sent out to colleagues and acquaintances by Grothendieck himself. Partial translations, some nearly complete, exist in Japanese and Spanish, but as of 2010 only the beginning of an English translation was made by Roy Lisker.

La Clef des Songes

This meditation of three hundred and fifteen pages was written in 1987.

Notes pour La Clef des Songes

These *Notes*, six hundred and ninety-one pages written in 1987 and 1988, were originally meant to be an addition to the original text, but they stand alone as a remarkable work in themselves. In particular, this meditation contains a largely independent text with the title *Les Mutants*.

Développements sur la Lettre de la Bonne Nouvelle

This commentary on the *Lettre de la Bonne Nouvelle*, written between February 18 and March 15, 1990, comprises eighty-two pages and two additional ones (see Chapter 29 for more detail).

Les Dérivateurs

This text of around two thousand pages written in 1990 takes up and develops themes from *Pursuing Stacks*, and is Grothendieck's last known mathematical meditation. A complete annotated edition was made by G. Maltsiniotis and can be found online.

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Grothendieck left several more unfinished and in part very sketchy mathematical manuscripts in the boxes that he left in the hands of J. Malgoire in 1991. There is little material to discuss further at present, but one interesting manuscript on topology from 1986 will be dealt with in Chapter 22.

We end this chapter with a few general remarks on the form and style of the reflections. All the texts have the same basic concept: Grothendieck writes his reflections progressively, as in a diary, and does not alter these sections later on, or very little. If he considers that there is still something to say about a particular section, he resorts to footnotes or appendices, which then sometimes grow into entirely new sections. It also frequently happens that he begins to meditate on parts of the written text, which then generates comments on comments and innumerable footnotes. This manner of writing does little to facilitate the reading, but perhaps more noticeably, in many stretches of these long manuscripts there does not seem to be a clear goal. In *Récoltes et Semailles*, in *La Clef des Songes* and in the mathematical meditation *Pursuing Stacks* and *Les Dérivateurs* one clearly perceives that after having begun to

write, completely new and essential perspectives surfaced and moved into the foreground.

Because the texts do not apparently have a clear goal there is also no clear structure. Constantly changing direction, they follow an unchanneled and meandering path through a wide landscape, as though in a glacial valley. The author allows himself to drift from topic to topic without any real search for form. In this regard, his mathematical texts written in the sixties were completely different. Although EGA and SGA spread out and go into the fine details, there is always a very clear aim: the “right” construction of algebraic geometry and the “right” cohomology theory in algebraic geometry. (It is possible, however, that the rough draft of SGA may not have looked very different from a text such as Pursuing Stacks. This topic merits further exploration, perhaps Volume 2 of this biography.)

There is no doubt that Grothendieck is a master of the use of language. The style of the texts is complex, imaginative and powerful; he often uses language which is in every way comparable to that of a poet. On the other hand, the language is often labored and tedious, with complicated multi-clause sentences stemming from the need for maximum precision. There are lengthy passages in which one fails to sense the inherent elegance and clarity of the French language, and a reader who does not possess an excellent mastery of the language will often have trouble working through the text.

In the author's opinion, it is still too early to form a definitive judgement or classification of these writings. The question remains open as to what they actually are. One could look at them as a sort of conversation with himself, which now and then loses any relationship to reality or to the world around Grothendieck. In any case, they represent a kind of literature for which hardly any model exists.