CHAPTER 10

An Outline of the Systematic-Dialectical Method: Scientific and Political Significance

Geert Reuten

Introduction

Marx and Hegel both contributed to development of the method of systematic-dialectical presentation, or systematic dialectics (SD) for short. Marx himself only briefly wrote explicitly on this method in his scant methodological writings. In this chapter I reconstruct this method, and fill in, or make explicit, any apparent methodological gaps, with a view to what we can learn through SD in the investigation of the contemporary political economy of capitalism.

This chapter is divided into four sections. Section 1 provides a synopsis of the method. Section 2 sets out the concepts and principles of research prior to an SD presentation. Section 3 discusses several general principles of an SD presentation. Section 4 is the substantial part of the chapter and sets out the principles and method of the SD argument or presentation itself. Under these main sections, sub-sections are numbered consecutively and used for internal cross-referencing (§§1–14).

SD is a superb scientific method for the synthesis of knowledge about a social system, and thus for the comprehension of a political economy. In terms of our purpose, the method allows one to theorise what institutions and processes are necessary – rather than contingent – for the reproduction of the capitalist system. This take on the method, initially developed in collaboration with Michael Williams, allows for the detection of strengths and weaknesses in the actual structure of the system itself. Generally speaking, the earlier parts of an SD presentation help delineate the strengths of the system as well as its contradictions (compare Marx’s Capital), while the latter parts help to develop the comprehension of its weaknesses and contradictions (not fully developed in Marx’s unfinished project). Any undue focus on one or the other can lead

1 University of Amsterdam, Faculty of Economics and Business (http://www1.fee.uva.nl/pp/greuten/). I thank Wijnand van der Woude for his useful comments and editing of drafts of this chapter. I also gratefully acknowledge the discussion of an earlier version of the chapter by the other contributors to this book and Martha Campbell.

to political paralysis – weaknesses should be understood in the context of the system’s strengths, and vice versa. §§12–14 of section 4 outline the political significance of the SD method.

In terms of the history of thought, the SD method that I flesh out connects substantially with Hegel’s Logic of Essence. Hegel’s method is especially useful in terms of setting out the strengths of the capitalist system. However, for the reasons outlined in §12, it is not capable of dealing with immanent weaknesses. At that crucial point I deviate from Hegel’s ‘logic’ in a significant way.

The impatient reader will find cold comfort in this chapter – the detection of system-weaknesses is only discussed in the last quarter of the chapter. This is, moreover, a chapter on method. The detail of the strengths and weaknesses requires a systematic presentation of the contemporary political economy of capitalism itself.

1 The Method of Systematic-Dialectical Presentation in Brief

§1 Aim and Synopsis

In principle the method of SD may apply, with qualifications, to natural and social object-realms. For brevity, in this chapter I will refer mainly to the capitalist political economy (in brief the capitalist system, or capitalism), from which I also take examples, generally with reference to Marx’s Capital, which is assumed to be the most well-known SD text to the reader.

SD has in common with other scientific methods that it seeks to know reliably what can be known. One main distinction from most other approaches is the SD claim that the key to the reliability of that knowledge lies in the interconnection of all relevant knowledge about some object-totality. SD is sceptical of any partial knowledge, including model-building, although it does not dismiss this knowledge a priori (§3, §7). Wider perspectives can show the limits, if not the falsity, of partial knowledge.

A second main distinction from all other approaches is the method through which the interconnection of the relevant knowledge is gained (§§9–14). The remainder of this section provides a synopsis of the method, which further sections flesh out. Using the metaphor of a pyramid, as shown in Figure 1, will help in outlining the method.

The starting point, denoted in the figure by ‘α’ , is an all-encompassing conception of some object-totality (capitalism) that abstractly captures the essence of that object-totality (compare the ‘commodity’ for Marx’s Capital). At the same time, this starting point posits what all objects and processes in this totality have in common (§9). While it is important to know what the entities and processes in the concrete world have in common (that is, α), it is, however,
more important to know how these entities and processes are interconnected within that commonality. This interconnection is exhibited in the dialectical conceptual movement between synchronous stages. Each layer, denoted by a ‘$\beta_i$’, is called a synthetic ‘moment’ ($\S 4$). As we move down the pyramid, we get an ever wider and more concrete grasp of the object-totality. Each stage of this dialectical presentation sets out how the system, initially posited abstractly ($\alpha$), can exist. It so provides the conditions of its existence in the concrete world – each time nearer to its empirical reality and so expanding our grasp of it. In the end, this grasp will be appropriate to a full comprehension of the essential working of the object’s empirical reality, here denoted by ‘$\gamma$’ ($\S\S 10–14$), as a self-reproducing or self-sustaining entity. This comprehension, in principle, allows us practically to apply knowledge of the object-totality (in the case of a ‘natural’ object-realm) or practically to reorganise that totality (in the case of a social object-realm).

2 Research Prior to Systematic-Dialectical Presentation

$\S 2$ Object-Totality

A condition for an SD investigation is that its object-realm, in our case capitalism, is inherently systemic; that is, it consists of interacting constituent parts forming an integrated whole (compare $\S 12$ on necessity). This is an ontological
matter. Without wanting to make a divorce between these, a rather epistemo-
logical requirement is that the object-realm can also be presented as a ‘totality’. The received SD view, stemming from Hegel, is that an object-realm can be presented as a totality only when it can be captured by a unifying concept (α in §1) that can successfully lead to the comprehension of reality (γ). However, this alone is not a sufficient criterion for a totality. A second criterion is that the object-realm can be presented without making any assumptions about that object-realm (see §6). This is to some extent a relative matter as we may require assumptions about other object-realms, say biological or physical realms (that is, issues that are not treated in the SD), as the political-economic realm does not exist in a vacuum. A third condition is that violations of these latter assumptions, be they explicit or implicit, do not immediately falsify the knowledge about the object-totality at hand. (In practice this means, for example, that we treat gravity or the general human constitution as relatively stable.)

§3  Research Prior to SD Presentation: Analysis versus Synthesis
SD inquiry encompasses two phases: research prior to the SD presentation, and SD investigation and presentation. Only the systematic presentation is reported – this is the material that one finds in an SD text (compare section 4). This §3 is about the research prior to that presentation.

In principle, the SD method critically appropriates the relevant existing knowledge about an object-totality. This is, of course, generally considered to be a condition for science in general. However, a major distinction between SD and most other research-methods is that in SD investigation synthetic knowledge appropriates analytic knowledge. Consider the following descriptions (rather than definitions) of the terms ‘analysis’ and ‘synthesis’. Analysis: to scrutinise by way of the division of wholes into their elements, or the deconstruction of initial knowledge. Synthesis: to connect, assemble or unite knowledge; the combination of often diverse concepts into a whole by indicating their interconnections. In pre-systematic research the results of existing analysis and empirical research are critically appropriated. The systematic investigation thus presupposes this knowledge (this point will be qualified later). There need be no temporal divorce between this appropriation and the work of synthesis, during which the investigator will often return to this existing knowledge in order to re-appropriate it in the detailed systematic presentation.

Within the pre-systematic research-phase, the researcher engages in a stage of preliminary synthesis – Marx called this ‘abstract determination’ (abstract constitution). I indicated that one condition for an object-realm to be an

3 Marx 1973 [1857–8], p. 101. ‘Determination’ is the standard translation for the German ‘Bestimmung’ (see Inwood 1992, pp. 77–9 on the complexities of the term). ‘Delineation’ is
object-totality is that it can be successfully captured by one unifying concept (§2). Which concept this could or should be is the result of an enormous creative research-process involving a great deal of trial and error. However, once this unifying concept is presented as the starting point of an SD presentation it will seem obvious and simple – and it should! Nevertheless, on page one of an SD work it will not be obvious that the author might be able to present the complexity of the totality (capitalism in the case of Marx) on basis of that ‘simple’, though in fact very abstract, unifying concept.

The pyramid in Figure 2 is a metaphoric image of this abstract determination, or research prior to the SD presentation. The aim of this phase is to move from existing knowledge (the base of the pyramid) to the abstract starting point (the pyramid’s apex, α) of the systematic presentation proper. This seeking of the ‘unity-in-difference’ is not a straightforward process. The base of the pyramid represents analytical research and past empirical studies, which

---


---

one of its connotations; instead of determination; ‘constitution’ might be another approximation. In the current context, one major aspect of this abstract determination is the subsumption of phenomena under more general phenomena, as species under a genus. Note that subsumption does not constitute their actual interconnection (see §10).
developed through the process of making conceptual distinctions between phenomena and of partial analyses, in both everyday cultural history and scientific history. This unity-in-diversity (α in Figure 2) is then the starting point for the SD presentation, as indicated in Figure 3.

We have good reason to believe that pre-systematic research along these lines was also the path taken by Hegel and Marx, to arrive at the respective starting points of their systematic dialectics.\(^5\)

There is, however, a crucial difference between Hegel and Marx concerning the critical appropriation of existing relevant knowledge at this research-stage, which then fed the content of the systematic presentation. The philosopher Hegel drew on the received views of contemporary empirical sciences for data on the natural and social realms; his task was to gain holistic knowledge from his synthetic systematisation of these received views. He was hesitant about speculating on the fate of knowledge at the research-frontier: ‘The owl of Minerva spreads its wings only with the falling of the dusk.’\(^6\)

For Marx this was very different. His study of the then-influential political-economic writings made him sceptical of the received view. Therefore,

---

\(^5\) See also Smith 1993b, p. 18. Marx describes this research in one of his few methodological writings (1973 [1857–8]). For the important insights of the next two paragraphs I draw on Damsma 2012, chapter 1.

\(^6\) End of Preface of the *Philosophy of Right*, 1821.
although he often drew on these writings, he felt compelled to carry out conceptual and empirical analysis of his own.\(^7\) In *Capital* this analysis is set out *alongside* and during his systematic presentation. Although this analysis is systematically placed at the appropriate points (by chapter), this gives Marx's SD presentation a very distinctive complexion, particularly since he usually does not clearly distinguish between his analytical and his synthetic texts. This often complicates the detection of the systematic order.\(^8\)

3 Systematic-Dialectical Presentation – General Principles

Before we discuss the argument of the SD presentation proper in section 4, this section briefly sets out some general SD principles.

\(\S 4\) Systematic Order and Dialectical Moments

The relative significance of a contemporary phenomenon does not necessarily pertain to its historical emergence. Although history is important in explaining *how* the existent came into being, it cannot explain why it is ‘what it is’, nor how the existent is reproduced as an interconnected whole.\(^9\) Therefore the systematic order and conceptual progression of SD has nothing whatsoever to do with the historical emergence of institutions and processes. The fact that ‘commercial capital’ emerged historically prior to ‘industrial capital’, for example, does not imply that the former should have systematic priority.

The term ‘*moment*’ refers to the constituents (each surface \(\beta_i\) in Figure 1) of each progression of the SD presentation. Each new moment marks a conceptual progression. Generally, a moment is a composition of concepts that belong together; these concepts are thus posited as immediately connected, or connected by a mediating concept.

In a text, systematic ordering is inevitably sequential. Nevertheless ontologically we always have the simultaneity of all moments.

---

\(^7\) See also Murray (2003, pp. 157, 160), who calls this Marx's phenomenological inquiry, as distinct from his presentation.

\(^8\) The insight that the distinct complexion of Marx's text is due to this mixture of analysis and synthesis, I owe to Damsma (2012, chapter 1). As with all good ideas, this is obvious in hindsight. For me at least, this at once clarified many of the puzzles of the systematic structure/ordering of *Capital*. Further, Tony Smith's 1990 book has been most important in the detection and delineation of Marx's analytical and synthetic work.

\(^9\) Reuten and Williams 1989, p. 34. See also Smith 1990, pp. 8–9; Arthur 2002, p. 75; Murray 2003, pp. 152–3; and Fineschi in this volume, footnote 14.
§5 Definition and Conceptual Progress

The definition of concepts is an inherent part of analysis (§3), and is useful for that endeavour. However, to the extent that conceptual development is central to the development of science generally, the positing of concepts as ‘definitive’ can hamper this development, even within non-dialectical discourses. Starting from an abstract concept of a totality (α), SD sets out interconnections in a layered movement of increasingly concrete concepts (βi). In so far as we therefore have conceptual development, SD eschews definitions. Nevertheless, at each dialectical level, or moment (§4), it delineates concepts ‘for the moment’. (This means, for example for Marx’s Capital, that an early concept of ‘capital’ – Capital Volume I, Part II – is different from later, richer conceptualisations.) Even so, the early concept is not untrue: indeed, it is true, but only abstractly (‘encompassingly’) so. Its truth is contained in the newly developed concept. Conceptual development progressively details a concept’s conditions of existence.

§6 Absence of Presuppositions and Assumptions

SD not only eschews definitions (§5), it also eschews the introduction of assumptions. Although SD eschews assumptions, it is sometimes not possible to avoid the introduction of an entity or process which cannot be immediately ‘grounded’ (see §10 for explanation of this term), because that grounding requires the introduction of another moment that itself cannot be introduced immediately. In that case, the as-yet-ungrounded entity is introduced on basis of an explicit temporary assumption/requirement that it can indeed be grounded later.10 (Unfortunately many systematic dialecticians call this postponed grounding a ‘presupposition’ at that particular point).11 Generally the

10 These self-imposed requirements of ‘explicit’ temporary assumptions, and ‘reference’ to a later moment, simplify reading and are a courtesy to the reader.

11 This is a misleading use of the term presupposition (‘tacitly assume to be the case’). My view is that the use of the term ‘presupposition’ stems from an inadequate translation of the German noun ‘Voraussetzung’ that Hegel sometimes used. One meaning is indeed ‘assumption’, but Hegel adopted another, ‘positing in advance’, which is better translated as ‘requirement’ (or, in this case, ‘positing the requirement’). Hegel’s use of the verb voraussetzen [‘to posit in advance’] might be translated as ‘to require’. (Compare Inwood 1992, pp. 224–6.) This would indicate that we posit a moment which still requires further conditions of existence.

Marx apparently does not consistently use the term ‘Voraussetzung’ in the way indicated above. To the extent that his use is similar to the one indicated, the standard Fowkes English translation of Capital Volume I (Marx 1976c [1867]) makes it difficult to detect it. For example, in Part II, the terms Voraussetzung or voraussetzen are translated variously
temporary introduction of as-yet-ungrounded moments is merely due to the fact that, whereas the entities or processes simultaneously co-exist ontologically, their written epistemological presentation must be sequential.

Even with this qualification, such SD assumptions/requirements are always grounded within the presentation. An SD presentation is not complete until all the relevant constituents of a given object-totality are endogenously determined, that is, when there are no ungrounded assumptions or exogenous variables.12

§7 Synthesis and the Rôle of Analysis
SD investigation is the process of inquiry from a systematic starting point (Figure 1). This investigation results in the systematic presentation that one finds in an SD text (such as Marx’s Capital). An SD presentation is synthetic.

In §3, I indicated that SD investigation requires sufficient conceptual and empirical analysis for its synthetic presentation. However, if the existing analysis is poor, then clearly the synthesis will be defective. In this case the author of an SD work will need to undertake the appropriate analysis.13 In terms of exposition, these additional pieces of analysis can usually be moved to addenda (independent of the presentation), so that the systematic presentation proper is purely synthetic.

§8 Immanency and Immanent Critique
The SD presentation of a social totality is an immanent one. That is, it sets out the system from the perspective of the object-totality’s principles, norms and standards. This is a principle adopted from Marx. Even if the system is presented from within itself, this does not imply the absence of any evaluation or assessment. When the norms and standards are taken to their logical conclusions, we may detect possible inconsistencies, which an immanent critique makes explicit.

12 See footnote 3 above on the term ‘determination’.
13 In §3 I noted that Marx was confronted with this exact problem, so that he had to engage in analysis himself. In my 2000 paper on SD I neglected the possible requirement for analysis along with the systematic investigation and Guido Starosta (2008) rightly criticised me for this.
4 Systematic-Dialectical Presentation

In this last section we discuss the systematic presentation proper. Strictly, the ‘presentation’ is the text of an SD work. However, it should be emphasised that alongside the actual writing-process, the author is engaging in a complicated SD investigation.

§9 Systematic Starting Point: Requirements

The pre-systematic research (§3) leads up to the starting point of an SD presentation. This starting point is an all-encompassing moment, which comprehensively captures the object-totality. That is, it abstractly (that is, implicitly) captures all the interconnections of all the necessary moments of the totality. Any starting point is inevitably abstract in that it cannot immediately grasp its object in its full, concrete interconnectedness. At the starting point we merely have the appropriation of analysis as an abstract determination (α in Figure 3). Or, we have ‘merely’ posited a unity-in-difference, the unifying concept of the object-totality – such as ‘free will’ for Hegel (Philosophy of Right), or ‘the commodity’ for Marx (Capital). This concept is so utterly abstract – even though it is simple – that by itself it can have no existence and it thus appears impossible. It will at least provoke the question of how this abstraction can be encompassingly true, and prompt further argument or presentation. (At the start of Marx’s Capital, for example, it is not obvious how the commodity, or commodification, could be the unifying concept of the capitalist political economy.) Thus the starting point is apparently impossible on its own: that is, its conditions of existence (grounds) are not apparent.14

At the beginning it is, of course, as yet, unproven that the starting moment (α) indeed is the unifying concept of the object-totality. This has to be shown in the process of progressive concretisation and differentiation (β). As Hegel says, at the beginning ‘difference is still sunk in the unity, not yet set forth as different’. Only on completion of the presentation will we know that ‘[t]he truth of

---

14 Most SD treatises use the term ‘contradictions’ to describe such an apparent impossibility (as well as similar apparent impossibilities that occur later on in the presentation). The term ‘contradiction’ is generally, however, too problematic in the English language. ‘Contradiction’ inevitably has the connotation of ‘inconsistency’, which is not at issue, while in this context ‘apparent impossibility’ more precisely conveys the meaning. (See also Smith 1990, pp. 6, 13; Reuten and Williams 1989, pp. 26–30.) ‘Contradiction’ is the common translation for the German Gegensatz, which is less problematic in German; the English ‘contradiction’ is closer to the German Widerspruch. That is not to say that I exclude the term ‘contradiction’ altogether (§14), but merely refrain from using it in this context.
the differentiated is its being in unity. And only through this movement is the unity truly concrete. Once the presentation is complete – and thus when the initial unifying concept is shown to be inherent in the object-totality, in its full concreteness (γ) – we will have come full circle, confirming the truth of the abstract starting point. Thus the ultimate test of a starting point is the success of the presentation itself.

§10 ‘Grounding Moments’ or ‘Conditions of Existence’: The Mode of Presentation or Argumentation

Through the starting point, we aim to find out which entities, institutions and processes are necessary to make an object-totality, in our case the capitalist system, into a potentially reproducible constellation. That is, a constellation that is potentially continuous and self-sustaining (as in many places, of course, this has been the case for one to nearly two centuries). We seek the ‘necessary’ moments, in contradistinction to ‘merely’ contingent moments (§12).

In Marx’s Capital, for example, through the starting point of the commodity and commodity-relations – an apparently impossible unifying concept for a society – the capitalist mode of transcending this apparent impossibility is presented. Capital Volume I sets out the first main stage of this presentation in the sequence of the commodity, exchange, the monetary-value dimension (Part I), then capital and the production of capital (Parts II to VI), followed by the accumulation of capital (Part VII). Its result is the contour of a potentially reproducible constellation, one that requires further concrete grounding of

---

15 Hegel 1985 [1833], p. 83.
17 Systematically, the starting point is merely the entry-point into the system. In principle – with introductory, referential and explanatory qualifications – we could also have entered at some other moment (think of the metaphoric pyramid). Our queries might have been somewhat different, although another entry-point would again have posed an apparent impossibility. (For example, Marx might have entered his SD in Capital at the moment of capital-accumulation, lacking, at that point, moments such as the production of capital. This would have required the introduction of the temporarily ungrounded moment (§6) of this production of capital, which it must be assumed which can be grounded once we have come full circle.) In this respect, the specific entry-point is somewhat arbitrary. However, to the extent that an abstract and simple moment/concept is easier to understand than a concrete and complex concept, it is preferable to start with the former. The price of this way of beginning the presentation, as the reader of a conventional SD work will know, is that the moments immediately following the starting point can be quite difficult precisely because of their abstractness.
the moments presented in this sequence (Capital Volumes II and III, as well as the books which Marx had planned but not even begun to draft).

Beginning from the starting point, an SD presentation must pose the *proximate condition of existence* of a moment, that is, the *immediate* requirements necessary for the existence of that moment. The terminology for a proximate condition of a moment is its ‘first ground’, or ‘*grounding moment*’.\(^{18}\) To the extent that this grounding moment cannot exist by itself (that is, to the extent that it is non-endogenous), that moment requires *new* proximate grounding moment(s). Thus the original grounding moment’s conditions of existence are progressively developed. In sum then, we have a development or the *movement of (a series of) grounding moments*.\(^{19}\) At each point, the dialectical presentation is *driven* forward by the *insufficiency*, that is, the impossibility, of a posited moment.

This process must continue until we have presented all the *conditions of existence of the entire system* – all the conditions that make it a potentially reproducible system. If successful, all grounding moments will be entirely endogenously determined. Throughout this movement, there is 1) *conceptual differentiation* and 2) *conceptual concretisation*. These are two sides of the same coin. I briefly expand on each.

1) **Conceptual differentiation**: With the progressive grounding movement, we have increased differentiation of phenomena. Recall that the process of research prior to the SD presentation, abstract determination (§3), results in a *unity-in-difference* (see the left pyramid in Figure 4). Within that research-process, phenomena are subsumed under more general phenomena – much like species are subsumed under a genus. (For example, the sale of output, the lease of land and lending money are all market-transactions.) In such a way, an abstract connection between phenomena is established.

This unity-in-difference does not exhibit the interconnection and *concrete* determination, or delineation, of the various subsumed phenomena. For this their *difference-in-unity* would have to be systematically shown: in what respects phenomena differ (see the right pyramid in Figure 4). Each new

---

\(^{18}\) The terms ‘condition of existence’ and ‘ground’ are used interchangeably. The first term has the advantage of focusing on existence, and is perhaps initially more transparent. The term ‘grounding moment’ has the advantage of focusing in on the momentary, therefore emphasising its incompleteness.

\(^{19}\) This movement, together with the two qualifications outlined in the remainder of this section, is in my view the core of Hegel’s Essence-Logic (that is, the second part of his *Logic*).
The grounding moment is also a more concrete determination of their differences. Throughout all of *Capital*, for example, we have the differentiation of ‘capital’ in several ways, such as in *Capital* Volume III, into industrial, commercial and money-/finance-capital.) These increasingly concrete differences thus appear to have been posited in preceding moments only implicitly. In this manner, differences that were not previously set forth as such, appear in increasingly concrete forms. The grounding moment at a new level (say, ‘capital’ at the end of *Capital* Volume I) sets out a still (relatively) abstract existence that cannot yet actually exist, which drives the presentation forward as described.20

With this differentiation, each grounding moment, each level of (relatively abstract) existence of the totality ($\beta_i$) is further determined as a particular form of existence. At each level entities are unity of form and determinate existence – that is, as determined at that level.21 In Marx’s *Capital* Volume I, for example, money has a different form of existence within the moment of Chapter I – where ‘abstract labour’ is its placeholder – than at its more developed form in Chapter III. ‘Capital’ gains different, ever more concrete, forms of existence throughout the three volumes of *Capital*. In Part I of *Capital* Volume II, for example, capital is posited as simultaneously existing as various forms in a circuit ($M - C_i \ldots P \ldots C_j' - M'$).

---


2) **Conceptual concretisation**: Through the movement from abstract concepts and determinations to concrete concepts and determinations (that is, through increasingly concrete grounds or conditions of existence), we set out essential interconnections. This goes on until the level of empirical reality is reached, that is, the level at which all the *essential interconnections* posited earlier (∊₁–∊ₙ) appear in experience (γ). We should now be able to comprehend experience in its essential interconnectedness. Empiricists and purist positivists will argue that we have made an unnecessary detour: did we not have the empirical reality before us all this time? Yes, we had empirical appearances, but – and this is the point of SD – we cannot simply ‘read’ phenomena and understand their interconnections and the relative importance (necessary or otherwise) of different phenomena to a totality. Nevertheless, phenomenal reality is indeed reality (I do not say ‘the’ reality) and the ultimate yardstick for an SD endeavour. *Essence and appearance are inseparable*, even if we distinguish the two throughout the course of the systematic presentation. As Hegel argued ‘[e]ssence must appear... [It] is not behind or beyond appearance, but since the essence is what exists, existence is appearance.’

On completion, if successful the initial unifying concept is shown to be inherent in the concrete object-totality. On arrival at this ‘end’ we are now in a position to re-comprehend the starting point, the earlier moments, and so forth (compare §9 ‘full circle’).

This section has focused on systematic ‘presentation’, the argument by which a totality is outlined, in a sense the ‘result’. The (creative) process by which this presentation is delineated is systematic investigation. I make some remarks about this process in an appendix at the end of this chapter.

§11  **Forces, Tendential Forces and their Expressions**  
(Grounding Moments Continued)

In §10, we saw that the starting point of a presentation is progressively grounded by a movement of moments, the insufficiency of each posited moment driving the presentation forward. This movement delineates the increasingly concrete

---

22 Hegel 1991 [1817], §131. Patrick Murray (for example in this volume) forcefully stresses that this is one of the key points that Marx took over from Hegel.

The epistemological process through which we reach the eventual comprehension of appearance and experience in their essential interconnectedness, and so of the unity of essence and appearance, was metaphorically pictured as a pyramid (Figure 1). This should not convey the impression that in my view reality is ontologically layered. However, I do not claim that there can be no other positions within the Marxian discourse, even within the ‘new dialectics’; see Brown, Slater and Spencer 2002 (and their references).
conditions of existence of both the starting moment and the further moments it necessitates. Earlier conditions of existence do not become irrelevant or untrue – they remain relevant and true – but are transcended by ever more concrete conditions: ‘a concentration of many determinants’, as Marx puts it.23

The ground, in providing conditions of existence (§10), is often further determined by a force (or synonymously, a compulsion), the manifestation of which is termed as that force’s expression.24 A force and its expression are central to an SD presentation of processes and their dynamic effects within the object-totality. (For example, the compulsion to produce surplus-value, which implies the compulsion toward the commodification of labour-power, is expressed in a rate of accumulation.) In the following paragraphs, I briefly expand on: 1) tendential forces; 2) their expressions; and then 3) the interaction of multiple tendential forces.

1) Tendential forces: When a political-economic force (tout court) has an absolute character for the totality the operation of that force is necessary for the existence and reproduction of that totality. (For example, the compulsion to accumulate capital is necessary for capitalism’s reproduction.) That said, it should then be recognised that a force almost never has such an absolute character in regard to any individual constituent part of that totality, since there may a certain balance of contingent influences acting upon an individual entity – a balance of contingencies that does not apply to similar entities generally.26 (For example, whereas a profitable individual enterprise could deliberately interrupt its capital-circuit, cease accumulation and liquidate – in spite of the various constraints that will ‘usually’ act upon it not to do so – the collective group of enterprises must necessarily accumulate in order to reproduce capitalism.) It is in this latter sense that I adopt the term ‘tendential force’, or equivalently ‘tendency’, in keeping with the absolute character of that force for the totality as a whole. A tendential force might not always predominate in any individual case, but it must apply to a significant enough number of cases (note this does not necessarily mean ‘on average’) such that, abstracting

24 Hegel sets out this connection in Division B–C, on Relationship, of his Logic of Essence (1991 [1817], §§135–41).
25 It can of course be the case that a force will be counteracted at times by the operation of other forces. This interaction of forces is discussed in the third point in this subsection.
26 Note that such a contingency is not an epistemological or methodological defect (perhaps at least some of these contingencies can indeed be adequately theorised), but ontologically underdetermined.
from counteracting tendencies, it has a predominant character for the totality. (Thus the compulsion to accumulate capital is a tendential force.) The concept of tendency is not found in Hegel’s work. Marx does posit tendencies in his SD, without, however, elaborating on the meaning of his conception of tendency.

2) Expression of tendential forces: The quality of the expression or manifestation of a tendential force establishes what can and what cannot be quantified within a political-economic discourse generally (including analytical models) and also within a political-economic SD presentation. This quality need not result in precise quantifications of the expressions of a tendency, that is, ex ante, or law-like, in which case the degree of expression is ‘underdetermined’. (For example, accumulation may be necessary for the system, but whether its expression is a rate of accumulation of three or six per cent is contingent. A rate of three per cent may be sufficient for systemic reproduction, but of course other positive rates can also be compatible with its reproduction.)

3) Interconnection of tendential forces: A synthetic dialectical presentation is well suited to the theorising of the mutual interaction of tendential forces (and, in this respect, it is superior to analytical model-building). Systematic clarity demands that we take one tendential force, and the expression thereof, at a time, as one moment, and then connect it with a second force and its expression (one that may perhaps counteract the former), and proceed in this manner. These various moments should then be synthesised as a constellation of interconnected tendential forces and their expressions, as ‘a concentration of many determinants’. (The rate of accumulation of capital, for example, is the complex expression of a constellation of interconnected tendential forces.)

Marx’s well-known presentation of the cycle of the rate of profit in three moments, in Chapters XIII to XV of Capital Volume III, is the paradigmatic case of the presentation of a constellation of interconnected tendential forces. The

---

27 In Marx’s work it is often not clear whether his term ‘tendency’ refers to a force or its expression, or perhaps both (I discuss Marx’s use of the term in Reuten 1997).
28 Note that this expression of a tendential force is also not an epistemological defect – in principle the determinants for one or another certain rate of accumulation can be known. Again, it is due to the ontologically underdetermined character of the expression of political-economic tendential forces.
29 Tony Smith (2003, pp. 27, 30) calls this a ‘meta-tendency’. More specifically (p. 34), he refers to cyclical patterns. A “meta-tendency” uniting the two sets of tendencies can also be derived with systematic necessity: the joint operation of the tendencies and counter-tendencies itself tends to form a cyclical pattern’ (pp. 27–8). His illuminating paper greatly helps to clarify the concept of tendency (especially pp. 26–8, 30, 34–9). Smith and I diverge somewhat with regard to the conceptual ‘systematic necessity’ of (some of) these meta-tendencies (see §14 where I expand on the contingent aspects of cyclical patterns).
first moment (Chapter XIII) sets out one constellation of interconnected tendential forces and their single expression in the rate of profit (a concentration of many determinants). The second moment (Chapter XIV) sets out counter-tendencies. The third moment (Chapter XV) sets out the expression of the earlier moments in a rate-of-profit cycle.30

§12 Necessity and Contingency in a Social Object-Realm
(Grounding Moments Continued)
For an object-totality to exist, all of its conditions of existence (grounds) must necessarily be fulfilled. The grounding movement (§§10–11) identifies which phenomena (entities, institutions and processes) in an object-totality are necessary and which are contingent. Phenomena are contingent when these could be different without changing the essence, the essential functioning and potential reproduction of the system. An example might be the dress-codes of bankers, which presumably have no economic impact. Another might be retail opening hours, or the personal distribution of income between individuals, which presumably do have an economic impact. They are contingent in the sense that an endless variety of opening hours or of personal-income distributions are, in principle, compatible with the capitalist system.

This implies that by means of the presentation, we find which institutions and processes are merely contingent and so ‘in principle’ changeable within the system. This possibility of change within the system is thus an important political consequence of the SD method.31

SD is generally concerned with necessities and not with contingencies. The implication is that everything that is not dealt with, is, in principle, changeable within the system. Necessary institutions and processes constitute the system.

---

30 This rate-of-profit cycle itself has the characteristics of a tendency – prolonged periods of steady growth or of stagnation cannot be excluded a priori. The third moment in Marx’s exposition of the profit-cycle is, after all, the synthesis of two other underdetermined tendencies. In fact, the name given to these three together, in Part III, ‘the tendency of the rate of profit to fall’, is misleading because it focuses attention on the first moment only. See Reuten 2004 and Reuten and Thomas 2011.

31 See Reuten and Williams 1989, pp. 35–6. This political relevance works in two directions. The personal distribution of income between individuals, for example, could, in principle, be changed within the system. On the other hand, the corollary is that if the majority of people are not satisfied with the system even with, for example, that redistribution, it makes sense to strive for possible alternatives to the system itself. Without referring to the methodical necessity – contingency distinction, Smith 1990, pp. 38–40, and 1993b, p. 28 cast this political relevance of SD in terms of ‘fundamental’ and ‘non-fundamental structures’.
On the other hand, contingencies can take us into ‘an endless sea’ of indeterminate possibility (‘it could be this way, or that way’). However, we will see in §§13–14 that the issue is somewhat less simple than it may appear here – at some crucial junctions we cannot neglect contingencies.

Addendum: Hegel and Marx on necessity and contingency: While necessity is central to Hegel’s Essence-Logic, there is no room for contingency in his work. To my knowledge the same applies for other SD works. In his lectures, not published by him, Hegel is quoted as saying, ‘The sole aim of philosophical inquiry is to eliminate the contingent. Contingency is the same as external necessity, that is, a necessity which originates in causes which are themselves no more than external circumstances.’ In his *Encyclopaedia Logic*, Hegel begins the presentation of this issue with the category of ‘possibility’, in the sense that everything that we perceive is possible (he means ‘determinate possibility’, not fictional possibility by assumption). Next he introduces the category of ‘contingency’ (accidentality). The point here is these contingencies (for example, bankers’ dress-codes) may have grounds (or perhaps must have grounds), though these grounds are not a part of, or are not essential to, the object-totality at hand. Hegel’s third category is that of ‘necessity’. Necessities posit the object-totality as an interconnected whole (as set out in §10 above). A ‘necessary’ moment contains the antecedent moment transcended in itself.

This makes sense as far as it goes. As we have already seen in §11, necessary forces could have contingent quantitative expressions. ‘Normally’ this poses no problem in the systematic presentation to the extent that, firstly, this has no consequences for the systematic interconnection of moments, and, secondly, we comprehend these contingent expressions within a totality, that is, when have reached the end-point of the presentation. (Again, in §§13–14 contingencies that are relevant for the systematic presentation will be treated.)

While Hegel is explicit about necessity and contingency, in his scant methodological writings Marx is not, and we must use the content of his texts to make inferences. These inferences are complicated by the fact that Marx expounded analysis alongside his synthetic presentation, without clearly separating the two (§3). Often his (apparent) analysis does introduce contingency.

32 In his *Encyclopaedia Logic* it is the most substantial element of the Logic of Essence’s last Division C: ‘Actuality’.
34 Hegel 1837, p. 28; compare 1991 [1817], §§143–5.
35 Hegel 1991 [1817], §§142–9; compare 1985 [1833], p. 80.
Even so, considering the general structure of his argument throughout *Capital* (and considering the preliminary-draft character of especially Parts IV to VII of *Capital* Volume III) I think that Marx’s synthetic argument mainly addresses necessity. (I cannot substantiate this issue here, as it would require an extensive study.) If this is correct, Marx nevertheless introduces the type of contingency that I treat in §§13–14.

§13  *‘System-Extension’ Type 1: Becoming Necessary*

The SD method outlined in §§9–12 takes inspiration from Hegel’s 1817 *Encyclopaedia Logic*. That said, it must deal with certain methodological limitations to be appropriate for the development of an immanent critique of the (contemporary) political economy of capitalism, for which Marx’s *Capital* laid the paradigmatic foundations.36

At least for the object-totality of the capitalist political economy, a Hegelian account of SD is inadequate because of the complete separation between necessity and contingency it insists upon (compare §12). This §13 and §14 will set out two reasons why this separation is not appropriate, and why particular contingencies should indeed be dealt with. In each case, the result is that

36  Reuten and Williams (1989) was our endeavour to develop this articulation further.
a particular type of contingency must enter the systematic presentation as a ‘system-extension’. The layer $\beta_{n+1}$ in Figure 4 shows a placeholder for these system-extensions. Even so, I stress that SD cannot deal (and in my view, should not try to deal) with other types of contingency.

The first type of system-extension is required because of the organic character of the capitalist system. Here a moment that was once contingent may ‘become necessary’. Consider the juridical property-form of the enterprise. At first sight, it appears to be contingent whether this form is that of the firm (with unlimited liability), or that of the corporation (with limited liability). In quite a few circumstances today this still is contingent. However, both a generalised increasing concentration of capital within enterprises and a generalised continued centralisation of capital-enterprises would be impossible without the corporate form of enterprise (that is, limited liability). Another example is the particular structural developments in finance in the twentieth century that had the result that a continuous ‘creeping price-inflation’ became necessary to the capitalist system.37

In the case of the form of enterprises, Marx introduces the joint-stock company (JSC) at the end of Chapter XXIII and expands on it in Chapter XXVII, in his ‘final draft’ for Capital Volume III. He does not see the JSC as essentially different from interest-bearing capital but rather as a developed form of it.38 One might see this as an immanent development of the system (compare §10 on the form of existence). The case of creeping inflation might similarly be theorised as an immanent organic development (even if more complicated than the former case).

A rigid Hegelian might argue that in such cases an ontologically new system comes into being, requiring a new systematisation in accord with its new necessities. However, we do not have the replacement of the original group of necessities by another different group. Instead, new necessities are added to the ‘previous’ necessities. If this is correct, the organic development of the system adds ever more necessities – the implication is that the system is becoming more restrictive. This insight, a consequence of the SD method, is of course politically important.

37 Reuten 2003. In the same book in which that paper appears, Tony Smith (2003, p. 26) takes a similar view in making a distinction between Hegel’s (or Hegelian) and Marxian SD: ‘Marxian systematic theory is revisable. Historical developments in capitalism may…lead us to discover systematic necessity in areas previously overlooked.’ (I suppose that ‘overlooked’ is just an unfortunate term, because that could make it an epistemological rather than an ontological matter.)

System-extensions, at least in my own investigative experience, occur toward the ‘end’ of the presentation (this also applies to the system-extension discussed in §14, and Marx’s introduction of the JSC). This is in accordance with the suggestion that priority should be given to proximate grounds ‘most necessary’ for the reproduction of the system (§10).

§14 ‘System-Extension’ Type 2: Ontological Systemic Weaknesses and Contingency

The first type of system-extension (§13) is important in assessing the strength of the capitalist system – including its potential for reproduction. We discussed the possibility of increasing systemic restrictions stemming from the organic development of the system.

A second type of system-extension concerns system-weaknesses. There is little to no scope for comprehending these within a Hegelian SD. The reasons for this stem from Hegel’s view of contradictions, combined with the view on necessities.

For Hegel – and here I am in agreement with him – a contradiction can have no concrete existence. Contradictions exist as internal processes, but in their external expressions contradictions are actually transcended in one way or another at a given point in time. Thus the capitalist system ‘temporarily resolves’ these contradictions in one way or another, whence capitalism has a concrete existence.

However, I disagree with Hegel on how contradictions are actually resolved. Because Hegel did not deal with contingency (§12), he had to resolve contradictions at the level of necessity. In this regard, this mode of resolution implies that contradictions are ‘dimmed’ (played down). Consequently, system-defects are reconciled. Hegel’s SD has therefore been called utopian. (Apparently with this in mind, Tony Smith calls Hegel’s an affirmative SD.)

This resolution and reconciliation is executed through Hegel’s Subjective Logic (or the Logic of the Concept – the third part of the Logic).

The key issue here is not that contradictions are resolved – there is agreement that they are – but a different appreciation of those resolutions, includ-

---

39 There is no adequate English translation for Hegel’s (and Marx’s) usage of the German term aufheben (I adopt ‘transcend’ or ‘resolve’ as the context requires). In Hegel’s case as discussed in §14, contradiction does not disappear, but I think that it is fair to say that, not only is a contradiction ‘dimmed’ (played down) on its transcendence into a new moment, but is also dominated by that transcending moment.

40 See, for example, Smith in this volume.
ing their robustness. This different appreciation would seem to be a matter of how the process of resolution is understood.

Along with this difference, Smith and I, and apparently Marx in *Capital*, adopt from Hegel’s method his Essence-Logic – its strength – and leave aside his Subjective Logic.41

Consequently some contradictions require contingent resolutions.42 Rather than being understood as a drawback of the method, this should be understood as a strong point, precisely because the practice of the capitalist system is indeed one of contingent resolution of its contradictions or weaknesses. In other words, even though the system has clearly historically been robust in terms of establishing its necessities, it is nevertheless vulnerable because of its contradictions.43

Apart from in a footnote (to §9), I have not used the term ‘contradiction’ before this section. I am inclined to reserve this term for ontological defects and vulnerabilities (weaknesses that are not resolved at the level of necessity). The contingent resolution of these contradictions – and the defects thereof –

---

41 I differ with any interpretations of Marx’s *Capital* that hint at Marx basing himself on a Subjective Logic, as Fred Moseley (in this volume) does. Marx experimented with it in the *Grundrisse* manuscript (see Meaney 2002, and in this volume). However, he never personally published this manuscript. There is no textual evidence whatsoever deriving from *Capital* that Marx there adopts a dialectical Subjective Logic. (Use of the words ‘general’ or ‘particular’ are of course not evidence for this either, as there is room for terms in dialectical Essence-Logic.)

42 In Reuten and Williams 1989 (pp. 26–30), we indicated why an SD for the capitalist political economy could not reach beyond Hegel’s Essence-Logic. Smith (1990) made this point in a much more sophisticated manner (unfortunately, at that time we did not know each other and the printing of the books coincided). See also Smith 1993b and in this volume. Smith and I seem to agree that contradiction may be a persistent and irreducible characteristic of social reality. Reuten and Williams 1989, more so than Smith, emphasised the contingency of, and shifts in, the essential transcendence of contradiction – so positioning contingency within the essential SD (as I do in the current text). Even so, I do not think we substantially disagree on this.

43 Chris Arthur takes a very different position in his SD project (elements of it are outlined in Arthur 2002 and in http://www.chrisarthur.net/towards-a-systematic-dialectic-of-capital.pdf). He highlights the dominance of capital within the system (we agree on this) and therefore considers Hegel’s Subjective Logic to provide an adequate framework for presenting that dominance. Riccardo Bellofiore (in this volume), without explicitly endorsing Hegel’s Subjective Logic, posits that fetishism empowers capital in a way similar to it being a Subject in the Hegelian sense.
make these are an inherent characteristic of concrete reality.\textsuperscript{44} We have more or less (un)stable contingent practices which ‘temporarily’ overcome contradictions. It should be emphasised that these contingent resolutions inevitably face all the forces earlier posited in the SD as necessary. The insight gained from this ‘system-extension’ – vulnerability in the face of necessary forces and the vulnerability of the very strengths of the capitalist system – is of tremendous political importance.

To illustrate a ‘system-extension’ due to ontological weaknesses of capitalism, I will briefly discuss the (dis)continuous accumulation of capital as generating a crisis-ridden cyclical development of capital. This is one of the main, and probably one of the most important cases where this second type of ‘extension’ becomes significant. Such an extension is required when the systematic presentation arrives at a point when a necessary condition of existence (for example, the condition requiring a continual accumulation of capital) lacks sufficient determination – ‘underdetermination’. Further ‘determination’ can only be provided at the level of contingency, as opposed to the level of necessity. Usually, this implies that several solutions are possible. Of course, in reality one solution will be the case at one particular time. This will not imply, however, that this particular solution will be repeated in the same shape in future (or for that matter, that it has not been different in the past).

In Marx’s 	extit{Capital} Volume I, and in the ‘final drafts’ for 	extit{Capital} Volumes II and III, we see this underdetermination at the level of necessity – and hence the introduction of a ‘required contingency’ in each of the parts of the presentation dealing with the accumulation of capital: Part VII of Volume I (accumulation); Part III of Volume II (reproduction); Part III of Volume III (development of the rate of profit).\textsuperscript{45} Generally, there are sufficient conditions to determine the accumulation of capital, but not for the continual accumulation of capital. Its contingent resolution is in economic crisis and the cyclical development of capital. Even if these cycles have certain common characteristics, the length

\textsuperscript{44} Thus – whereas an ‘apparent impossibility’ (§9) is a matter of the limits of the presentation (we cannot introduce all the proximate conditions of existence of a moment at the same time) which is resolved at a later point in the presentation – ‘contradiction’ is an ontological limit of the system. To the extent that the object-realm for Hegel’s Logic is ‘thought’, he can say (1985 [1833], p. 71), ‘[T]he essence of philosophy consists precisely in resolving the contradiction of the Understanding.’ This manner of resolving contradiction is not appropriate to a presentation of a social object-realm.

\textsuperscript{45} To these we might add the drafts for chapters of 	extit{Capital} Volume III that casually deal with monetary aspects of the cycle: Chapters XXI, XXII, XXX, XXXI. See Reuten 2002, pp. 189–90; this paper deals with all of Parts III to V of 	extit{Capital} Volume III.
and amplitudes of their phases are contingent; thus *the form of existence of the cycle* is contingent.

The ‘non-necessity’ – that is the contingency – of the form of these cycles is clearly of great political importance, especially when viewed from the perspective of the social forms of subsumption of labour (as including unemployment) during the course of a business-cycle.

**Conclusions**

The method of systematic dialectics is particularly well suited to identifying which institutions, entities and processes are necessary, rather than contingent, for the continued reproduction of an object-totality such as the capitalist system. Such a system’s strength is that it immanently generates these necessities (§§9–12). To the extent that it does, the SD method outlined here – which builds on Hegel’s Essence-Logic – is capable of clearly exhibiting this reproduction of necessities. However, a Hegelian SD is not suited to the comprehension of a system that organically generates *new* necessities (§13). Nor is it able to detect and theorise any weaknesses in the immanent generation of necessities in cases of underdetermination, as a consequence of its inadequate treatment of contradictions and necessities (§14). In this respect, the incorporation of *required contingencies* is an important improvement of the method. The political significance of this insight is that it reveals systemic weaknesses and vulnerabilities.

**Appendix: Systematic Investigation**

Section 4 of this chapter focused on systematic ‘presentation’, the argument by which a totality is outlined, in a sense the ‘result’. The process by which this presentation is delineated is systematic *investigation*. (This investigation is itself preceded by the appropriation of analytical and empirical research discussed in §3; compare §7.) In initially grounding the starting point, and then later moments, the *proximate* conditions of existence are presented (§10). But what is proximate? This is, to a degree, a matter of the creative process of investigation. As a consequence, there are no hard-and-fast rules or guidelines for investigation – there are no criteria other than the content of the argument.

---

46 Another strength is that it immanently subsumes the agents of these necessities. This is a matter of content that I have not dealt with.
Nonetheless, to give the reader a feel for the process, I will make a few comments based on my experience in SD investigation and presentation. Systematic ordering is not usually obvious. During the investigative process, a transposition and re-transposition of moments occurs for larger collection of moments (say chapters or parts), but more often with smaller groups of moments (think of the order of sections within a chapter). This is largely a matter of what best ‘fits’.

An example will clarify this. Based on everyday experience, and analysis, banks and the corporate form of enterprises would seem to require systematic placement. When should these be introduced into the presentation? In Capital, Marx introduced these only in Volume III. This ordering, however, is not the only possibility. Transpositions of larger moments, such as the introduction of banks and the corporate form, do make a difference in the arguments that can be made – at least in how concisely they can be made. This seems to be less the case for smaller transpositions, where there is often some arbitrariness.

In the various editions of Capital, we do see some smaller transpositional differences. In order to discover the relatively larger transpositions we should compare the last version with the earliest drafts, that is, those of 1857–8 and 1861–3. Roberto Fineschi has, beyond this, compared nine of Marx’s plans for the ordering of Capital, from 1857 to 1866. In particular, Fineschi outlines Marx’s transposition of the moment of the accumulation of capital in these plans, and the consequences this had for the general structure of the presentation.

The process of Marx’s writing of Capital underscores the importance of systematic investigation. Marx wrote his ‘final draft’ for Capital Volume III in 1864–5; his final drafts for Capital Volume II date from 1865 to 1870 and from 1877 to 1878, from which Engels edited Capital Volumes II and III. Marx published Capital Volume I in 1867. Despite his being under pressure from various people to publish, the decision was his. After 1867 Marx worked almost exclusively on revisions of Part III of Capital Volume II (1877–8), dying in 1883. Why

47 Reuten and Williams 1989, as well as a book that I am currently writing.
48 Between these drafts we have more than just larger transpositions in the SD – the content of the argument changes (one example is Marx’s view on the business-cycle – see Reuten and Thomas 2011). In an important study, Mark Meaney (2002) sets out how much of Marx’s Grundrisse (the 1857–8 manuscript) is homologous with Hegel’s Objective Logic as well as his Subjective Logic (or his Logic of the Concept) – compare Meaney in this volume. In Capital, however, the Subjective Logic is discarded – see Smith 1990, and in this volume.
49 Fineschi 2010, and in this volume.
was it that for more than 20 years he had a more or less complete structure, and drafts, of *Capital* Volumes II and III without caring to publish these, completing his life-work? My answer is that Marx was stuck. Not because he was not able to write the full work, but because he had already published *Capital* Volume I. I suspect that this publication prevented him from making both smaller and larger transpositions of moments over the three volumes. Anyone with experience in doing systematic-dialectical investigation and presentation knows that important transpositional changes are bound to occur until the final draft of the *full* text. Having already published *Capital* Volume I set it ‘in stone’, and prevented these transpositions.50

50 I make this remark here, although the issue would deserve a full paper. In a 2009 paper I provided some hypotheses about it regarding the connection between *Capital* Volume I and the ‘final draft’ for Part II of *Capital* Volume III (the part on ‘the’ transformation-problem). I suppose this (non-)connection from Volume III to Volume I was one major stumbling-block.
References


* Papers with an asterisk can be found in PDF format here: http://www.feb.uva.nl/pp/greuten

→ publications → year.