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Friedrich Engels and the *Dialectics of Nature*

Kaan Kangal

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Marx, Engels, and Marxisms

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Series Foreword

The Marx Revival

The Marx renaissance is underway on a global scale. Whether the puzzle is the economic boom in China or the economic bust in 'the West', there is no doubt that Marx appears regularly in the media nowadays as a guru, and not a threat, as he used to be. The literature dealing with Marxism, which all but dried up twenty-five years ago, is reviving in the global context. Academic and popular journals and even newspapers and online journalism are increasingly open to contributions on Marxism, just as there are now many international conferences, university courses and seminars on related themes. In all parts of the world, leading daily and weekly papers are featuring the contemporary relevance of Marx's thought. From Latin America to Europe, and wherever the critique to capitalism is remerging, there is an intellectual and political demand for a new critical encounter with Marxism.

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Toronto, ON, Canada — Marcello Musto
Bristol, UK — Terrell Carver

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Praise for *Friedrich Engels and the* Dialectics of Nature

"This book gives a detailed analysis of Engels' *Dialectics of Nature* and the fullest and best account that I have seen of the controversies that have swirled around it and Engels' philosophy more generally. It covers debates in the English, German and Russian literature. Remarkably comprehensive. A unique and invaluable resource."

—Sean Sayers, Emeritus Professor of Philosophy, *University of Kent, UK*

"Why has a text on philosophy and the natural sciences written in the 19th century generated so much controversy for so many decades? Kaan Kangal surveys the battlefield in a thorough, lively and insightful way. He takes on those who have been there before him and puts forth his own fresh perspective on it all."

—Helena Sheehan, Emeritus Professor, *Dublin City University, Ireland*

"Kaan Kangal's book is an indispensable resource for understanding and evaluating Frederick Engels' philosophy of nature, his views about dialectics, and their relation to Marx's ideas. The heart of the book is a deep exploration of Engels' intentions, arguments, ambiguities and contradictions, as expressed in his unfinished *Dialectics of Nature*, a 'book' assembled and reassembled by others. Especially valuable are Kangal's account of Engels' different, overlapping projects and his complex relationships with Hegel, Kant and Aristotle."

—Thomas Weston, Emeritus Professor of Philosophy, *San Diego State University, USA*

Contents

CHAPTER 1

Introduction: *Neue Engels-Lektüre*

Some texts are interpreted and discussed more than others. Authors and texts, once valued and canonized, can be demonized and buried in later periods of time. Authors and texts can create audiences or divide communities. The difference between uniform and divided readership is that the former is expressive of shared convictions while the latter brings disagreements to the fore. Typically, the more divided the community of readers, the broader interpretive possibilities one encounters.[1] This, in turn, provokes a closer scrutiny of authors and texts in order to specify constraints on, and set limits to, a variety of interpretations. An increasing variety of compatible or incompatible interpretations leads readers to pay greater attention to the object of interpretation, that is, authors, texts and readers themselves. Ultimately, readers do two things at once: 'going beyond' what is read, and 'going back' to what one presumes to have read. Reading is a bidirectional act that suggests re-reading what comes before and anticipating what follows after. Thus any 'going beyond' necessitates moving simultaneously in the opposite direction, that is, 'going back'.[2] This book deals with that double task: it documents the protocols of 'going beyond' a past author, and it delves into a past author by 'going back'.

The history of reading Engels in general, and the controversies over *Dialectics of Nature* in particular, exemplify a division of communities *par excellence*. It goes like this. We are sometimes told that Engels may not be what we think he is: the political companion, life-long comrade and friend of Marx.

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One tale suggests that Engels is not just the co-founder of modern socialism but *also* its malevolent detractor. As forerunner of dialectical materialism Engels allegedly co-invented 'Marxism' and damaged it at once. He not only betrayed Marx's science but infected it with a disease: *Dialectics of Nature*. It is this infamous work that is sometimes considered the greatest shibboleth of all time. For this reason, Engels is charged with metaphysics, dogmatism, eclecticism, positivism and so on. According to this narrative, dialectics of nature is Engels' own invention, and it must be distinguished from Marx's social scientific enterprise.

Another tale enforces the opposite: whatever stands and falls with materialist dialectics is not an invention of Engels but a product of Marx and Engels' collaboration. Accordingly, Marx and Engels do not diverge but rather complement each other. *Dialectics of Nature* is a crystallization of the Marxist worldview, penned by Engels with Marx's support. Those who come up with strange accusations against Engels do so for political reasons. What underlies their account is a hidden anti-communism under the mask of scholarship.

It is not unusual in the history of Marxism that scholarly debates turn into battlefields. But no other topic seems to have been a matter of dispute to this extent. I am not aware of any other work that has been subject to greater conflict and chaos. *Dialectics of Nature* might be the most appreciated *and* disliked philosophy book ever. The Engels debate goes so far as to divide Marxists into 'Western' and 'Soviet' varieties. Supposing rather naively that there are Marxisms distributed to different regions of the earth, we are sometimes told that those who blindly commit themselves to Engels' dialectics are grouped in the 'East', while the 'intelligent' Marxists are placed in the 'West'.

Looking at their enemies from afar, Engels' critics propose to drop Engels, leave his natural dialectics aside and simply move on. Engels' supporters, by contrast, typically oppose this tendency. As a consequence, the debate clusters around the narrow questions of whether Engels earned his place in Marxism, whether he is a true friend or a genuine foe of Marx, and whether he deserves our attention or rather wastes our time.

At his bicentenary, however, it is somewhat odd to observe that one of the pioneering figures of modern socialism is remembered with mixed feelings. The present study is prompted by a curiosity about the reasons as to why and how a philosopher/politician can be interpreted in so many controversial ways, and by an interest in finding out anything philosophically new and insightful from that infamous book.

From today's vantage point, one might rightfully expect that such concerns as Marx's alleged (dis)approval of Engels and the problem of applying dialectics should have come down to more fundamental questions like these: how to understand Engels' dialectics in its own right in the text as he has written it? What were his intentions and goals? What did he achieve, and where did he fail? These questions hardly need a justification, for if *Dialectics of Nature* is a work that really matters, and if the application of dialectics to nature is a real question, the potential merits of what the author has to say and what his text can offer are self-evident.

Since dismissive attacks rather than reasoned arguments have shaped much of the polemical framework of this literature, it is not surprising to see that the debate has ended up attaching different, conflicting and controversial meanings to Engels' text that are not necessarily there. For the debate was never only about Engels' science; his intellectual prestige and political authority were at stake. Challenging or defending him was, and still is, ideologically motivated, though that motivation has sometimes led scientific argument to personal insult. Present interpretations have often been projected into a past text, but this has risked a clear distinction between author's intentions, his text and its subsequent readings. As a by-product of this fallacy, to which it has contributed in turn, we have the editorial aspects of the text. In the sixty years of publication history (1925–1985), Engels' text has been presented and read differently. Under different titles and with different manuscript arrangements in subsequent editions of the 'book', the audience has met, and was supposed to meet, a different Engels. Invariably, however, a completeness and maturity of his dialectics was always editorially imposed.

The chronicle of the Engels debate testifies that scholars have failed to distinguish Engels' purposes, goals, desires, motivations, intentions and procedures. Relatedly, they have tended to ignore the possibility that Engels' project might have been marked out by potential incongruencies among the tasks that he set for himself and the choices he made in order to realize his plans. Understandably, picturing Engels' science as inconclusive is an undesired interpretive option for the proponents of Engels' dialectics. Yet I cannot help but notice that even his opponents fail to appreciate the incomplete character of Engels' work. That fallacy might have something to do with this: charging someone with the alleged defects presumes that the 'wrongs' are unmistakably there; talking of indecision, by contrast, would make him a 'moving target' that would be harder to hit. Hence we are left in ignorance of his intentions, complete or otherwise.

Seeking proper ways to approach Engels, one runs into the difficulty to decide where to begin. We enter an old arena occupied for generations by countless warriors, both friendly and hostile. Curiously, since the Soviet Union is gone and the Cold War is over, there is not much left of the Engels debate. For the last twenty years or so, scholars have hardly been bothered with Engels' philosophy. The topic seems to have lost its heat; it has perhaps died away. Surprisingly, now might be a better occasion to take up the issue once again. What we need today is more space for reasoned arguments rather than appeals to political authority, closer scrutiny of alternative positions rather than dismissive attacks, interesting questions rather than final answers. Aware of the fertile grounds for endless disputes regarding textual exegeses and eclectic doctrines, the present study aims to dig into new ways of reading, understanding and interpreting Engels.

Here I offer neither an exhaustive analysis of Engels' intellectual biography nor a fully-fledged inquiry into his overall views on philosophy and natural sciences. Instead, I focus on *Dialectics of Nature*, and deal with its most controversial component, namely dialectics. I consider Engels' *Dialectics of Nature* one of the products of, and an intended response to, the theoretical needs and concerns of nineteenth-century working-class politics. The Marx-Engels relationship in general and Engels' philosophical undertakings in particular, emerge from, belong to, and represent part and parcel of, this political background. Concentrating largely on Engels' own intentions in his own text and context, I search for (successful) failures and (failed) successes of Engels' project. I go against the grain of previous attempts either to defend or to defeat Engels by turning to Marx's authority, for I believe that we need to let the philosopher speak for himself in the text as he wrote it. I take into account that his problems were changing throughout the years, because he was setting different tasks for himself and speaking to different audiences. These intentions deserve a reconsideration without anyone else giving him a voice or speaking on his behalf. Thus in this regard what Marx would have said of Engels' dialectics is less decisive than one might usually think.

Drawing attention to the intentional quality of Engels' work, I reveal that Engels was not oblivious to a majority of the theoretical problems that he intended to solve, and he expressed, implicitly or explicitly, a need for a fuller historical and systematical approach. Nevertheless, such intentions remained largely incomplete, an aspect which most participants in the Engels debate do not take seriously. I suspect that these narrow readings have to do with a lack of interest in, if not a purposeful ignorance of, the divisions between what is meant or intended by an author in a text and

how it has been reconstructed by later readers, between a historically definable political agent, and a hermeneutically open intellectual work that is subject to continuous remaking.

When former narratives discard what an author intends to do in favor of what the text is decreed to mean, we are expected to follow certain guidelines to produce a specific reading that is assumed to be more binding than the author's own intentions. By conditioning readers to choose a certain way of approaching the author and the text, we are invited to appropriate one mode of reading and to disregard others. There is certainly nothing wrong with preferring some readings over others, but that decision does not, or perhaps should not, shut down the author's own voice. To paraphrase Hans-Georg Gadamer, the 'horizons' of the past and the present continually merge, but this is not to say that the distinction between the two should be erased.

In addition, past accounts invariably suffer from this fallacy: we are invited to listen to a story of Engels' victories and defeats, to a tale about him written after he lived. This is a posthumous monologue, and he is depicted in it as a figure who buried his precursors for good in one way or another. He is either celebrated or condemned for having done so. However, the same narratives do not question that Engels' precursors may 'throw bricks' back at him as well.

Admittedly, philosophy is a battlefield, and Engels is just another warrior on it. Nevertheless, he was neither the heir to the throne of philosophy nor was he willing to become one. What he did, as anyone else should do, is to redraw the map and reset the coordinates of an old arena in order to orient himself in it. He took up some old issues in this regard and tried to resolve them in the ways other than those of his precursors. 'Dialectics' is that kind of issue, and Engels' take on it is a node in the history of this field. Therefore any appeal to Engels' undertaking requires us to ask what traditions he belonged to, what concerns he hoped to address, and what problems he aimed to solve.

The kind of reading I propose here does not do anything as ambitious as offering a key to unlock 'Pandora's box'. I rather follow the conventional wisdom expressed by Marx. At a certain point, Marx says it is important to 'distinguish what a particular author actually says from what he believes he say' (1966, p. 506).[3] I practice a modified version of this rule. We must distinguish between what *we* think what an author says and what *he* thinks that he is saying, and thus acknowledge the inevitable gap between what he thought he was or was not saying and how much his inner speech is or is not realized in the text.

I have structured this book in a way that allows me to approach to Engels' dialectics in a retrospective fashion. I first peel off the newer and older readerly and editorial layers of Engels' text (Chaps. 2 and 3), and then inquire into the intentions, goals and procedures of *Dialectics of Nature* (Chaps. 4 and 5). The reason for choosing this reading strategy has to do with the need to move one step back in order to see what ideological commitments, philosophical convictions and records of past readings would influence reading Engels anew *before* the reading has even begun.[4] This is then followed by reconstructing the setting of the extratextual context into which the text was born.

Due to the formal limits of this book, I have regrettably reserved the natural scientific material for another study and decided to gravitate mainly toward philosophical dialectics. In so doing, I have set limits to my ambition to do full justice to Engels' science. The negative impact of this decision upon the present work is that I will not be able to play my role fully as part of the audience for which Engels wrote his (incomplete) work. What I will be able to do instead is to document the historically changing semantics of philosophical dialectics in Engels' text and context; to trace the ways in which terminological conventions can foreground very different meanings of concepts such as materialism, idealism, dialectics and materialism that are at the heart of the Engels debate; and to point out what he intended to say when he wrote the text and how he did this.

Since this inquiry is directed by my concerns and by what I take to be crucial issues of the contemporary Marxist philosophy, the questions I pose here do not necessarily overlap the kind of questions with which Engels occupied himself. Although I feel committed to his undertaking as well as to the political-philosophical tradition that followed him, what I have to say about past interpretations of Marxist dialectics will not find support so easily.

For instance, I dismiss, rather paradoxically, some bogus terms like 'Western Marxism' or 'Soviet Marxism' which have been depicted as integrated and homogeneous traditions. For reasons unknown to me, past historiographies take them for granted. In my reconstruction of the Engels debate, by contrast, I make a case that empirically falsifies the plausibility of what these terms are supposed to refer to.

To add more fuel to the fire, I am a proponent of a philosophical account that argues for compatibility rather than divergence between materialism and (a specific sort of) idealism, and between dialectics and (a specific sort of) metaphysics. In this regard, I advocate controversial views such as the following: when contesting Engels' dialectics, some scholars come up with the charge that contradictions do not exist in nature. In my opinion, the

problem is not whether contradictions do or do not exist in nature; rather, that there are *too many* of them. Here is another example: Engels' work is sometimes regarded as *too* metaphysical; I believe that it is not metaphysical *enough*. To name a final charge, Engels is sometimes accused of remaining some sort of Hegelian; I believe, by contrast, that much of the potentially fruitful aspects of Hegel's philosophy is problematically abandoned. Dialectics, metaphysics and idealism, to paraphrase Lenin, are 'sources' and 'components' of Marxist philosophy. It is therefore astonishing to see that they are meant to be insults rather than 'badges of honor'.

It is perhaps obvious that I am inspired by what Lenin once termed 'materialist friends of idealism'. It goes without saying that, despite Lenin's encouraging remarks, they remained 'frenemies' rather than 'friends', and that this ambiguity goes back to the philosophical views propagated by Engels *and* Marx. *Dialectics of Nature* expresses ambiguities of this kind, because it compounds a vast field of problems that remain to be resolved. If this is not a reason good enough to reassess Engels' dialectics, then I am not sure what is.

Readers of this book are kindly advised to keep in mind that what awaits them is a prolegomenon for reading Engels anew. It is part of a larger undertaking to explore new ways of approaching past, present and future problems of Marxist philosophy. It is (self-)critical in spirit and polemical in character. Its purpose is to provoke debate rather than to reconcile differences.

Notes

1. Cf. Halbertal (1997, p. 44).
2. Cf. Ray (1986, p. 13).
3. Unless otherwise noted, all translations or modified translations are mine.
4. Cf. Rabinowitz (1987, pp. 2–3).

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CHAPTER 2

After Engels, After Marx

For the last fifty years or so there has been a remarkable tendency in Marx scholarship that emphasizes temporality. Looking back at things that have been written and done by the pioneering figures of a political past, scholars perhaps began to realize that much of what had been written and said of Marxism(s) involves an inescapable perspective from which that past has been narrated and through which it has been refracted. As always, whenever a story is told, yours or mine, it is told by someone from a present vantage point for present purposes with present concerns. A narrator is supposed to take into account not only a certain past of which that story is told, or particular ways of how the story is told, she should also reflect upon where she stands in the timeline of history and how she is able to relate herself to the past from afar.

The notions of afterness and beyondness articulate, I believe, a temporal relation of this sort embedded in the historiographies of Marxism(s). I have in mind such fashionable rubrics as 'beyond Marx' or 'after Marx' that have been circulated for quite some time. For instance, we have had David McLellan's *Marx Before Marxism* (1971) and *Marxism After Marx* (1979), Antonio Negri's *Marx Beyond Marx* (1991), Terence Ball and James Farr's *After Marx* (1984), Gary Steenson's *After Marx Before Lenin* (1991), Michael Lebowitz's *Beyond Capital* (1992), Martin Jay's *Marx After Marxism* (1993), Saree Makdisi, Cesare Casarino and Rebecca Karl's *Marxism Beyond Marxism* (1996), Manfred Steger and Terrell Carver's *Engels After Marx* (1999a), Michael Buroway's *Marxism After Communism*

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(2000), Daniel Bensaïd's *Marx for Our Times* (2002), Tom Rockmore's *Marx After Marxism* (2002), Göran Therborn's *From Marxism to Post-Marxism?* (2008), Michael Lebowitz's *Following Marx* (2009), Riccardo Bellofiore and Roberto Fineschi's *Re-Reading Marx*, Harry Harootunian's *Marx After Marx* (2015), and Ingo Schmidt and Carlo Fanelli's *Reading 'Capital' Today: Marx After 150 Years* (2017). With a sense of serious irony, Peter Osborne (2016, pp. 47–51) captures this temporality with the phrase 'Marx after Marx after Marx after Marx'.

The motif 'after Marx' has different meanings. For Lebowitz (2009, p. xiii), it means 'to follow Marx' in order to 'rescue and retrieve' him. He asks. 'What does it mean to follow Marx? To come *after*? That is to say, to come after in *time*? To come after in *space*—i.e., to take the same path? Who follows in the same path? The disciple, certainly. But also the hunter, the detective, the tracker. And, then, there is another meaning of follow: to understand, to grasp, to follow the *logical* path.' For Rockmore (2002, p. 1), it means 'to "recover" Marx', that is 'to free him as much as possible from Marxism, hence from Engels, the first Marxist'. 'There is no alternative to understanding Marx as best we can in his time and place from the perspective afforded by our time and place. Any reading of Marx must occur from the present vantage point' (Rockmore 2002, p. 14). Bellofiore and Fineschi (2009a, b, p. 1) argue that 'Marx has largely been read through Engels' spectacles.' Now it is time 'to read Marx according to Marx'.

Erik Olin Wright, Andrew Levine and Elliott Sober (1992, pp. 1–2), by contrast, protest that recent social 'transformations, compounded by developments internal to Marxist theory and to the intellectual culture in which it exists, have led many Marxists to turn away from the Marxist tradition or to move "beyond" it. Thus many of those who have remained on the left have gravitated towards one or another form of "post-Marxism".' In Therborn's terms, post-Marxism is to be understood as the 'recent work' that has 'gone beyond Marxist problematics' without 'a continuing Marxist commitment'. 'It is not tantamount to ex-Marxism, nor does it include denunciation or renegacy; development and new desires, yes, maybe even divorce, but only on amicable terms' (Therborn 2008, p. 165).

For some scholars, it is the issue of orthodox dogmatism that provokes all these re-readings of, and going beyond, Marx (cf. Osborne 2016, p. 48). In Bensaïd's understanding, to separate the real Marx from orthodox interpretations 'does not mean pitting some original, authentic Marx against counterfeit versions, or restoring a truth seized from us long ago,

but disturbing the heavy slumber of orthodoxies' (Bensaïd 2002, p. 2). For Michael Heinrich (2009, p. 79), reconstructing Marx means 'to collect and maintain what has been lost, and to reread the later texts in the light of the earlier ones'. This undertaking, however, runs into some difficulties, so the argument goes, for the very reason that, in its attempt to discover and reveal the 'real but *hidden kernel*' of Marx's work, it naively assumes that there is such an internal coherence. Recent materials published in the historical-critical edition of Marx and Engels' works (MEGA) give good reasons to suspect that Marx's work consists of questions rather than answers, fragments and unfinished projects rather than complete systems (Heinrich 2009, p. 74).

There are a couple of things at stake here. Following Lebowitz, one can assume that Marx has been read in many wrong ways. Narrative distortions and misrepresentations are to be undone by recovering an 'authentic Marx'. The primary suspect in contaminating Marx's theory, according to Rockmore, is Engels. Hence Engels is to be taken down from the stage. Here the unspoken presumption is that Marx needs us in order to be rescued from Engels and Marxism(s), so that he can speak to us without Engels, or anyone else after him. After Marx's death, Carver (1998, p. 171) asserts, 'Engels made Marx live on not only by giving him a voice of his own, but also by constructing a narrative such that when Engels spoke, Marx seemed to speak, too.' As a result of the 'narratives constructed by Engels', we are told, 'it is not clear in textual terms if Marx is one person or two, and therefore precisely whose voice … is speaking to us through the texts we read' (Carver 1998, p. 166). At this point, Carver seems to mean by Engels' 'voice' actually a 'noise'. The moral of the story is this: we have been dancing to Engels' music all along, but the party is over. It is time to go 'back to Marx', and Marx alone.[1]

Heinrich's frustrating warning is interesting in this regard, for what awaits us in this 'going back' will be disappointing in terms of unity and coherence. Bensaïd, by contrast, is not so much concerned with getting Marx's story right as with axing the canonized settings of getting Marx's story crooked. Wright, Levine and Sober fail to make much sense of this jungle of 'after', 'beyond' or 'post-Marx'. But at least they seem to be aware that, for some, 'after Marx' does not promise much except for bad jokes or annoying surprises, and for others, it signals a fresh beginning in the ways that either Marx makes a comeback in our times or we revisit him with a time machine.

Marx, Engels and Authenticity

The aforementioned ambiguities concerning 'after', 'beyond' or 'back to Marx' point to at least one unresolved issue: do multiple Marxes, as they come down to us, contain an authentic Marx that is distinct from the narrative layers covering him? In other words, is Marx's theory what we are told it is, or is there something genuinely wrong (or right) with the subsequent representations, including that of Engels, that come 'after Marx'? Conversely, it can be questioned whether there is such an authentic Marx, for authenticity is a claim that is made after Marx, on his behalf, with present concerns.

Authenticity suggests recovery of something or someone that has been excluded, forgotten or suppressed (cf. Gouldner 1980, p. 284). If it is Marx who needs to be restored, then the task of the scholar is to rescue his forgotten, neglected or underestimated sides. Engels has allegedly done much harm to Marx. Therefore we are assigned to undo those damages and bring the 'real' Marx back. The flipside of the 'real Marx' is the 'real Engels': not the friend and comrade as we used to think, but the contaminator, distorter and the enemy within. Engels is not just someone but also something: a disease, a nightmare, a horror story. If Marx is to be cured, he needs to be purified from Engels.

There is a body of literature dedicated to this task. Its particular mission is to uncover an alleged myth that Marx and Engels had a perfect relationship and agreed on everything. Marx's materialist dialectics is a case in point. Shlomo Avineri (1968, p. 65), for instance, claims that Marx's worldview is wrongly considered to be materialism. 'Marx himself never dealt with materialism systematically.' That scholars heavily rely on Engels' narrative of Marx leads them to believe that Marx was a materialist. 'Much of what is known as "Marxist materialism" was written not by Marx but by Engels, in most cases after Marx's own death.' Leszek Kołakowski (1968, pp. 47–48) finds in Marx's theory an anthropocentric idealism, according to which reality 'divorced from man "is nothing"'. The world is an artificial product created by human beings. 'In this world the sun and stars exist because man is able to make them his objects, differentiated in material and conceived as "corporeal individuals".' Engels, on the contrary, believed that 'man could be explained in terms of natural history and the laws of evolution to which he was subject, and which he was capable of knowing in themselves' (Kołakowski 1978, p. 401). In a similar vein, Alfred Schmidt (1971, p. 59) argues that it was Engels, not Marx, who sought to 'interpret

the area of pre- and extra-human nature in the sense of a *purely objective* dialectic[s]' that lapsed into a 'dogmatic metaphysic[s]' (Schmidt 1971, p. 51; emphasis in original). For Marx, by contrast, there can be 'no question of a dialectic[s] of external nature, independent of men' (Schmidt 1971, p. 59). Claiming the opposite is 'sheer nonsense' (Schmidt 1971, p. 51) because '[n]ature becomes dialectical by [the] producing men' (Schmidt 1971, p. 61; cf. Kangal 2017b, c). According to Norman Levine (1975, p. 230), the 'major differences' between Marx and Engels amount to what he calls 'Marxism and Engelsism'. Succeeding generations have 'made the crucial mistake of thinking that the close association of the two men both during and after Marx's death meant that Marx and Engels shared common ideas about everything. Therefore, when they read Marx through the eyes of Engels, they thought they were reading Marx. In truth, they were reading Engelsism' (Levine 1975, p. 240).

There is another body of literature that claims the opposite. Its most famous pioneer is V.I. Lenin (1974, p. 51): Engels' views are in 'full conformity' with the 'materialist philosophy of Marx'. Only 'a sworn enemy of Marxism' can use philosophical views to open 'a direct campaign *against Engels*' in order to 'counterpose Marx to Engels, accusing the latter of "naïve dogmatic materialism"' (Lenin 1977, pp. 98, 99; emphasis in original). Abram Deborin (1924, p. 49) characterizes any attempt to sharply contrast Engels with Marx as concealed mysticism and idealism. According to John Hoffman (1975, p. 56), materialist dialectics is 'no invention of Engels'. On the contrary, 'it was worked out in collaboration with Marx and had his full agreement'. John Stanley and Ernst Zimmermann (1984, p. 226) assert that those who separate Marx from Engels deny the fact that Marx actually endorsed Engels' natural dialectics. Marx 'took a strong interest in science and regarded a dialectics of nature as essential to his theory of a unified science'. In Teodor I. Oiserman's view, no true scholarship but a hidden anti-communism is behind those who come up with charges against Engels and separate him from Marx (Oisermann 1978, pp. 44–45).

The critics identify the Marx-*and*-Engels epithet with scholarly amnesia and ideological blindness. 'Leninists', in turn, charge their opponents with textual distortion and historical falsification. No one seems to deny that Marx's theory has been further developed and transformed by Engels, but not everybody is happy about the ultimate outcome of this process. For different reasons, both accounts call for a rigorous engagement with the (dis)connections between Marx's and Engels' theoretical enterprises, pri-

vate communications and political activities. For different reasons, again, both accounts accuse their counterpart of projecting their own views onto Marx and Engels and defending themselves when they defend Marx-*and*-Engels or Marx-*against*-Engels.

It is particularly Engels' *Anti-Dühring*, *Dialectics of Nature* and *Ludwig Feuerbach* which a series of scholars succeed, or fail, to make sense of in Engels' own terms and with regard to the Marx-Engels relationship. More often than not, some passages or specific lines or even words are violently extracted from Engels' texts and isolated from their contexts, and the presumed contentions of Engels live on in those quotations and in the comments accompanying them. As a result, Engels comes down to us in so many different shapes in which he perhaps would not have recognized himself. In a way, Engels (1968, p. 75) shares the destiny of Marx, as he once wrote to one of his correspondents that 'there are passages taken out of the writings and the correspondence of Marx, and interpreted in extremely contradictory ways, just as if these were texts from classic authors or from the New Testament'.

For those scholars who invest a great deal in exposing wrongs of Engels, the point is to depict the kind of Engels who is foreign to himself and to Marx. The problem, however, is that if there was something seriously wrong with Engels, then Marx was somewhat deluded about Engels. After all, the Marx-Engels relationship amounts to a jointly formed, shared, defended and propagated worldview and political perspective, and a four-decade-long mutual support, correspondence and corroboration. They defended a shared political position in the League of the Just in France, in the Communist League in Belgium, in the First International in England and in the formation of the Social Democratic Party of Germany. Engels (1989, p. 190) said once that to 'describe Marx's activity in the International is to write the history of the Association itself, which in any case lives on in the memory of European workers'. With regard to their authorial collaboration, Richard Sperl (2004, p. 18) counts more than 100 corroborated works of Marx and Engels, including 12 long and 30 short texts and at least 60 co-authored newspaper articles, among which *The Holy Family*, *The German Ideology* and *Manifesto of the Communist Party* are the most well known.

From the Leninist point of view, the critics' deep dissatisfaction with Engels probably goes back to an unwillingly shared position with Engels, not to mention the envy of Engels' privilege in representing Marx and Marxism(s) in his own ways, distorted or otherwise. If Engels followed or

went beyond Marx in any sense of these terms, he must have failed to do so, for Marx's theory, according to the critics, is not compatible with Engels' philosophy. Since the critics cannot undo Engels or the Marx-Engels relationship, or just topple him by installing themselves in his place, they remain bound to what is historically given. They seek for narrative fields which they can occupy so that at least the Marx they rescue enters our vision more than the 'distortions' of Engels do. Let me say a couple of things about the playground on which such a strategy is initiated. This has to do with Marx and Engels' alleged differences.

When it comes to inheriting Marx's science, we all invariably do our own thinking as a kind of 'after-thought' or 'thinking-after' (Richter 2011, p. 8). The act of 'following after' or 'going beyond' always marks an inevitable difference between what comes before and what follows it. As Gerhard Richter (2011, p. 8) suggests, what follows perpetuates 'its predecessor by remaining bound to the concepts and conditions of that from which it was thought to have taken its leave'. When a prior instance of theory gives way to what follows upon it, it does so by affirming what is yet to come. The posterior marks the *not*-yet of what precedes it and what is left behind. If there is a following at all, it must be a negation *and* a confirmation of the original point of departure. One present concern is whether such a divide between prior and posterior is a 'difference', or whether it rather exemplifies a 'break' or 'rupture'. In other words, how does one distinguish the act of 'following' from an act of 'breaking away from'?

In this regard, Leninists would perhaps assert that the critics stand before an uneasy task of pointing out precisely where Engels' following of Marx did *not* take place. Furthermore, if this is an acceptable challenge, the question concerning Engels' presumed break with Marx, or that of Marx with Engels, is still pending. More often than not, many scholars tend to believe that 'difference of' squares with 'break away from' or 'conflict with'. Accordingly, if there can be found a thin layer of evidence that can point toward any 'difference', it is usually interpreted as a rupture. That, say, Marx did not write anything substantial on the philosophy of nature, as Engels did, signals on this view not a mere 'difference' but a 'break'. Even if there were a break or rupture in the Marx-Engels relationship, we should be offered an explanation of whether Engels and Marx did succeed, or fail, to break with, or turn away from, one another and from themselves, respectively. In other words, the critics need to demonstrate convincingly that Engels' 'going beyonds' and 'followings' were *not* encouraged, supported and enabled by Marx. After all, it was Marx (1985,

p. 546), not Engels, who said 'I invariably follow in your footsteps', referring to the latter's position in philosophy and natural sciences.

The critics may, in turn, object that the majority of evidence provided to support the Marx-*and*-Engels template is questionable or even dubious. Furthermore, even if '[t]here is little evidence of any major intellectual dispute between the two men', as Levine (1975, p. 231) disappointingly admits, the critics do not seem to be disturbed so much by the textual evidence as by ways of how it is interpreted. Therefore Levine (1975, p. 230) asserts that 'Marxism and Engelsism can only be explained as arising from philosophical differences between Marx and Engels.' This is indeed the main contention of his book *The Tragic Deception: Marx Contra Engels*: 'major differences of thought existed between Marx and Engels' (Levine 1975, p. 228). Unfortunately, this position gives rise to more difficulties than the solutions it offers. For if the thesis concerning 'difference' cannot be textually supported but rather derived from a certain reading, it is up to one's own interpretation to figure out the Marx-Engels relationship which, in turn, depends on the theoretical framework upon which one relies and the private philosophical and political beliefs one defends. Accordingly, Levine cannot rule out alternative readings of Marx because there is a great variety of worldviews and beliefs that determine the ways that each reader, including Engels, can come up with an original account of Marx that is equally admissible as Levine's. Alternatively, Levine must conduct the debate from a position of assumed authority. To paraphrase Carver (1998, p. 234), such positions generally have a 'trajectory towards closure and exclusion, or to put it simply, "We are right and you're wrong."'

What we have in the end is a version of hermeneutic circle: I confirm what I have already believed, and I do not look for something which I have not already found (cf. Gouldner 1985, p. 293). Those who disagree with me do so precisely because they do not share my views, values and goals in the first place, nor do they belong to my interpretive community in which these views, values and goals are constitutive. Consequently, there is no room for a debate because difference of views enables and cancels it out at once. Then how to explain why there is a de facto Engels debate? Does it make sense to engage in it? There are certain reasons as to why there is a debate, but it does not necessarily make sense to engage in it in the ways previous scholars already did. Two factors are crucial: political practices of reading and hermeneutic procedures that are informed by, and effect in turn, a system of beliefs, political or otherwise.

Politically, Marx and Engels are resituated in contemporary intellectual settings based upon which one's own ideological position is distinguished from others' ideological positions. On one side, we all unwittingly share with Engels a chronological and theoretical afterness in Marx's shadows (cf. Ball and Farr 1984, p. 5). On the other side, some of us tend to convert others', including Engels', 'being after' into a 'behind' or 'back' in the sense of 'falling behind Marx' or 'behind Marx's back'. Some political views lead to, and find support in, Engels' alleged flaws. Ultimately, the problem turns out to be not Engels alone but also Marx, who maintained his partnership with him. From the opposite point of view, there is nothing wrong with Engels or with his relation to Marx, for there was a division of labor between both men according to a prior agreement that they kept alive for forty years whereby Marx played the leading role and Engels supported it. Thus the issue at stake, that is, the Marx-Engels problem, is a fiction or an invention of those who come up with the charges in the first place.

Hermeneutically there is no real consensus of what belongs to the debate. In other words, there is no negotiated minimum set of rules that regulates the functioning mechanisms of the debate. Ideally both sides need to agree, implicitly or explicitly, on what counts as an interpretation and what an interpreter does when someone or something is read. It should ideally also be clear whether author's intentions, text's meanings or reader's postulations are the issues at stake. Last but not least, some criterion for justifying a claim is needed as well. These are the regulative ideals that help developing a proper argument and conducting an unbiased study. Such suggestions might sound commonsensical, but they are not always followed. This is not very surprising, because rational argument here appears to have an instrumental rather than an intrinsic value. Certain hermeneutic procedures are usually followed in order to establish 'the true origins' of political currents, to draw bold lines between one's own community and others' communities, and to maintain internal coherence while pointing at others' defects. To this end, scholars sometimes claim right things for wrong reasons or wrong things for right reasons. We also witness that some of the most reasonable premises can lead to some of the least plausible conclusions, or conversely. 'The Engels debate', as I coin the term here, expresses precisely this contradictory unity of strengths and weaknesses, merits and faults, of conflicting views.

The Politics of Reading Engels

The ambition to peel off the Engelsian layers of Marx's views is symptomatic with regard to a much deeper concern to establish unity and coherence *within* Marx and Marxism. It is this obsession with an authentic Marx, whom the critics so energetically try to recover and rescue from Engels, that makes me wonder whether authenticity is a scientific ideal in the first place. To some extent, such accounts rather defend themselves when they capture their own mirror image in Marx. At that point, Engels seems to be read and interpreted from the 'spectacles' of an 'authentic' Marx. It is this post hoc construction of Marx that hardly allows Engels to speak. Curiously enough, this is where another question arises: is there another Engels that might come down to us, without an (in)authentic Marx, giving him a voice and speaking on his behalf?

Steger and Carver (1999a, b, p. 7) seem to be aware of such problems when they ask whether there is

> such a thing as an authentic Marxism, traceable in genealogical fashion from contemporary socialists back to Marx and Engels? Does it make even sense to raise this question? As the long history of socialist factionalism and sectarianism shows, questions of Marxist legitimacy and authenticity have been at the root of numerous political and theoretical battles. But aside from the problems regarding what elements should be included in a genuinely Marxist tool kit and who passes the ultimate judgment in what context, the tentative formulation of an even remotely satisfactory answer to this question must employ a strong research focus on Engels after Marx.

What Steger and Carver refer to (Engels after Marx's death or the late Engels), and what other variegated forms of afterness have in common, is that they entail more than a simple temporal posteriority. In order for some sort of afterness to happen, Marx's theory must have survived, and continued to have an (after)life, in its Engelsian metamorphosis. Anything bogus, counterfeit, fake, illusory or factitious is ascribed to this metamorphosis. This is then contrasted with an authentic, genuine, real, original or unique Marx. The 'authentic' Marx is uncoupled from the aura of Marx-*and*-Engels so that an empty space is created which, in turn, is filled by that very authenticity. This is where Marx the 'charismatic lawgiver' comes in and Engels the 'bad epigone' is left out. Thus *topoi* of theory are divided into separate safety zones. 'Border patrol' is at work. Passengers are policed. There are 'us' and 'them'. Latecomers must decide to which side they belong.

Now the problem is that theory is not something that can be parceled out whereby some portions of it can be possessed by various groups. No one is at liberty to transform it into their private property and protect it from 'outsiders', including Engels, who might enter it. Leninists protest against precisely the attempt to suppress one of the most crucial components of socialist theory, due to which that theory's development could be sustained. When critics separate Marx and Engels, they do not really 'protect' the former from the latter, but rather themselves from competing accounts that they are unhappy to encounter. Usually those elements are repressed that one does not like so that one's own theory is distinguished from all others' theories. Engels' misfortune is to have been made the scapegoat of this internal struggle. Hence the double standard displayed against him. Sebastiano Timpanaro (1975, p. 74) puts it well:

> In all of these operations, there is a need for somebody on whom everything which Marxists, at that particular moment, are asking to get rid of can be dumped. That somebody is Friedrich Engels. Vulgar materialism? Determinism? Naturalistic metaphysics? Archaic and schematic Hegelianism? Marx turns out to be free of all these vices, provided one knows how to 'read' him. It was Engels who, in his zeal to simplify and vulgarize Marxism, contaminated it. Thus, whereas Engels is loaded down with materialist ballast, Marx can take on that physiognomy of a profound and subtle (and still uncomprehended) great intellectual which is *de rigueur* in our cultural world.

Indeed, if Engels played the role of a 'banalizer and distorter of Marx's thought', one will eventually find 'many of Marx's own statements too "Engelsian"' (Timpanaro 1975, p. 77). If the critics seek for some theoretical defects, they can alternatively admit that all the problems associated with Engels may be found *within* Marx and Marxism rather than *between* Marx and Engels. After all, it is a present understanding of Marxism(s) according to which Engels is accused of having smuggled in all the 'heresies' rejected *after* him by the back door of socialist theory. In this regard, Engels' name stands for a later obsession to establish one's own identity by drawing bold lines between oneself and others. The usual way of conducting this operation has been so far to minimize the similarities and to focus on the differences between Marx and Engels. Paraphrasing perhaps the Chinese idiom *yi fen wei er*, Alvin Gouldner (1980, pp. 252–253) draws attention to the logic of 'one divides into two':

> The splitting mechanism makes one thing into two, stresses the virtues of one, while emphasizing the defects of the other. In effect, the contradiction *within* one entity is thus resolved by reconstructing it as *two* entities: one, whose negative character is focalized; a second, whose positive character is stressed. This has the effect of reducing the dissonance of the single 'gray' object where strengths and weaknesses are complexly intermingled, by substituting for it, one object, all white, and a second, all black. Ambivalences to the original object are resolved; persons can now whole-heartedly accept one of the objects and unambivalently reject the other. Splitting thus produces both uncritical hero worship and unworthy 'scapegoating'.

It might sound surprising that in terms of locating contradictions within Marxism, or between Marx and Engels, Leninists actually have the upper hand, for they, like Engels, embrace the idea that everything consists of contradictions, though not necessarily in the sense of depreciation and slander. Just like the act of 'following', the 'division of labor' between Marx and Engels can be viewed as a contradiction. For instance, Marx (1981, p. 114) says that he and Engels 'work to a common plan and after prior agreement', and Engels (1990a, p. 382) speaks of his 'forty years' collaboration with Marx' during which he 'had a certain independent share in laying the foundations of the theory, and more particularly in its elaboration'. These anecdotes can be taken to refer to explicit points of departure for brave new explorations in the realms of theory that are gravitated by a shared worldview with common political goals. Naturally a 'difference' is always involved in this, or any other, shared project. As Samuel Weber (2004, p. 19) suggests, '[i]n order to share and partake, there must … be a concomitant dividing or divesting, a *parting* or, perhaps more precisely, a departing, a taking leave, a *partitioning* in order to *im-part*'. Any 'parting entails a departure, not simply as the dissolving of a relationship, but rather as a singular way of (re)constituting one'.

The question then is whether and how the delicate balance between the gravitational center and the periphery of theory could be maintained (cf. Gouldner 1985, p. 293). Seen from this angle, 'contradiction' not only makes sense, but it appears to be necessary and inevitable. Unfortunately, this is not the point that the critics are interested in. What they are rather keen to exhibit is a direct link between Engels' philosophical 'sins' and 'corruptions', on one side, and their political extrapolations by what came to be known as 'Soviet Marxism', on the other. Once again, Engels becomes the scapegoat when Marx and Marxism are rescued from political disgraces and failures associated with 'Soviet Marxism'.

For example, Herbert Marcuse (1969, p. 137) stresses in a genealogical fashion a continuum between Engels' alleged reification of Marx's theory and the ideological constitution of 'Soviet Marxism'. Dialectics has undergone a significant change in the hands of 'Soviet Marxists': 'it has been transformed from a mode of critical thought into a universal "world outlook" and universal method with rigidly fixed rules and regulations'. Thus Marxism is vested with 'magical qualities of official thought and communication'. From the viewpoint of its political outcome, Engels' theory is seen as the origin of the problem. 'The first step in this direction was made by Engels in his Dialectics of Nature … and his notes have provided the skeleton for the Soviet Marxist codification' (Marcuse 1969, p. 138). Engels' dialectics is full of 'empty shells', for it ignores the fact that a dialectical theory of historical reality 'includes nature in so far as the latter is itself part of the historical reality … in the interaction [*Stoffwechsel*] between man and nature' (Marcuse 1969, pp. 143–144). Subsequently, Engels gave rise to the 'Soviet Marxist hypostatization of dialectic into a universal scientific outlook', that is 'codified into an ideology and interpreted by the officials of the Party' in order to justify its 'policy and practice' (Marcuse 1969, pp. 145–146).

With a more criminological tone, Kołakowski (1978, p. 408) makes the same case. 'Engels's "dialectic of nature" is full of obsolete examples and unfounded speculation' and 'its effect in the Soviet Union has been to stifle sciences, not bring them to birth … Engels is not wholly innocent in this respect.'

Schmidt (1971, p. 191) believes that there is a direct connection between Engels' philosophy and Stalin's politics. By reducing 'history to the special area of application of nature's general laws of motion and development', Engels 'cleared the way for the institutionalized division of theory into dialectical and historical materialism, which is characteristic of Stalinist ideology but meaningless from the Marxist point of view'. This view is then joined by a Berkeleyan idealism ascribed to Marx: 'Stalin himself and Stalinism as a whole drew from this the dogma of the absolute objectivity of historical laws, which act independently of man's will and differ in no respect from the laws of nature' (Schmidt 1971, p. 192).

Finally we have a conspiracy account in Frederic Bender's *The Betrayal of Marx*. Bender complains there about an obstacle to a clear understanding of Marxism. This has been the 'failure to distinguish the views of Marx from those of his epigones, including the most important of these such as Engels, Bernstein, Lenin and Stalin'. Contrary to the 'apologists of

"official Communism"' and the 'pundits of Marxist-Leninist orthodoxy', the development of 'Marxism after Marx' is a history of 'betrayal'. Engels has committed the first 'sin' by 'betraying' 'Marxian humanism'. Marx is to be rescued from those who 'distort the Marxian heritage' (Bender 1975, pp. ix–x).

Claiming a single and authentic origin of Marxism, restoring an undamaged innocence, and recovering a pure and sober Marx, are not very far from the religious notions of salvation and redemption. However, one does not really need Marx to that end. Curiously, what we have in the end is just another cultish aura of Marx that the critics originally intended to destroy. More often than not, a critique does not simply put behind what is criticized but continues to be co-determined by it. It is to some extent a natural 'after-effect' that what precedes the critique and what follows from it coincide at some point. The act of critique is endangered by this tension, and it loses its critical power when the critique just replicates what it intends to deconstruct.

To be sure, the Engels problem also has roots in the methodological apparatus that is employed and the theoretical premises that are followed. Therefore it might be useful to reconsider some of the theoretical approaches and, if necessary, modify them. One can conveniently start with the historiographic treatments of *origin* and the domain of political *telos.*

When we are invited to trace Stalin's 'satanic verses' back to Engels' 'sacred gibberish', we are implicitly expected to presume that there is such an immediate link between origin and outcome. Eventually the assumed origin would fall under a particular political domain, because it is constituted from a position of a political construct: 'Soviet Marxism'. The position of immediacy serves in this context to determine the present politics as an expression of its archaic rudiments. As Susan Buck-Morss (1977, p. 60) suggests in another context, to 'identify the historical "source" … or historical prototype … or historical development' is to 'construct it from the perspective of the present, and for the purpose of criticizing the present'.

The 'present concern' here is to evoke a fundamental disruption between Soviet and other Marxisms, and to that end, to stage a scene of their divergent origins. John Bellamy Foster (2017) calls this other Marxism 'Western Marxism'. Foster (2017, p. 46) characterizes one of its operations as the attempt 'to separate Marx from Engels'. 'To discover the authentic Marx, it was necessary to separate Marx's wheat from Engels's chaff.' In the 'Western Marxist' narrative, Engels is depicted as the figure

who has 'introduced positivism into Marxism, pointing to the Second and Third Internationals, and eventually to Stalinism' (Foster 2017, p. 47). It has 'as its principal axiom the rejection of Engels's dialectics of nature' (Foster 2017, p. 47). While any potential connection between Engels and 'Western Marxism' is energetically denied, Engels and Soviet Marxism are seen as linked by immediate causality. Foster has David McLellan's Engels monograph in mind where the latter charges that 'with the consolidation of the Soviet regime, the vulgarizations of Engels should have become the main philosophical content of Soviet textbooks' (McLellan, quoted in Foster 2017, p. 48). Therefore Engels has served in 'Western Marxism' 'as a convenient whipping boy' (Foster 2017, p. 48).

If 'Western Marxism' expresses an apparent nostalgia for a lost undamaged Marx, it tries to restore him by rejecting the handed-down meanings that are originally attached to him by its Soviet counterpart. In order to ruin the epithet of Marx-*and*-Engels, it attempts to fracture its integrity and make its consistency look suspect. It is a 'present concern', again, that pushes Foster forward to the other extreme in order to question the schemata of 'Western Marxism' (cf. Kangal 2018). Foster suggests a return to Engels and Engels' return in our times, for what we now witness is that Marx-*against*-Engels template has also started to lose its binding power. He predicts that a more informed account of the past is likely to ruin present perceptions of it. The past, in other words, threatens to undo the present from within. Foster's political *telos*, which foresees this narrative collapse, finds its expression in the socialist vision of our century. Engels, 'along with Marx, continues to inform the struggles and inspire the hopes that define our own crisis-ridden, and necessarily revolutionary time' (Foster 2017, p. 50). The 'return of Engels' is therefore more than welcome.

The advantage of Foster's approach is that it embraces a multiplicity of origins of Marxism and encourages a dialogical engagement with an open-ended past, without shutting Engels' voice down. In the near future, critics might 'honor' Foster with the charge of 'smuggling' Engels in behind Marx's back. Foster, in turn, might argue that even if we believe we are done with Engels for good, his ghost will continue to haunt us, because the past of Marxism, as with any other past, is not fixed, stable or dead, once and for all. Its origins are multiple in space and time, and they have been interacting for a long time. The term 'origin' suggests here an 'eddy in the stream' of whatever Marxism ever was and whatever it is yet to become (cf. Benjamin 1977, p. 46; Pizer 1995; Jay 2006). If Marxist thought is somewhat a set of 'rivers' with many 'sources', Engels represents

one of its tributaries. Cutting him off will just not do. Since he cannot be simply put behind, it remains to be asked how he continues to determine what follows after him.

All in all, an intellectual war has been going on for quite some time. It is perhaps normal to some extent, and probably a standard in Marxism, that 'theory-work is not done just by "adding another brick to the wall of science" but often involves throwing bricks as well; it not only involves paying one's intellectual debts but also (and rather differently) "settling accounts"' (Gouldner 1980, p. 12). But this is not to say that science can be pursued only in paranoid ways. Seen from the angle of the questions yet to be asked, the problems yet to be solved and the unexplored areas yet to visit, we possibly need a better set of rules that could guide us in less turbulent ways on less shaky grounds.

Hermeneutic Concerns

Marxism scholars do not have a good reputation for arguing about rules. By 'rules', I mean rules of discussion, rules of interpretation and rules of reading. Curiously enough, it is hardly a matter of concern what rules are followed when something is discussed. On the contrary, what usually matters is the final theoretical choices one makes according to some (unknown) rules. I would argue that it makes sense to put the rules up for debate, because they govern the coherence of an argument, define the plausibility of an interpretation and determine the acceptability of a reading. Ultimately, the plausibility of an argument depends to a great extent on the plausibility of the rules which one employs. When right and wrong readings are distinguished, a closer scrutiny of rightness and wrongness is called for. Long story short: one ought to be aware of what an interpretation is and what it involves when something or someone is interpreted. I doubt that Marx scholars take these issues very seriously, let alone those engaged in the Engels controversy. Certainly there are exceptions, but even those exceptions tackle such problems just in passing. Other than Avineri, Gouldner, Lichtheim and Carver, only S.H. Rigby and John Stanley come to mind.

Rigby's monograph *Engels and the formation of Marxism* opens with a brief analysis of the structural components of reading Engels. Concerning the rules of reading, Rigby draws attention to the distinction between authors, texts and readers. He emphasizes that we ought to be clear about what is read when a text is read and whether this is identical with the intentions of authors that readers claim to understand. What authors have

in mind when they write their texts does not always coincide, wholly or partially, with what is written down or how it is read. More often than not, readers in general, and readers of Engels in particular, tend to confuse what an author says with what is said in a text and how the meanings of authors and texts are interpreted by readers. Nevertheless, settling an account of these issues is necessary to understand why there is an Engels debate and whether it can be solved. In order to come to a certain decision in such matters, one ought to be clear about whether it is his works and intentions that originally give rise to the later conflicts or whether much of what stands and falls with the Engels controversy has more to do with the present constructions of him.

To this end, Rigby (1992, p. 1) proposes a semantic model of reading that consists of a threefold structure: Engels originally intends to convey a meaning that goes through his works and reaches his readers (author → text → reader). When readers derive certain meanings from Engels' works, the direction of transmission of meaning is reversed into the opposite (reader → text → 'author') whereby 'author' becomes 'the outcome of textual interpretation'. Since readers engage with texts and authors in a dynamic way, one cannot naively assume that the meanings derived from a text would fully coincide with the original intentions of an author.

> [G]iven the variety of readings to which Marx and Engels are now open, it would be easier to argue that, in the dialectic whereby readers obtain meanings from texts and texts constrain the meanings open to readers, it is the reader who has the upper hand … That the readers of a text do not have direct access to its author's intentions, and are themselves obliged to deduce such intentions in order to understand it, can be seen from the variety of interpretations of Engels' claim that his works were an accurate representation of Marx's own opinions. (Rigby 1992, pp. 2, 7)

Rigby's ultimate aim is to offer a pragmatic account of useful readings that permits competing alternatives.

> [W]e can concentrate on the more important issue of deciding which reading of Marx and Engels is the most useful [one] for our practice as historians, social theorists, political activists and so on. We should not, however, confuse the claim that *we* find a particular reading of Marx and Engels to be the most useful, with the claim that this was, therefore, Marx and Engels' own, consciously-intended meaning. (Rigby 1992, p. 9)

It is particularly noticeable in the Marxist literature, as Stanley remarks, that political readings can impose distortions on the meanings of a text or obscure the original motives behind it. Stanley, like Rigby, gives special weight to the difference between a writer's context and that of readers. At times, our present understanding, Stanley (2002, p. 121) warns, 'tends to ignore the original historical audience with which the author was in dialogue, a dialogue expressing the author's original historical "position"'. The difficulty that is brought about by a passage from one historical context to another is formulated in terms of a tension.

> On the one hand, the more consistently we focus on the theory, the more we tend to blur or distort its original historical motives. On the other hand, the more that 'practical' considerations intervene in the application of a theory, the more the latter tends to be obscured. (Stanley 2002, p. 121)

In a similar vein, Lichtheim (1964, p. xvi) argues that the task of any proper study of Marxism is to 'derive significance of a corpus of thought from its historic function'. This is to be distinguished from how it is utilized in the present political context. In order for this intercontextual differentiation to succeed, Carver (1983, p. xii) supports a 'more thorough attention to the intended audience and other circumstances surrounding the production of a text'. This approach might lead to a depiction of the intellectual development of Marx and Engels that is 'admittedly more complex, but arguably more accurate and much more informative'. Avineri (1968, p. 2), by contrast, goes against the grain when he proposes to 'emancipate the study of Marx's thought from the historical circumstances'. It is this non-contextualism that enables Avineri to cut off Marx's ties to the historical context to which Engels belongs. Lichtheim and Carver's accounts are more modest in this regard, for at least they preserve the historical context, while Engels' place in it is revised.

Author, Text and Reader

The difficulty of distinguishing the 'real' author from the 'postulated' one does not really lie in identifying the author as someone external to her audience. After all, an author is what all the later postulations are made *of*. The 'real' author is posited rather as a negative term by readers in order to highlight what components of authorship are *not* the postulated ones. The 'real' author appears in this respect as someone who is external to, *and*

part of, readers' postulations. Therefore it makes a difference what those postulations specifically indicate and how they reorganize the historical material within which the 'real' author is replaced.

One of the postulations I have mentioned in passing is that the single individual is the sole creator of a given theory. It is sometimes assumed that theory must have an individualistic and atomistic origin. Theory receives the seal of authenticity when it can be shown whose name it bears. Thus different names on different texts are interpreted to indicate different theories or conflicting views. Reducing the origins of theory to one single person, of course, is comforting because it provides us with an easy access to an author and makes her accountable for whatever she has written and how she has been read. In case of a joint authorship, mutual support and collaboration of *two* authors for a relatively long period of time, it becomes rather difficult to assign a single text to a single person, for theory is not single-handedly owned by one author. 'Single author' becomes seriously problematic if one considers it expressive of a scientific tradition, social convention and political history. In this respect, we usually speak of individuals as 'products of their time'. With Marx *and* Engels, we not only have the unconventional case of two figures working, acting and struggling together in an astonishing degree of harmony but their personal relationship seems also to have formed a positive (or negative) *model* of political collaboration for the later generations of (non-)Marxists. Whether one tends to affirm or deny this model impacts, and is effected by, the kinds of postulations that one employs. Postulations, in turn, not only redefine the ways of how certain authors *should* be read but they also co-determine the material forms in which their texts are reproduced.

David Riazanov, the first editor in chief of the historical-critical edition of Marx and Engels' collected works (MEGA), articulates such a postulation when he says: 'I repeat, when I say Marx, it means Marx and Engels' (Rjasanow 1993, p. 114). Such a remark is sometimes taken to point to the origin of why we came to have a joint rather than a separate edition of Marx and Engels' works. It is the Leninist reading, the critics claim, that imposes not only a projection of Marx and Engels into one another but also publishing their works within a joint edition so that the old political postulations can be sustained and adopted by the later generations of readers (cf. Backhaus and Reichelt 1994, p. 101; Heinrich 1995; Sperl 2004, pp. 13–33). An academic compilation cannot keep its basic promise, so the argument goes, to provide a historical-critical edition if its technical and interpretive guidelines are 'contaminated' by the then

canonized 'world view', 'dialectical world formula' and other allegedly dubious terms that belong to Engels rather than to Marx (Backhaus and Reichelt 1994, p. 102). As novel as the call for an unbiased reading of Marx (and Engels) might sound, we are not offered an alternative. What we have instead states something rather obvious: herculean projects such as MEGA are politically and ideologically motivated. However, the presumably 'non-ideological' undertakings of the 'new' MEGA from 1970s onward testify, once again, that interpretive choices, editorial or otherwise, are always informed by a political worldview, in one way or another. Be it Marxism or something else, the result is always the same.

The reasons for a joint edition are usually justified on the grounds of joint authorship, collaboration and the countless forms of help and support two authors have derived from one another. Nonetheless, just one of them, the one that 'played the first fiddle', functions as the emblem for an entire tradition of political and philosophical thought. That the name of one of the authors stands for the whole group overshadows those involved in the creation of the final intellectual product. This seems to be one, if not *the*, reason as to why it has been so difficult to single out Engels' individual contributions to a collective effort. He certainly encouraged this framing most of the time, but not always.

Dialectics of Nature entails a rare situation in which Engels could literally appropriate a product and call it his own achievement, though that product hardly belonged to him alone. For it is rather a product of an entire group of people, a larger philosophical tradition and a scientific culture that are brought together and given a voice by him. In short, *Dialectics of Nature* is an unconventional emblem of a scientific collective. As the 'author' of that work, Engels is in charge of recruiting some members of the 'team' and discharging others. Interestingly, in all the fragments other than those related to *Anti-Dühring*, Marx is not mentioned, even once. Marx appears there as a member of an invisible group of a larger scientific tradition.[2] It is perhaps this foreshadowed Marx that the critics do not like. Accordingly, the critics may argue that within the constraints of consensus and collaboration, Engels was justifiably responding to some of the unresolved questions of their common theory. He failed, however, to distinguish intellectual allies from enemies, ancestors from competitors. In fact, he became 'one of them', not 'one of us'.

Since the critics as individuals within certain social groups are at liberty to approve or challenge the membership status of others, it is their decision to include or exclude any potential candidate, prominent or otherwise.

In some communities, Engels made a name for himself as persona non grata, in some others he did not. In some communities, the 'joint authorship and collaboration' thesis is most welcome, in others it is not. In some communities, Engels is charged with contaminating not only Marx but also the group's identity, in others he is not. By (not) separating Engels from Marx, one group demarcates itself from all others. As a result, we receive a variety of 'Marxes' and Engelses'.

There is an irony in this story. When the critics claim an authentic Marx and attempt to restore him, they recover what has been excluded or forgotten within a given narrative, by Engels or narratives by others. In order to restore authenticity, one must have a sense of limitation which she intends to overcome. The doctrine of authenticity thus draws attention to the neglected parts of a whole which has once overshadowed those parts. It requires, in other words, a methodological holism that works with an organizing center. A coherent picture of the past can be established if one can recollect the neglected bits of reality. The critics turn out to be working with a model of parts and wholes, reintegrating suppressed elements of the past to the body of social history. By consolidating the recovered parts, they aim to establish an interconnected whole. The irony is that this methodology amounts to what Engels used to term 'dialectics'. In resisting the attempts to systematically establish it, the critics confirm and deny dialectics at once. As a response, they may argue that this method is limited to society. Leninists, in turn, may object that if natural scientific *knowledge* is social in character, why does not dialectics apply to the natural domain of reality? Perhaps it does, but Engels might have not worked this out to the critics' complete satisfaction. At this point, they, the Leninists, may ask why the critics do not 'get' that they, the critics, and Engels, have been speaking of the same thing all along. Possibly, critics are not unaware of the parallels, but they are rather keen to 'make sense' of Marx in a way that does not fit the Leninist narrative.

Structures of Argumentation

At times, depictions may be admitted to 'make sense' when they follow and support one's own belief system. Certainly, any belief system can be supported or challenged. (Dis)agreements between a variety of discourses, however, determines whether a meaningful debate can take place. For only those who follow the same set of beliefs would adopt the inferences compatible with the discourse. In order for the inference to follow some basic

convictions, one needs to have already confirmed them. Those who disagree with those convictions in the first place do not have any reason to adopt the same inference.

For instance, that Engels is 'the progenitor of unresolvable ambiguities within the Marxist tradition' is a *belief* (Carver 1983, p. 117). Here is another one: It was first and foremost Engels who encouraged readers to identify Marx's worldview with his own 'bogus dialectic' and 'factitious metaphysics' (Carver 1983, p. 152). Calling Engels' philosophy 'bogus' and 'factitious' is meant to be insult, but *believing* it 'bogus' is not a fallacy. For as part of a larger framework, Engels' 'bogus' philosophy registers the flipside of 'authentic Marx'. Authenticity is a construct that the critics need in order to maintain a coherent system of beliefs. This operation requires selectivity, exclusion and reorganization of its members. Engels is one of the 'ex-members' of the 'club', but he is not the only one. Revising his place *within* present Marxism(s) *after* him, and reconfiguring 'authentic' Marx's relation to him, are what the Engels controversy is about.

Certain statements are expressive of the discourse. They articulate basic convictions that lead one to assert a claim. Given the potentially large amount of data and limited space for developing an argument, it may occur that some claims are left unjustified. Therefore scholars focus on the central claims that are binding for their arguments. Weakness and strength of an argument are measured against one's capacity to support a claim and avoid unsubstantiated ones. Difficulties arise when the central claims cannot be justified. Things can get worse when one suggests an interpretive rule that she does not follow. Carver is a case in point. He proposes the *rule* that a claim must be supported by textual 'positive evidence' (Carver 1980, p. 360; 1984, p. 252). He *claims* that after Marx's death, Engels had the opportunity and the motive to create the myth of 'a perfect intellectual partnership' (Carver 1980, p. 353). This explains why Engels, unlike Marx, 'became keen to characterize this relationship in volubly general terms' (Carver 1998, p. 165). 'The surviving Marx-Engels correspondence fails to support the picture painted by Engels' (Carver 1980, p. 360). In other words, (1) Engels' 'bogus dialectics' was not supported by Marx, (2) Marx's alleged support results from Engels' auto-narrative after Marx. Note here that Carver does not provide any textual 'positive evidence' for his claims, and does not refer to Marx's 1865 letter to Engels where the former states that 'the two of us form a partnership together' (Marx 1987c, p. 172).[3] Now recall Carver's rule and read the following passage by Marx (1991a, pp. 333–334) where he promises to send Engels' *Anti-Dühring* to one of his correspondents.

> I shall send you—if you do not yet possess it—by post a recent publication of my friend Engels: *Herrn Eugen Dühring's Umwälzung der Wissenschaft*, which is very important for a true appreciation of German Socialism.

On another occasion, Marx (1991b, p. 218) complains that some of the leading theoreticians of the German social democratic movement fail to appreciate Engels' philosophical work. For instance, when criticizing figures like Johann Most, a supporter of Eugen Dühring, Marx writes that

> if Mr. Most has failed to note that there's much to be learnt from Engels' positive exposés, not only by ordinary workers and even ex-workers like himself [Most], … but even by scientifically educated people, then I can only pity him for his lack of judgment.

In a letter to Wilhelm Liebknecht, Marx (1966, p. 209) writes that it was 'a great sacrifice on [Engels'] part' to write an extensive criticism of Dühring 'since to do this he has had to postpone an incomparably more important work [i.e. *Dialectics of Nature*]'.[4]

As is well known, Engels' *Anti-Dühring* was a defense of Marx's theory, and Marx has written even a chapter for *Anti-Dühring*.[5] This means that Marx not only had every reason to support and, if necessary, suggest to change the content of Engels' work, but he had also the responsibility to do so. Marx went further as to provide or recommend natural scientific literature to Engels, or help him communicate with natural scientists such as Carl Schorlemmer. He even prepared excerpts from Aristotle's *Metaphysics* which Engels put into the first folder of *Dialectics of Nature* (Ms. 96).

Now recall the second claim that Engels was 'keen' to represent Marx after his death and he was willingly promoting his partnership with him. What we find in the texts is exactly the opposite. Engels was humble enough, perhaps too humble, not to mention himself as the congenial founder of the new materialism. In his *Ludwig Feuerbach and the End of Classical German Philosophy*, Engels (1990a, p. 382) responds to a '[l]ately repeated reference … to my share in this theory'.

> I can hardly avoid saying a few words here to settle this point. I cannot deny that both before and during my forty years' collaboration with Marx I had a certain independent share in laying the foundations of the theory, and more particularly in its elaboration. But the greater part of its leading basic principles, especially in the realm of economics and history, and, above all, their final trenchant formulation, belongs to Marx. What I contributed—at any

> rate with the exception of my work in a few special fields—Marx could very well have done without me. What Marx accomplished I would not have achieved. Marx stood higher, saw further, and took a wider and quicker view than all the rest of us. Marx was a genius; we others were at best talented. Without him the theory would not be by far what it is today. It therefore rightly bears his name. (Engels 1990a, p. 382)

In his 1884 letter to Johann Philipp Becker, Engels (1979b, pp. 218–219; 1995, p. 202) speaks of his 'misfortune' that

> since we lost Marx I have been supposed to represent him. I have spent a lifetime doing what I was fitted for, namely playing second fiddle, and indeed I believe I acquitted myself reasonably well. And I was happy to have so splendid a first fiddle as Marx. But now that I am suddenly expected to take Marx's place in matters of theory and play first fiddle, there will inevitably be blunders and no one is more aware of that than I. And not until the times get somewhat more turbulent shall we really be aware of what we have lost in Marx. Not one of us possesses the breadth of vision that enabled him, at the very moment when rapid action was called for, invariably to hit upon the right solution at once to get to the heart of the matter. In more peaceful times it could happen that events proved me right and him wrong, but at a revolutionary juncture his judgment was virtually infallible.[6]

Bruno Schoenlank (1979, p. 847), a German Social Democrat, wrote a book in 1880s on the workers' conditions in modern industry. When the book was prepared for publication, he wrote to Engels in 1887: 'I am proud to have obtained the socialist outlook from your and Marx's writings without which a critique of economic circumstances would not be possible. And I would like to dedicate my script to you, … to you, to the founder of the descriptive national economy.' In his response, Engels wrote that he read Schoenlank's work with great interest and he

> would not object on principle to your doing me the [honor] of dedicating the book to me. But, in the first place, dedications are now rather out of fashion and, in the second, Marx and I have always felt a certain aversion to such more or less uncalled-for-tributes. And at present I happen to be in a frame of mind which makes me think my merits grossly overrated in some quarters. If one is so fortunate as to collaborate for forty years with a greater man and measure oneself against him day by day, one is given the chance of evaluating one's own achievements in accordance with a true standard. And I feel instinctively that to place any undue emphasis on my own activities is

> unwittingly to detract from what we all of us owe to Marx … So from a *personal* point of view, I would sooner you abandoned your intention, and this *solely* on the grounds outlined above. But should you fail to be convinced by them, I would not venture to dictate what you should do. (Engels 1979a, p. 697; 2001a, pp. 97–98)[7]

In 1892, Karl Kautsky (2001, p. 626) informed Engels that Rudolf Meyer had described Engels as the 'oldest and greatest of the living political economists' in an article. Engels (2001b, p. 416) protested:

> To apply that epithet to me was really very silly. You would be doing a kindness to me and certainly to others as well, if you pointed out to him, at any rate for his future guidance, that he must accustom himself to our less grandiose terminology, failing which you will have to correct his stuff accordingly.

The phrase was kept anyway, and Meyer's article appeared in *Die Neue Zeit*. In 1893, Engels (2010, p. 163) shared his views with Franz Mehring on the latter's writing *On Historical Materialism* which on Engels' reading 'brilliantly collated the essentials in a manner that must convince any impartial reader'. He added the following remark:

> If I have any criticism to make, it is that you accord me more merit than I deserve, even if one takes account of what I may, perhaps, have found out for myself—in course of time—but which Marx, with his swifter *coup d'oeil* [insight] and greater discernment, discovered much more quickly. If one has been fortunate enough to spend forty years collaborating with a man like Marx, one tends, during one's lifetime, to receive less recognition than one feels is due to one; when the greater man dies, however, the lesser may easily come to be overrated—and that is exactly what seems to have happened in my case; all this will eventually be put right by history, and by then one will be safely out of the way and know nothing at all about it. (Engels 2010, p. 163)

Despite the assumed internal conflicts between Marx and Engels, there must be good reasons, Carver thinks, for the two men to have maintained their relationship. Therefore he consults their individual psychologies. He asserts that, in view of 'their long friendship, their role as leading socialists, and the usefulness of Engels's financial resources', 'Marx felt easier … to keep quiet and not to interfere in Engels's work' (Carver 1980, pp. 360–361). Engels, on his part, tried to persuade us that his philosophy was an 'accurate reproduction of Marx's views' and 'a body of thought compatible with Marx's work' (Carver 1984, p. 249).

Levine (1975, p. 231) similarly contends that the Marx-Engels relationship was based on mutual exploitation and perverse domination. 'In the realm of ideas, in terms of philosophic leadership, Marx played the role of exploitative master. In this area, Engels willingly accepted Marx's strength and primacy. Engels needed someone like Marx in order to establish his own self-esteem' (Levine 1975, p. 231). When exploiting Engels, Marx also made use of Engels' 'financial and emotional support' (Levine 1975, p. 232). 'Only after [Marx's death] Engels was freed from the need to service the exploitative master' (Levine 1975, p. 233). If this was the case, it can be objected, then why did Marx (1987b, p. 253) criticize 'any appearance of pursuing personal interests or abusing personal influence for clandestine purposes' in political affairs? 'As for personal sacrifice, I have given up as much as anyone; but for the class and not for individuals … We are devoted to a party' (Marx 1978, p. 628).

It is in principle possible that a reader understands her authors better than themselves, for she has the advantage of looking back at past events from the viewpoint of an end toward which those events have yet to come. But pretending to have a privileged access to authors' subconsciousness from an Archimedean point of view is not a very modest way to make a point.

Note here that the psychological depictions above do not, nor do they have to, rely strictly upon textual evidence, for it is about 'making sense' of an *assumed* nature of the Marx-Engels relationship. That the evidence contradicts this assumption naturally harms the reliability of that account. At this point, a decision has to be made as to whether one is allowed to say anything within the constraints of what the evidence allows one to say. If the evidence plays no significant role on this account, the critics are at a disadvantage in persuading their counterpart. The Leninists probably share the scholarly passion for figuring out the components of the (self-) narratives of Marx and Engels. But they do not, nor do they have to, *assume* the kind of Marx-Engels relationship suggested by the critics. For what brings about Marx and Engels is who they are or what they achieved within that interconnection, that is, individual contributions to a collective effort with a shared worldview.

Carver (1998, p. 165) carefully remarks elsewhere that unless there is available evidence, one is 'left in a domain of inference'.[8] This 'inference' seems to coincide with the psychological account. In this respect, the problem, however, is that evidence and inference are indirectly proportional, that is, the smaller the amount of textual evidence, the larger is the

'room for inference'. At the extreme, we could have a case with no evidence and a very large room for interpretation. In this kind of situation, one does not really need to read Marx and Engels or examine the later debates. Anything goes. Reason is thus endangered by merely making sense, inventing and attaching meanings to the past figures and events as one likes. Then there would be no point in engaging in a debate. Thus, the 'debate' narrows down to a clash of beliefs.[9]

What we rather need is a common ground on which similar, different or opposite accounts can afford answers to shared questions with common procedures of arguing. Evidence obviously plays a central role in this regard, but it is important to distinguish textual and contextual evidence. After all, text is an object that addresses different concerns and serves different purposes in different contexts. The aforementioned distinction between author, text and reader indicates at least two contexts in dialogue: a context in which what an author has to say appears, fully, partially or minimally, on paper, and a context in which what the author leaves behind is read, used, discussed, approved or criticized by others for purposes potentially other than that of the author. These two contexts are intermediated by a third one: the editorial interventions of the text. How readers communicate with authors through texts depends to a great extent on the editorially determined forms. Authors bring their works to the public with the assistance of editors who alter the texts that pass through their hands.[10] In addition, editorial decisions concerning the ways of how an author and her text are presented are informed by, and serves the purposes of, the discourse to which the editors belong.

The interaction of different contexts consists of a diversity of intentions in authorial, textual, editorial and readerly domains. The task of interpretation is to understand author's individual and social intentions, to explicate the 'problem horizon' that determines particular questions which she intends to solve, to highlight other questions which she may have failed to address and to formulate propositions that are not only unexpressed in the text but also concealed from her grasp over the whole problem situation.[11] Readers are obliged not only to figure out what problems the author has thought or unthought and to what extent her inner speech is graphically realized in the act of writing[12] but also to recognize how editorial rearrangements of author's work and all the historical meaning and political significance ascribed to it impact later interpretations.

In working my way to the text and context of *Dialectics of Nature*, I will first peel off the interpretive and editorial layers of the 'book'. The task

of the next chapter is to reveal the ambiguities of widely circulated headings of 'Western' and 'Soviet Marxism' that supposedly capture the differentiations of pro- and anti-Engels camps. The protocols of the Engels debate lay bare that different individuals and traditions attach different meanings to natural dialectics and derive controversial conclusions from the same textual sources. This is the polemic ground in which bold lines are drawn that distinguish friends and foes of Engels, and separate proponents from opponents of natural dialectics.

Notes

1. As a matter of fact, this motto was chosen by a Chinese scholar, Zhang Yibing, as the title of his voluminous study: *Back to Marx*. There is also *Back to Engels* by another Chinese scholar, Hu Daping. Although this 'going back' instead of 'going beyond' or 'after' Marx (and Engels) is somehow a more fashionable trend in China, it amounts to the scholarly universal concern of getting Marx's (and Engels') story right. See Zhang (2014), Kangal (2017a), He (2007), Hu (2010, 2011).
2. One exception is the 96th manuscript on the Aristotelian reception of Leucippus, Democritus and Epicurus that was prepared by Marx. cf. Engels (1985, pp. 62–5).
3. Carver does not raise any objection when Engels employs the same partnership rhetoric in the political context: 'Marx and I, for forty years, repeated ad nauseam that for us the democratic republic is the only political form in which the struggle between the working class and the capitalist class can first be universali[z]ed and then culminate in the decisive victory of the proletariat.' Cf. Engels (1990b, p. 271).
4. Marx wrote to Kugelmann that Dühring 'is ordinarily a most bumptious cheeky boy, who sets himself up as a revolutionary in political economy. He has done two things. He has published, first (proceeding from Carey) a *Kritische Grundlegung der Volkswirtschaftslehre* (about 500 pages), and secondly, a new *Natürliche Dialektik* (against the Hegelian dialectic). My book [Capital] has buried him from both sides.' Cf. Marx (1974, p. 538). Marx had encountered Dühring's *Natural Dialectics* by chance when he was leafing through the catalogues of the British Museum Library. He reported to Engels ironically that 'Dühring is a great philosopher. For he has written a *Natürliche Dialektik* against Hegel's "un-natural" one. … The gentlemen in Germany … believe Hegel's dialectic[s] to be a "dead dog".' Cf. Marx (1987a, p. 520). When working on his critique of Dühring, Engels (1966, p. 17) jokingly complained to Marx that 'you can

lie in a warm bed studying Russian agrarian conditions in general and ground rent in particular, without being interrupted, but I am expected to put everything else on one side immediately, to find a hard chair, to swill some cold wine, and to devote myself to going after the scalp of that dreary fellow Dühring'. See also Engels and Marx (1975, p. 119).

5. Marx's contribution is mentioned by Engels in the second preface to the book, though Marx's chapter was already published in the first edition. In addition, the entire second section of *Anti-Dühring* resulted from Marx and Engels' close collaboration. They not only exchanged ideas but Marx prepared lengthy notes, excerpts and other manuscript notes for Engels' book. Cf. Engels (1988, pp. 1049–1057), Marx (1988, pp. 131–216).
6. See also Schoenlank (1979, p. 847), Engels (1979a, p. 697; 2001a, pp. 97–98; 2001b, p. 416; 2010, p. 163), and Kautsky (2001, p. 626).
7. Commenting on the title which Schoenlank has attached to him, Engels (1979a, p. 697; 2001a, p. 97) added: 'Nor can I agree with you when you dub me the father of descriptive economics. You will find descriptive economics in Petty, Boisguillebert, Vauban, and Adam Smith, to name only a few. Such accounts, notably of proletarian conditions, were written by Frenchmen and Englishmen before I did mine. It was just that I was lucky enough to be precipitated into the heart of modern large-scale industry and to be the first whose eyes were opened to its implications—at any rate the most immediate ones'.
8. For a critical response to the allegedly problematic relation of Marx and Engels see Hollander (2011, pp. 22–4, 279–313).
9. Hermeneutic idealism of this sort that projects one's own thinking into an author and her text is what August Nimtz (2000, pp. 307–308) calls a 'self-centered' and 'apolitical reading'. Political militancy of Marx and Engels and the primacy which they attributed to social-political practice does not fit Carver's narrative, for we are advised to treat Marx and Engels 'as we would treat ourselves as intellects and as persons'. That contemporary readers may share and inherit the revolutionary legacy of Marx and Engels' socialism in practical political terms is a hermeneutic option which Carver seems to leave out. Cf. Carver (1999, p. 34). Note here Carver's claim that Marx 'left political organization almost entirely to others and saw himself as a publicist making workers aware of the class struggle'. Carver (1991, p. 12). A well-founded response to this account is Nimtz's aforementioned book.
10. Cf. Tanselle (1991, p. 83).
11. Cf. Mohanty (1981, pp. 2–3).
12. Cf. Hurlebusch (1988, p. 113).

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CHAPTER 3

The Origins of the Engels Debate

Georg Lukács' 1923 book *History and Class Consciousness*, 'one of the few authentic events in the history of Marxism' (Žižek 2000, p. 151), is usually celebrated for representing the beginnings of what Maurice Merleau-Ponty (1973, pp. 30–58) termed '"Western" Marxism'. As one of the most 'important theoreticians' and 'real originators of the whole pattern of Western Marxism' (Anderson 1989, p. 29; cf. Wolff 1978, pp. 57–59), Lukács is considered a crucial point of departure for a Marxism that was 'politically independent of the Soviet Union', a view that is shared among those that were 'not conforming to the official Soviet ideology' and 'not regarding the social structures of the Soviet Union either as socialist, or as developing towards socialism' (van der Linden 2007, p. 4). It was this infamous book in which Lukács (1971b, p. 24, n. 6) asserted that 'Engels – following Hegel's mistaken lead – extended the [dialectical] method also to the knowledge of nature'.[1] The dialectical method was limited to 'historical-social reality'. 'Natural knowledge' lacks the kind of 'crucial determinations of dialectics' such as 'reciprocity of subject and object, unity of theory and praxis, historical change of substrates of categories as the foundation of their change in thought etc.' (Lukács 1977, p. 175, n. 1). Although he made this remark in a footnote in passing, it did not escape his critics' attention.[2] On the contrary, it triggered a long-lasting debate. Unsurprisingly, it was taken to be one of the cornerstones of the non-Soviet Marxism, to which later generations of scholars referred as the

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beginning of the Engels controversy (cf. Merleau-Ponty 1973, pp. 59–73; Schmidt 1993, p. 57; Sheehan 1993, p. 53; Jacoby 2002, p. 53).

It is of course a myth that theoretical positions could be geographically distributed as the term 'Western Marxism' mechanistically indicates. 'Western' or 'Eastern' do not capture the heterogeneity of philosophical opinions held before and after Lukács, let alone the intellectual and political figures that have changed their views over time or immigrated from one place to another, as in the case of Lukács itself.[3] As for the charge against Engels, the novelty of Lukács' claim is overrated. In the domain of dialectics, social or natural, there were attempts to disprove the application of dialectics to nature and society, or to separate Marx from Engels, when both men were still alive, or shortly after they died.[4] Furthermore, there was no single Marxist dialectics, in any place at any time; rather, there was an inflation of it.

Before 1923, there was a Hegel(-Marx) debate that clustered largely around the problematic relation between logic and reality (nature/spirit) and a crucial component of it (contradiction). Anyone (including Marx) who claimed Hegel's dialectics, critically or otherwise, faced the same charges brought against Hegel. Up until Lukács singled out Engels, the heritage of Hegelian dialectics was at stake. Not the existence of real opposites, but that of real contradictions was questioned. Russian, German and Austrian socialists jointly shaped a debate, and voiced various opinions from a wholesale rejection to a full approval of dialectics. Lukács initially proposed an intermediary position by limiting dialectics to society, which he ambiguously defended shortly afterward, though he dropped this view in the late 1950s. As the chronicle of the debate testifies, there was neither an East-West division that can clearly demarcate one single Marxism, 'Western' or 'Eastern', as an integrated tradition, nor a straight line between Engels and Stalin, linking both figures by immediate causality. I suppose these facts fail to find their place in the narratives for the very reason that they cannot be easily assimilated into the histories of Marxism(s) by those who invent the definitions of 'East' and 'West', let alone that of 'Soviet' and 'Western' Marxisms.

In this chapter, I offer an alternative history of the origins of the Engels debate. It goes back to the critical readings of Hegel among his pupils, most notably Adolf Trendelenburg and Eduard von Hartmann. Especially the latter figure was frequently consulted by socialists who launched attacks against dialectics. It is important to keep in mind that the worker-philosopher Josef Dietzgen (rather than Engels) was viewed in some

circles as the source of reference with regard to philosophy of nature until 1920s.[5] This situation, however, changed with the growing Engels literature, especially in the early Soviet philosophy and particularly after the publication of *Dialectics of Nature* (1925). The 'book' was presented in a way as to force those back who either doubted the scientific character of dialectics in general, or just denied its application to nature in particular. An increasing interest in dialectics and natural sciences was virtually present in Soviet and other East European debates, while *some* Western intellectuals fashioned a stance that came to be known as the 'Marx-Engels problem', that is, Marx's alleged disapproval of Engels' dialectics. Although Engels' name usually stands and falls with this latter quarrel today, participants of that debate said almost nothing new that was not said before. *Contra* 'Western Marxist' narrative, there was no single Marxist voice in Soviet Union nor an overall full approval of Engels' dialectics. A variety of opinions were held in the 'West', as well, a fact which does not fit the predominant historiography of 'Western Marxism'.

The Hegel Problem

Trendelenburg (1843, p. 3), not Hegel, was probably the first who used the term 'dialectical method', referring to the 'self-movement of content' of concepts in Hegel's *Logic*. By the adjective 'dialectical', Trendelenburg meant to define a rationally controlled procedure of pure logical thinking that inevitably gives rise to, and resolves in turn, contradictions which interconnect each and every step of logical progression. Hegel's method is the result and full expression of this entire process. Trendelenburg (1862, pp. 79–80) contrasted this with the 'genesis' of objective reality which was presumed by Hegel to correspond to the system of logic. It was strange to Trendelenburg (1843, p. 18) to expect that the 'dialectical method' and 'genetic view' will eventually 'coincide', for the order of things does not follow the order of concepts, nor do they obey the latter's command.[6] If Hegel's dialectics had initially emerged as a 'philosophical universal method' that 'conveys itself to the philosophical treatment of particular sciences', it failed to accomplish this task most significantly in 'physics and natural sciences' which were based on the 'factual existence' of natural entities and 'empirical interpretation' of evidenced facts (Trendelenburg 1862, p. 101).

In his 1868 book *On the Dialectical Method*, Hartmann (1868, p. 38) took Trendelenburg's criticism up to another level when he raised doubts not only on the application of the dialectical method of Hegel's logic to

objective reality but also on the latter's play with contradictions. Hegel's 'dialectics recognizes no empirical facts' or 'higher principles' other than its own, for it claims a sense of absoluteness that 'disdains the rules of formal logic' from a much more 'advanced standpoint'. Hegel's concept of contradiction runs against common sense. The history of human thinking teaches us that contradictions either in the sense of 'contradictions in themselves (aprioristic impossibility), or contradictions against incontestable facts (empirical impossibility)' amount to mistakes or errors in the human mind because they point toward the 'impossible' and 'nonsense' (Hartmann 1868, pp. 38–39).

Paul Barth's *History of Philosophy of Hegel and Hegelians up until Marx and Hartmann* reproduced Trendelenburg and Hartmann's criticism of Hegelian dialectics and claimed to have exposed the defects of Hegel's contemporary followers (including Marx). In following Trendelenburg's distinction between genetic and dialectical methods, Barth (1890, pp. 5–8, 14) remarked on Hegel's confusion of 'contradictory' (*contradictorische*) and 'contrary opposites' (*conträre Gegensätze*) which undercuts the entire thread of his dialectical method. According to Barth, contrary opposites are empirical, while contradictory opposites are logical-dialectical. Marx manages to establish a correlation between both types of opposites without directly confronting Hegel in his belief that the 'process of nature' is 'identical with the dialectical [process]' of Hegel's contradictory logic. Unlike Hegel, Marx admits a duality of 'dialectical and empirical' processes (Barth 1890, p. 46). This principle, however, lacks sufficient 'illustrations'. It is not just Marx but also his 'most significant … follower', 'Friedrich Engels', who fails to provide the evidence for the correlation at stake (Barth 1890, p. 47).

Early Socialist Debates

When reviewing Marx's *Capital*, Eugen von Dühring, a former pupil of Trendelenburg and a Social Democrat theoretician, asserted that Marx was following in Hegel's footsteps, and committing the logical fallacies that were already exposed by Trendelenburg and Hartmann. On his reading, Marx's logic was a 'clone' of Hegel's, for Marx not only adopted Hegel's dialectical categories in the exact same order and applied them to the critique of political economy but also repeated the same mistakes of Hegelian dialectics (Dühring 1873, p. 452). These flaws stem from the Hegelian principle of contradiction. That contradictions are actually 'absurdities' in

logic was ignored by Marx (Dühring 1873, p. 445). It was a typically Hegelian mistake, Dühring (1875, p. 30) believed, to project a logical invention such as contradiction into the real world. Marx ignored the fact that there is no such thing as a 'real contradiction' (*realer Widerspruch*) (Dühring 1875, p. 32). Contrary to this 'arabesque' 'unlogic' (Dühring 1873, pp. 446, 453), Dühring (1865, p. 113) offered an alternative dialectics, which he termed 'Natural Dialectics' (*Natürliche Dialektik*) that adopted another structural core unit: unity of opposites. Interrelation and interpenetration of mechanical forces in nature are 'real opposites', and the unity of real opposites is 'antagonisms' (*Antagonismus*) or 'conflicts' (*Widerstreit*), but certainly not contradictions (Dühring 1875, p. 31). Although the title of his 1865 book *Natürliche Dialektik* was unmistakably similar to the term *Naturdialektik* (nature-dialectics) or *Dialektik der Natur* (dialectics of nature), Dühring's emphasis was on the 'natural division of philosophy into dialectics, physics and ethics' (Dühring 1865, p. 1). By 'naturalness' of dialectics, Dühring (1865, pp. 3, 10) meant the opposite of what he considered artificial, unnatural, fake or inconsistent logic as it was supposedly fashioned by Hegel and his followers.[7]

Friedrich Albert Lange, a philosopher by profession and a political supporter of Marx and Engels,[8] found Hegel's philosophy inconsistent for several reasons. For once, he took 'the Hegelian system to be a step backward towards scholasticism from which we are really already free'.[9] A 'deeper mathematical-natural scientific literacy' was another weak spot of Hegel (Lange 1865, pp. 147–148).

Engels famously protested against this view in a 1865 letter to Lange. Although Engels was 'no longer a Hegelian', he believed that 'the titanic old fellow'

> knew so much mathematics that none of his disciples was capable of editing the numerous mathematical manuscripts he left behind. The only man who, to my knowledge, has enough understanding of mathematics and philosophy to be able to do is Marx. I admit of course the nonsense in the detail of the philosophy of nature, but his *true* philosophy of nature is to be found in the second part of the 'Logic', in the theory of essence, the authentic core of the whole doctrine. The modern natural scientific doctrine of reciprocity of natural forces (Grove, *Correlation of forces* …) is just another expression or rather the positive proof of the Hegelian development on cause & effect, reciprocity, force etc. (Engels 1987c, p. 138; 2002, pp. 363–364; translation modified)

It is obvious from the second edition of *Die Arbeiterfrage* that Lange (1870, pp. 235–6, 246–7) has taken Engels' comments on Hegel seriously. He wrote an additional chapter (*Capital and Labor*) for the second edition with a lengthy discussion of Marx's *Capital* (1867). He did not hide his astonishment about Hegel's influence on Marx, but he at least attempted to roughly capture Hegel's dialectics in terms of 'the development in opposites and their compensation' (*Entwicklung in Gegensätzen und deren Ausgleichung*) or 'development through opposition' (*Entwicklung durch Gegensatz*) (Lange 1870, p. 237). The 'transformation' (*umschlagen*) of one 'opposite' (*Gegentheil*) into another one presents a scene of 'dialectical struggle [*dialektischer Kampf*] of these concepts' that 'leads to a peaceful conclusion [*Friedensschluß*]' (Lange 1870, pp. 243–244). A 'conflict' (*Streit*) between opposites is 'overcome [*aufgehoben*] in a higher unity' (Lange 1870, pp. 243–244). The 'ultimate goal of all social tendencies' should be to annihilate the misery of 'struggle for existence' (*Kampf um das Dasein*) by means of 'reason' (*Vernunft*), an agenda which 'could be construed even in accord with Hegel's method' (Lange 1870, pp. 239–240).[10]

In his posthumously published book *Logical Studies* (1877), Lange seems to have gone much beyond Engels' expectations, when he worked out what Engels could have called a dialectical theory of probability. In *Arbeiterfrage* and *Geschichte des Materialismus*, he has already developed a probabilistic prototype of a rational choice theory.[11] In *Logical Studies*, he combined this with disjunctive logic, otherwise known as either-or-relation. As is well known, Hegel (1986a, p. 193; 1986c, p. 282; 2010, p. 206; cf. 2018, p. 148) has denied any place for probability in philosophy and mathematics because 'mathematical determinateness … excludes the possibility of a greater or lesser degree of exactitude, just as in philosophy there can be no question of a greater or lesser probability but of truth alone'. For Lange (1887, p. 41), this was an absurd claim to assert. 'The concept of probability' is a 'forceful necessity' in all sciences. He defined probability as the relation of a single possibility to an entire set of possibilities which are members of the same set. When, for instance, a dice is thrown, it has necessarily one outcome, say 1, and this amounts to the realization of one out of six possible outcomes. Realization of a given possible outcome (1) contradicts the realization of the rest of the members of the same set (2, 3, 4, 5 and 6). Probability amounts in this regard to the relation of mutually excluding possibilities (cf. Kangal 2016). He called this relation a 'contradictory opposition' (*contradictorischer*

Gegensatz) (Lange 1877, pp. 105–108). Interestingly, he did not mention Hegel's name, let alone Marx's or Engels', in this context, nor did he attempt to associate probability with dialectics.[12]

Khaim Zhitlovskii, a Jewish-Russian intellectual and co-founder of the Socialist-Revolutionary Party (PSR), was perhaps the first to attack Marx and Engels' natural dialectics *separately* by referring to Engels' dialectical concept of motion in *Anti-Dühring*, on one side, and to Marx's view on elliptical (planetary) motion in *Capital*, on the other.[13] Engels' contention was that 'motion itself is a contradiction' and 'a body can be in a place and elsewhere at the same time' (Schitlowsky 1896, p. 363). In the beginning of the chapter *Metamorphosis of Commodities* in *Capital*, Marx (1983, p. 65) wrote: 'It is a contradiction, for example, for one body to continuously fall into another, and just as constantly to fly away from it. The ellipse is one of the forms of movement in which this contradiction is actualized just as much as it is solved'.[14] The difference between Marx's and Engels' formulations is that, motion, on Marx's view, 'is the consequence of two opposite tendencies', while in Engels, motion *is* contradiction (Schitlowsky 1896, pp. 365–366). Although both men were equally wrong in their adoption of Hegel's logic of contradiction, Engels was closer to Hegel in his 'rather static standpoint', while Marx was reinforcing the same argument from 'a more dynamic' angle (Schitlowsky 1896, p. 364).[15] However interpreted, the belief in 'seeing a real contradiction in nature' (*in der Natur einen wirklichen Widerspruch erblicken*) (Schitlowsky 1896, p. 342) is nothing but an 'antilogical' illusion (Schitlowsky 1896, p. 341; see also Schitlowsky 1895, p. 193; 1899, p. 330; Schweigmann-Greve 2012, pp. 108–119).

Eduard Bernstein (1921, p. 71) drew the following conclusion from these debates: 'The great things which Marx and Engels achieved they accomplished in spite of, not because of, Hegel's dialectics.' He complained about those who pursued 'Marxistik', that is, 'Marxology' (Bernstein 1905, p. 418), taking Marx and Engels' words too literally, without questioning the prescriptions of 'dialectical scheme[s]' (Bernstein 1921, p. 246). The 'working class' has been marching under the false banner of Hegel. It should rather follow 'Kant, not Hegel', 'for its emancipation today' (Bernstein 1905, p. 421). Bernstein repeatedly warned against commitments to 'the laws of dialectics, as Hegel deployed them', and spoke of the 'great scientific danger of Hegel's logic of contradiction' (Bernstein 1921, p. 53).

Pointing out similarities between Dühring's and Bernstein's views, Karl Kautsky (1899, p. 39) objected: 'What remains of Marxism if it is deprived of dialectics that was its best "working tool" and its "sharpest weapon"? Was Marx and Engels' thought not dialectical to the core?' Against Bernstein's charge that 'applying [dialectics] is nonsensical', Kautsky argued that dialectics is necessary for it explains 'the motive force of all development', that is, 'struggle of opposites' [*Kampf der Gegensätze*] (Kautsky 1899, p. 39).[16] Here Kautsky avoided the term 'contradiction' which Bernstein (1899, p. 331) had ruled out, because it was incompatible with the formal rationality of science. Kautsky was indeed unarmed with regard to 'real contradictions', and he openly admitted that he has 'never been strong in philosophy, and, even if I stand entirely on the standpoint of dialectical materialism, I still think that the economic and historical standpoint of Marx and Engels is in the last resort compatible with neo-Kantianism'.[17] A complete mastery of Kant and Hegel was needed in such debates. One must 'have an interest in Hegel himself', Engels said once, 'which was not the case with anybody then, or, to be exact, "neither with Kautsky nor with Bernstein"' (Voden 1956, p. 331).

Later on, Kautsky took up these issues again. This time he tried to advance a more principled account. He identified dialectics largely with evolutionary development and motion in nature and society (Kautsky 1927, p. 129). Development was structured by a threefold of 'thesis, antithesis and synthesis', or 'negation, negation of negation and position'. 'Contradiction' was evidenced by the presence of antithesis within thesis which contains its own negation or gives birth to it (Kautsky 1927, p. 130). However, he sided with Hegel against Engels when he claimed that development does not fully apply to nature. That 'thesis itself generates its own antithesis is valid only for human development in society'. Therefore he concluded that Engels' idea of development 'as a general law of nature' was wrong (Kautsky 1927, p. 791).[18]

These debates took place against the backdrop of changing views on working-class struggle, crisis of capitalism and transition to socialism. The collapse theories of capitalism and the consequent violent socialist revolution were, according to Bernstein and other 'revisionists', to be replaced by a gradualist strategy of establishing socialism via reforming the existing social order. This evolutionary socialism found its philosophical expression in a distaste for the socialist adoption of the Hegelian heritage of dialectics and contradiction.

Peter Struve (1899, p. 702), for instance, concentrated his criticism on the close connection between the Marxist 'formula of contradiction' and the 'collapse theory' of capitalism, and picked on the predominant account of 'dialectical contradiction [*dialektischer Widerspruch*] that tends towards sublation [*Aufhebung*]'. He formalized a primitive calculus of opposites that is presupposed to struggle to a conclusion through an increasing degree of intensity. If one of the opposite sides is 'destroyed' (*vernichtet*) by the other, '[t]he contradiction is "overcome" [*aufgehoben*]' (Struve 1899, pp. 663–665). This logic, he claimed, underlies 'Marx's theory of social development' that 'revolves around … the conflict [*Widerstreit*] between economy and law', the former being 'cause' and the latter its 'effect' (Struve 1899, p. 667). Marx, however, was mistaken because he believed that the material misery of masses is a natural necessity, emerging from the development of capitalist economy (Struve 1899, p. 692).

Perhaps unsurprisingly, Max Adler (1908, p. 82), the Austro-Marxist theoretician, concluded from the ongoing quarrel that one of the alleged internal elements of Marxism, that is, dialectics, has attracted the greatest attention from the opponents, not proponents, of Marxism. He appreciated that Marx and Engels had 'saved … two sides of the Hegelian dialectics, method and antagonism [not contradiction]' (Adler 1908, p. 88). Nevertheless, he found it problematic that Marxism was quickly turned into a 'worldview' with a 'philosophical materialism' in the background, two instances that endanger the scientific quality of Marxist social theory (Adler 1913, p. 65). Adler had Georgii Plekhanov in mind, and he was targeting the latter figure when he spoke of metaphysics, defining it as a 'real dialectics' (*reale Dialektik*) of 'opposition' (*Gegensätzlichkeit*) in 'social life' (Adler 1913, p. 77).[19]

The fiercest enemy of the Hegel critics was certainly Plekhanov. In a series of articles which he wrote on the sixtieth anniversary Hegel's death for *Die Neue Zeit*, he crossed swords over the 'great master' and his dialectical heritage. He quickly made a name for himself afterward. Engels (1979, p. 235) told Kautsky that 'Plekhanov's articles are excellent.' Kautsky indeed shared this opinion. 'He is our philosopher, certainly the only one among us who studied Hegel.' 'This [Plekhanov] is after Marx and Engels perhaps the most significant theoretician of our Party.'[20] Plekhanov (1958, p. 121) made it clear that the 'philosophy of Marx and Engels is … *dialectical materialism'*. It goes without saying, he argued, that 'motion is contradiction', and that this latter term 'is to be understood dialectically' (Plechanow 1958, p. 123). '*What underlies our dialec-*

tics is the materialist conception of nature.' Unlike Hegel's dialectics, which coincides with metaphysics, Marxist dialectics is based on the materialist 'doctrine of *nature*' (Plechanow 1958, p. 128; emphasis in original). The dialectical method finds in nature (i.e. 'dialectics in biology') an equally large scope for application as it does in society (Plechanow 1958, p. 130).

The Lukács Controversy

One year after Lukács' book came out, the German sociologist Werner Sombart published a lengthy critique of Marx's concept of social laws. There he depicted Marx and Engels as naturalists because they persistently conceived of 'the social movement as a nature-historical process'. Marx (1991a, p. 685; 1996, p. 751; also quoted in Sombart 1924, p. 16) had asserted in the first volume of *Capital* that 'capitalist production begets, with the inexorability of a law of Nature, its own negation'. Another highly irritating passage for Sombart was the following: 'Here, as in natural science, is shown the correctness of the law discovered by Hegel (in his *Logic*), that merely quantitative differences beyond a certain point pass into qualitative changes' (Marx 1983, p. 246; 1996, p. 246). On Sombart's view, such lines proved most clearly Marx's crude determinism that ignored the relevance of human freedom in social action and reduced human activity to causally determined epiphenomena (Sombart 1924, p. 19). Hegel's dialectics was instrumentalized to this end, although the conceptual framework of Hegelian philosophy was inappropriate for such a purpose. That Marx and Engels have butchered the 'old master' is evident from their attempt to 'apply Hegelian dialectics to the empirical world'. Hegel never spoke of any 'real' or 'dialectical contradiction[s]'. Nevertheless 'antagonisms' (*Antagonismen*) and 'opposites' (*Gegensätze*), not contradictions (*Widersprüche*), are present in the empirical world (Sombart 1924, p. 28). Sombart referenced Lukács' infamous footnote in this regard. The latter's claims that 'Engels has fundamentally misunderstood the doctrine of his friend', and that 'the method must be limited to historical-social reality', had a certain novelty, but Lukács, like other Marxists, confused contradictions with antagonisms and was wrong to believe that the dialectical method can apply to reality at all (Sombart 1924, pp. 30–31).[21]

Ladislaus Rudas, a Hungarian communist and one of the editors of Engels' *Dialectics of Nature*, asserted that Lukács' scenario is not corroborated by any of his quotes from Marx because the latter never argued for

limiting dialectics to society. Lukács had naively presupposed that Marx had ignored Engels' alleged errors for the sake of their friendship, an attitude which is hardly consistent with Marx's well-known principled fastidiousness (Rudas 1971b, p. 73). Lukács' account was also at odds with Marx's references to negation of the negation, the transition from quantity to quality, and the logical flux of concepts in *Capital*. Moreover, given the evolutionary origins of human society and the metabolic exchange between man and nature, the assertation that nature-specific laws of dialectics suddenly disappear within society not only amounts to eclecticism but also turns dialectics, *contra* Lukács' intentions, into a merely subject-dependent construct (Rudas 1971b, pp. 75–77). However, there is 'only one [super-]regularity (in nature as well as in society): the dialectics, and everything that happens in the world is subordinate to the natural laws of dialectics'. The 'laws that are effective in nature transform into various regularities' that belong to the same, and create other, systemic interactions (Rudas 1971a, p. 140).

In a similar vein, Abram Deborin, a Soviet philosopher and a former Menshevik, reinforced the collaboration account, referring to Engels' anecdote in the preface to the second edition of *Anti-Dühring* and a letter exchange between Marx and Engels shortly before the publication of *Capital*. In the preface, Engels (1987a, p. 9; 1988, pp. 492–494; cf. Deborin 1971, p. 93) tells his readers:

> I must note in passing that inasmuch as the mode of outlook expounded in this book was founded and developed in far greater measure by Marx, and only to an insignificant degree by myself, it was self-understood between us that this exposition of mine should not be issued without his knowledge. I read the whole manuscript to him before it was printed, and the tenth chapter of the part on economics ('From *Kritische Geschichte*') was written by Marx but unfortunately had to be shortened somewhat by me for purely external reasons. As a matter of fact, we had always been accustomed to help each other out in special subjects.

As for the brief exchange prior to *Capital*, Engels (1987d, p. 382) wrote to Marx in June 1867, sharing some of his notes on the dialectical relation between quantity and quality derived from his reading of August Hofmann's *Introduction to Modern Chemistry*. A 'molecule as the smallest part of matter capable of independent existence', he wrote, is 'a perfectly rational category, a "nodal point", as Hegel calls it', which 'marks

a qualitative change'. Referring to the aforementioned passage concerning quantitative differences passing into qualitative changes (Marx 1983, p. 246; 1996, p. 246; cf. Deborin 1971, pp. 104–105), Marx (1987b, p. 385) replied that Engels was

> quite right about Hofmann. Incidentally, you will also see from the conclusion of my Chapter III, where I outline the transformation of the master of a trade into a capitalist — as a result of purely quantitative changes — that in the text there I quote Hegel's discovery of the law of the transformation of a merely quantitative change into a qualitative one as being attested by history and natural science alike.

For Deborin (1971, p. 96), Lukács' bias could not be explained simply by bad scholarship. It was rooted rather in a 'worldview' (*Weltanschauung*) other than that of Marx and Engels. Otherwise he would have not put the application of dialectics to nature or 'dialectics in nature' up for debate (Deborin 1971, pp. 91, 104). At least he could have admitted a reciprocal interaction between nature and society (Deborin 1971, p. 103), and derived the contested subject-object dialectics as a particular form of dialectics from general dialectical laws, as suggested by Engels (Deborin 1971, pp. 99, 107).

It is quite possible that Lukács was originally alerted by, and indirectly responding to, a theoretical trend largely voiced by Aleksandr Bogdanov's 'tektology', an early cybernetical theory of functional differentiation of biological organisms which Bogdanov had applied to equilibrium dynamics of modern capitalist society. Bogdanov (2016, p. 164; emphasis in original) associated dialectics with the interaction of contradictory opposites within dynamic processes, and he combined this idea with natural and social agents placed within '*an organizing process, proceeding by means of contradiction*, or … *by means of a struggle between different tendencies*'.[22] Such processes were characterized by coexisting opposite tendencies of destruction and restoration, or disorganization and reorganization, of the equilibrium state of any system, natural or social (Bogdanov 1980, 136–139; 2016, pp. 164–165, 185).

In the 1922 book *Theory of Historical Materialism* Nikolai Bukharin (1967) similarly proposed a unified dialectical theory of (dis)equilibrium of forces in nature and society. He reinterpreted social antagonisms, natural processes and metabolic interaction between nature and society as a reciprocity of opposite forces that simultaneously effects an equilibrium

state of systems. However, development in each area, he argued, would ultimately lead to overcoming disturbances by easing internal tensions and recreate relative stability.[23]

In his 1925 review of Bukharin's book, Lukács (1967b, p. 188) praised Bukharin's efforts to present systematically the philosophical foundations of historical materialism, a rare contribution since the time of Engels' *Anti-Dühring* and Plekhanov's writings. Nevertheless it suffered from an oversimplification of distinctions between nature and society, and an ignorance of the specificity of developmental processes within the realm of both spheres. While one can easily find quotes from Marx and Engels that would support Bukharin's theoretical achievements, he was wrong to apply natural scientific methods to a concrete analysis of the functioning mechanisms of modern society (Lukács 1967b, p. 191). The most obvious proof of this defect was his equilibrium theory (Lukács 1967b, p. 197).

Commenting on Lukács' book and on the latter's review of Bukharin, Antonio Gramsci (1971, p. 197) remarked that a dualistic separation of nature and society is hardly compatible with Marxist dialectics. He suspected that 'perhaps as a reaction to the baroque theories of [Bukharin's] exoteric textbook, Lukács fell prey to the opposite error, to that of a form of idealism'. Late Lukács would have definitely agreed with this characterization when he launched a public campaign to prevent the reprints of his 1923 book. On many occasions, he deemed it 'outdated', 'misleading' and even 'dangerous', for it was written in a 'transition [period] from objective idealism to dialectical materialism' (Lukács 1960, 1967a, pp. 57–58; 1984, pp. 38, 395–396), and revealed his tendency to view Marxism 'exclusively as a theory of society, as social philosophy, and hence to ignore or repudiate it as a theory of nature' (Lukács 1971b. p. xvi; 1977, p. 18).

In his posthumously published 1925/26 'defense', Lukács (1999, p. 121; 2000, p. 95) ambiguously claimed that it is 'the *development of science* that drums the dialectic[s] into the natural scientists'.[24] 'Self-evidently the dialectic[s] could not possibly be effective as an objective principle of development of society, if it were not already effective as a principle of development of nature before society, if it did not already objectively exist' (Lukács 1999, p. 128; 2000, p. 102). This remark of course did not justify his position in the 1923 footnote, nor did it provide any insight into his belief that 'the dialectics of nature [*Dialektik der Natur*] can never become anything more exalted than a dialectics of movement witnessed by the detached observer, as the subject cannot be

integrated into the dialectical process' (Lukács 1971b, p. 207; 1977, p. 396). Nature is dialectical insofar as it is about the '*knowledge* of nature' (*Naturerkenntnis*) (Lukács 1977, p. 396; emphasis in original). Later he said that 'my struggle against … the concept of dialectics in nature [*Dialektik in der Natur*]' was one of the 'central mistakes of my book' (Lukács 1971a, p. 260).[25]

The Birth of *Dialectics of Nature*

Around the time when these debates were taking place, Boris I. Nikolaevskii, an associate of the Marx-Engels Institute in Moscow under the directorship of David B. Riazanov, was assigned to collect archive materials for the newly established project *Marx-Engels Gesamtausgabe* (Marx-Engels Collected Works)—MEGA[1]. In November 1924, he visited Bernstein who was then acting as an executor for the literary estates of Marx and Engels. Nikolaevskii reported to Riazanov that Bernstein possessed extensive manuscripts by Engels, including some lengthy works on 'natural science' (Nikolaevskij 1997b, p. 62). Bernstein was ready to transmit the whole Engels archive, except Engels' letters to him and a few works, including 'Dialectics and Natural Sciences' (Nikolaevskij 1997a, p. 63).[26] However, this was legally and politically not an option for Riazanov. The Marx-Engels-Institute in Moscow and the Frankfurt Institute for Social Research, headed by Felix Weil, were about to sign a contract to arrange for the editing of manuscripts in the SPD archives (Hecker 2000, pp. 34–36). Riazanov announced that 'the most important unpublished manuscripts (German Ideology, Nature-dialectics [*Naturdialektik*]) will be released within one year after the conclusion of the contract' (Rjazanov 2000b, p. 152). The 'Nature-dialectics' was indeed published in 1925 in German and Russian in the *Marx-Engels-Archive*, though not in MEGA[1], perhaps for the reason that Riazanov rushed to undercut Bernstein's attempts to edit and comment on those manuscripts on his own.[27] Politically MEGA[1] was part of the activities of the Marx-Engels Institute that had been established in 1920 on the initiative of the Comintern and the Russian Communist Party (Bolshevik). It owned scientific offices, a library, archive, museum, publishing house and financial administration. Contrary to editorial practices of the German Social Democrats, MEGA[1] intended to avoid an arbitrary selection of significant, well-known and obviously completed works by Marx and Engels

(cf. Kangal 2018, pp. 74–75). Everything written by the two men, including finished or unfinished works, private records, excerpts and letters, was to be published in a historical-critical edition. MEGA[1] was divided into four sections: Marx and Engels' philosophical, historical and political works, including some manuscript reconstructions; the preparatory materials for, and the manuscripts of, Marx's *Capital*; the Marx-Engels correspondence; a complete index of names and contents in all three divisions. *Dialectics of Nature* was planned for volume 14 in the first section (cf. Rjazanov 1997, p. 112).[28]

Apart from those passages from *Anti-Dühring* and *Ludwig Feuerbach* which Engels had rearranged for *Dialectics of Nature*, the first piece of text (*The Part Played by Labor in the Transition from Ape to Man*) was published by Bernstein already in 1895/96. This was followed by *Natural Science in the Spirit World* in 1898. A majority of the Marx-Engels correspondence relevant to the later Engels debate was edited and published by Bernstein in 1913, as well. The SPD also entrusted German physicist Leo Arons with the task of assessing whether or not Engels' manuscripts on dialectics of nature were worth publishing. Arons came to a negative assessment, claiming that Engels' works were outdated. Arons' judgment, according to Bernstein (2000b, pp. 166–167) probably originated from his empiricism and distaste for dialectics.[29] In 1924 Bernstein asked Albert Einstein's opinion. Einstein (2015, p. 141) believed that the manuscripts had no merit from the perspective of contemporary physics, but that they gave interesting insights into Engels' intellectual biography. Bernstein thought that this view did not defy but rather confirmed Engels' self-estimation in the second preface to *Anti-Dühring*:

> There is much that is clumsy in my exposition and much of it could be expressed today in a clearer and more definite form. I have not allowed myself the right to improve this section, and for that very reason [I] am under an obligation to critici[z]e myself here instead (Engels 1987a, p. 11; 1988, p. 494) … the advance of theoretical natural science may possibly make my work to a great extent or even altogether superfluous. For the revolution which is being forced on theoretical natural science by the mere need to set in order the purely empirical discoveries, great masses of which have been piled up, is of such a kind that it must bring the dialectical character of natural processes more and more to the consciousness even of those empiricists who are most opposed to it. (Engels 1987a, p. 13; 1988, p. 496)

The contradiction between Engels' intentions and conclusions is quite obvious here. If '[n]ature is the proof of dialectics' and if the advance of theoretical natural science may make his work superfluous, *Naturdialektik* was a hard case to argue for (Engels 1987a, p. 23; 1988, p. 233). Its proponents at least believed that the ontological presumptions, and the corresponding formal determinations of being and thought in the realm of nature, are far from superfluous. The editors of *Dialectics of Nature* seem to have thought that the contested legacy of dialectics in general, and that of natural dialectics in particular, might receive a turn to the dialectician's advantage if the place and significance of the philosophy of natural sciences within the entire theoretical corpus of Marx and Engels were more strongly emphasized. Although a large part of Engels' studies here, especially at the end of 1870s, were dedicated to physical concept of motion rather than to philosophical dialectics, the latter aspect was chosen to define the general character of Engels' main direction. That decision found support, if only partially, in Engels' manuscript and folder headings.

Engels had put 197 manuscript fragments into four folders or 'convolutes', naming them 'Dialectics and Natural Science' (*Dialektik und Naturwissenschaft*), 'Natural Research and Dialectics' (*Naturforschung und Dialektik*), 'Dialectics of Nature' (*Dialektik der Natur*) and 'Math[ematics] and Natural S[cience] Diversa' (*Math[ematik] und Naturw[issenschaft] Diversa*). The title of the third folder seemed to be the best candidate for what the bulk of manuscripts was to be called. The 94 manuscripts contained in the first folder carried the title *Naturdialektik*, which Engels had subdivided into 11 groups (*Naturdialektik* 1-11) plus *Naturdialektik references.* Conspicuously, those works from 1880 onward that mainly dealt with contemporary physics, not philosophical dialectics, were put into the third folder (*Dialektik der Natur*). Also note here that, in private editorial correspondence, Engels' four folders were interchangeably referred to as 'nature and dialectics' (Rjazanov 2000c, p. 183), 'dialectics of nature' (Weil 2000a, p. 179; Bernstein 2000a, pp. 404–405), 'nature-dialectics-work' (Bernstein 2000a, p. 405), 'dialectics in nature' (Weil 2000b, p. 194) and 'nature-dialectics' (Rjazanov 2000a, p. 221; Czóbel 2000, p. 226).

The editors, two Russian physicists (Arkadii K. Timiriazev and Egor E. Lazarev) and a German biologist (Julius Schaxel), released the 1925 bilingual edition under the rubrics *Naturdialektik* and *Dialektika Prirody* ('Dialectics of Nature') (cf. Weil 2000b, pp. 194–195).[30] It included most of the manuscripts, except some formulas, calculations and the *Plan 1878.*

In the 1927 edition, the title was changed to *Dialektik und Natur* ('Dialectics and Nature'). This edition, unlike the previous one, included *Preparatory Works for Anti-Dühring*, but omitted the fragment *Transition from Ape to Man*. In both editions, manuscripts were published according to their chronological order. That format was then reproduced in the 1929 and 1931 Russian editions. A new German edition was prepared by Vladimir V. Adoratskii, Ladislaus Rudas and Paul Schwenk in 1935, with corrected decipherments of the manuscripts and additional remarks on the texts. This time it had the *1878 Plan* and *The Motion of Planetary Bodies* in it, but it omitted *Slavery, Fourier, Concerning the Value of an Object*. It opened with *Articles on Dialectics of Nature*, containing works on physics from 1880s, that were followed by *Notes on Dialectics of Nature* (early works from 1870s), *Transition from Ape to Man* and *Natural Science in the Spirit World* (Engels 1935, pp. 479–716). The 1935 MEGA[1] special edition switched the title to *Dialektik der Natur* ('Dialectics of Nature'). A newer Russian edition (1939–1941)[31] put both *1878 Plan* and *Dialectics* at the very beginning, which were then followed by *Articles and Chapters*, indicating that Engels' natural scientific studies illustrate a certain number of dialectical laws or axioms.[32] This edition also served as the textual basis for all subsequent editions in Russian, German and English and so on (Griese 1985, pp. 597–598).[33]

All the editors, early or late, saw their task as establishing an authentic text, though their manuscript arrangements were never fully committed to Engels' final (late) intentions. Although the first editions in 1920s were chronologically ordered, half of the editorial introduction was dedicated to Marx's natural scientific studies (Rjazanov 1969, pp. 117–132). The later editions in the 1930s, by contrast, did not follow chronological order, but then they did not adjust Marx's works to Engels' studies in the introduction, either. What came into play in the introduction to the 1935 edition instead, in which *Anti-Dühring* and *Dialectics of Nature* were published together, was in part a hagiographical description of the Marx and Engels' collaboration, supported by quotes from Lenin (cf. Adoratskij 1935, p. x).

This suggests that the role of the editors was not limited to acting the middleman between author and readers. In their choice to present the texts in specific forms, editors were taking into account how the edition at hand could address the current political and philosophical concerns of their readers in the most effective ways possible. This means that they were partly in charge of not only stimulating debates, or enabling readers to

orient themselves in the manuscripts, but also of deciding how past texts were to function in the current context. To a certain degree, editors were instructors who guided the reading public that was expected to be affected by the ways the texts were presented. Creating a politically committed readership was indeed one of the goals, but it generated ambiguity to ascribe that task to the historical-critical edition.[34] Moreover, it had an impact on the readership, but not always in the anticipated ways. There were those like Ivan Luppol (1930, pp. 171–172), a Deborinite philosopher, according to whom the publication *Dialectics of Nature* would put an end to the ongoing debates, or others like Ivan I. Skvorcov-Stepanov (1925, p. 60), a Bolshevik-Mechanist, who divided Engels' work into early and late periods, playing off the latter against the former.

Deborinites Versus Mechanists

In the 1920s and 1930s, the Soviet Engels debates were carried out in such journals as *Pod Znamenem Marksizma* ('Under the Banner of Marxism'), *Vestnik Kommunisticheskii Akademii* ('Bulletin of the Communist Academy'), *Bolshevik* and *Dialektika v Prirode* ('Dialectics in Nature'). Party theoreticians and scholars were largely concerned with the conceptual clarity of the philosophical terminology and its application to contemporary natural scientific issues in quantum mechanics, relativity theory, cell biology and modern cosmology. To be sure, the debates in philosophy and in the natural sciences were accompanied by, and provoked, political turmoil, with one group declaring victory over the other. No single individual, however, seems to have adopted the same view as any other, though it was a common trend to turn to the authority of Marx, Engels and Lenin, in order to claim materialism and to downplay idealism, so as to win an argument. Despite all the energetic efforts to invent unitary definitions of philosophical concepts, or just transform a pre-existing terminology, the debates hardly ever achieved a stable consensus. It is no exaggeration to say that the Soviet debates accumulated an astonishing variety of contradictions, even if some figures embodying those ambiguities, or later historians narrating them, would not openly admit this. The short history of *Pod Znamenem Marksizma* (1922–1944) is a case in point.[35]

Despite the title of the journal and its political commitment to the revolutionary class struggle of the proletariat 'under the banner of orthodox Marxism', 'not all contributors of our journal are communists; what brings us together is a common philosophical worldview: we are all consis-

tent materialists' ([Editorial] 1922, p. 4).[36] Referring to a short book review by A.K. Timiriazev, a physicist and a fresh Bolshevik since 1921, Lenin praised the journal's inclusive character. Such a contradictory 'alliance of communists and non-communists' was necessary, Lenin (1922, pp. 9, 5) argued, for successful revolutionary work, not only in the political-practical field but also in the realm of theory. He also encouraged a 'systematic study of Hegelian dialectics from a materialist standpoint' and suggested the establishment of a 'Society of Materialist Friends of Hegelian Dialectics' (Lenin 1922, p. 10). This would provide the theoretical natural sciences with a solid philosophical basis, and the philosophical theory, in turn, would benefit from it. Perhaps these remarks were meant to be a friendly warning rather than straightforward support of the journal's aim, for it was from the very beginning a communists-only journal, and remained that way.[37]

An interesting account covering the pages of the journal in its early period was offered by S. Minin's two articles *Philosophy Overboard!* and *Communism and Philosophy* published in 1922. Minin went against the grain and claimed that the contemporary pioneers of Marxist theory, such as Plekhanov, Deborin and even Lenin, were seriously mistaken when they spoke of dialectical materialism as a philosophy. For Minin (1922, pp. 123–125), Marxist philosophy was contradiction in terms. Philosophy is an invention and exploitative tool of the bourgeois class. The proletariat retains science, not philosophy. In order to support his claim that Marx and Engels were actually against philosophy, Minin (1922, pp. 125–126) quoted passages from Engels' *Anti-Dühring*, *Ludwig Feuerbach*, *Socialism: Utopian and Scientific*: 'With Hegel, philosophy comes to an end; … he showed us the way out of the labyrinth of systems to real positive knowledge of the world' (Engels 2011, p. 129). 'For the philosophy, which has been expelled from nature and history, there remains only the realm of pure thought, so far as it is left: the theory of the laws of the thought process itself, logic and dialectics' (Engels 2011, p. 161). Anti-philosophy or 'philosophobia' (Troitskii 1924, p. 12) was not an uncommon trend at that time, and aside from Minin, it was popularized by Emmanuel Enchmen, a former Russian Social Revolutionary and biologist (cf. Joravsky 2009, pp. 93–94), until its condemnation by Bukharin (1924, pp. 128–170) and Deborin (1926, p. 8).

Using a more moderate tone, another group, the so-called Mechanists, ascribed primacy to, or even the supremacy of, factual science over speculative philosophy.[38] For instance, Stepanov argued that for Marxists there

is no independent philosophy separate from science. What the former 'philosophical materialism' used to achieve became now a task of modern natural science, that is, deriving the most general theoretical conclusions from the latter's enterprise (Stepanov 1924a, p. 57). Precisely for this reason we are now able to say, he claimed, that Engels was wrong when he wrote in his recently published *Dialectics of Nature* that

> matter as such and motion as such have not yet been seen or otherwise experienced by anyone, but only the various, actually existing materials [*Stoffe*] and forms of motion. Material [*Stoff*], matter [*Materie*] is nothing but the totality of materials from which this concept is abstracted, and motion as such nothing but the totality of all sensuously perceptible forms of motion; words like matter and motion are nothing but *abbreviations* in which we comprehend many different sensuously perceptible things according to their common properties. Hence matter and motion can be known in no other way than by investigation of the separate materials and forms of motion, and by knowing these, we also pro tanto know matter and motion *as such*. (Engels 1985, pp. 135–136; 1987b, p. 515; translation modified; emphasis in original)

'*Matter as such*', Stepanov (1925, p. 59; 1928, pp. 39, 140; emphasis in original) objected, '*sensuously exists for us as negative electrons and positive nuclei*. This does not contradict that, for us, they are only indirectly perceptible and with the help of very complex devices.' In order to avoid the terminological confusions that are brought about by the so-called dialectical understanding of nature, he suggested speaking of a 'mechanical understanding of nature', that is, 'the reduction of all nature's processes exclusively to the action and transformation of those forms of energy that are studied by physics and chemistry' (Stepanov 1924b, p. 85; 1928, p. 73). As is evident from Engels' natural scientific studies in the early 1880s (November 1877),[39] Engels was approaching a mechanical understanding of nature that resembled Stepanov's ideas. Engels of 1874, by contrast, suffered from 'vitalism' that disregarded the significance of physicalist theory of nature. Stepanov was protesting against Engels' remark, recorded in the 1874 manuscript *Mechanical Motion*, that the main or higher and also subsidiary or specific forms of motion should not be obliterated:

> This is not to say that each of the higher forms of motion is not always necessarily connected with some real mechanical (external or molecular) motion, just as the higher forms of motion simultaneously also produce

> other forms, and just as chemical action is not possible without change of temperature and electric changes, organic life without mechanical, molecular, chemical, thermal, electric, etc., changes. But the presence of these subsidiary forms does not exhaust the essence of the main form in each case. One day we shall certainly 'reduce' thought experimentally to molecular and chemical motion in the brain; but does that exhaust the essence of thought? (Engels 1985, pp. 23–24; 1987b, p. 527).

On Stepanov's view, Engels' statement that 'chemical and physical processes are subsidiary forms for the manifestation of organic life' signified a vitalist tendency (Stepanov 1925, p. 51; 1928, p. 130). By vitalism, Stepanov understood an eclectic view of organic life that minimizes, if not rejects, the interpenetration of different spheres of nature, such as biology, chemistry, physics and cosmology. That Engels later dropped this idea in favor of a mechanical reductionism was most welcome for Stepanov, as Engels came to terms with the views in ongoing contemporary science.

> Electricity passes into and arises from chemical transformation. Heat and light, ditto. Molecular motion becomes transformed into motion of atoms—chemistry. The investigation of chemical processes is confronted by the organic world as a field for research, that is to say, a world in which chemical processes take place, although under different conditions, according to the same laws as in the inorganic world, for the explanation of which chemistry suffices. In the organic world, on the other hand, all chemical investigations lead back in the last resort to a body—protein—which, while being the result of ordinary chemical processes, is distinguished from all others by being a self-acting, permanent chemical process. If chemistry succeeds in preparing this protein, in the specific form in which it obviously arose, that of a so-called protoplasm, a specificity, or rather absence of specificity, such that it contains potentially within itself all other forms of protein … , then the dialectical transition will have been proved in reality, hence completely proved … When chemistry produces protein, the chemical process will reach out beyond itself, as in the case of the mechanical process above, that is, it will come into a more comprehensive realm, that of the organism. Physiology is, of course, the physics and especially the chemistry of the living body, but with that it ceases to be specially chemistry (Engels 1985, pp. 144–145; 1987b, pp. 534–535).

That Engels emphasized in this passage a physico-chemical derivation of non-chemical properties of organic and non-organic substances was sufficient proof for Stepanov that natural scientific reductionism had

demonstrated what Engels called 'dialectical transitions' from one natural sphere to another. Stepanov also used this passage to attack Deborin's claim that there are leaps and disruptions in nature, an idea which Plekhanov had originally defended in order to prove that dialectics does apply to nature. *Contra* Deborin and his pupil I.A. Sten, who underlined 'dialectical leaps' in nature, Stepanov asserted that those Hegelian 'nodal lines' representing the universal interconnection of material points are 'untied' by mechanical materialism. Dialectics applies to nature precisely because there are no leaps but only uninterrupted continuity and transformation in nature (Stepanov 1928, pp. 91–92; Deborin 1927, p. 45; for a more detailed overview, see Ahlberg 1960, pp. 46–52).

Such views found support in the newly established journal *Dialektika v Prirode*, issued by the circle of A.K. Timiriazev and A.I. Var'iash. In a joint declaration, the editorial warned the Deborinites that one cannot simply '*write on any subject on the basis of a study of Hegel's logic*'. They recommended, instead, that 'the Marxist physicist does positive research on dialectics in physics, the Marxist biologist in biology' ([Editorial] 1928, p. 16). To this end, one must '*take into account the singularity of each field of phenomena*' by deriving them from their '*factual interdependence*' and not by '*an a priori construction introduced into them from without*' ([Editorial] 1928, p. 15; emphasis in original). Elsewhere, Var'iash (1924, p. 315) made a similar point when he asserted that dialectics is not a normative prescription which one has to follow in order to pursue science. It is rather the 'actual path along which humanity is actually proceeding'.

Ambiguously, Timiriazev, like Var'iash, was suggesting just another antidote or categorical imperative that was supposed to secure the rational foundations of science. It was that premise, according to which Timiriazev was able to argue that Plekhanov and Deborin had fallen prey to idealism when they spoke of 'objective coincidence' as the dialectical opposite of necessity. Plekhanov's definition of objective coincidence as the 'intersection of two *necessary* processes' amounted to the denial of causality (Plekhanov 1956, p. 323; emphasis in original; cf. Timiriazev 1926, p. 154).[40] Timiriazev also claimed that Engels' dialectical law of quantity and quality was at odds with how scientific research is done. Engels had asserted that qualitatively new phenomena *always* arise from quantitative change. However, there are many phenomena, Timiriazev asserted, that are subject to qualitative change, though we are not in a position to prove that they *all* result from quantitative change (Timiriaseff 1925/1926, p. 472).

Deborin was in principle ready to appropriate a historical-critical understanding of Hegel's, Marx's and Engels' dialectics, but he was clearly disturbed by how the Mechanists were threatening to replace philosophy as a whole with the natural sciences, and thus to resituate dialectics in a new setting that had cut off its ties to the Hegelian heritage, yet going by the name of dialectical materialism and Marxism. On the Mechanists' view, Deborin was lecturing natural scientists from the armchair of a philosopher. In response to the Mechanists' challenges, Deborin contended that 'philosophy provides us with a holistic worldview by synthetizing the results of particular sciences'. Philosophy is involved in, and required by, particular sciences to the extent that its subject of investigation is human 'cognition, the analysis of scientific concepts, and the elaboration of the method of knowledge. Unlike individual sciences, the interest of philosophy is aimed at the overall, universal interconnection of phenomena.' Individual sciences investigate 'separate segments or areas of reality', though this is usually achieved in isolation from the all-encompassing whole. The task of dialectical materialist philosophy is to provide the proper method for reintegrating unconnected parts to a unitary body of knowledge' (Deborin 1961, p. 417).

Deborin initiated a strategy to immunize the dialectical method against the Mechanists' attacks by demanding from them that they critically revise their particular scientific procedures. Emphasizing the primacy of the whole over its parts, he argued that the dialectical materialist worldview cannot be worked out 'from the point of view of *particular* facts, of a *particular* science'. Thus philosophical dialectics cannot be overthrown by them. On the contrary, '*particular*, *contingent* facts' of particular sciences are themselves 'subject to critical examination from the point of view of the general methodology' (Deborin 1925, p. 5; emphasis in original). Deborin aimed to rule out the Mechanist undertaking of proving a 'dialectics *in* nature', that is, the investigation of dialectical structures in nature, such as unity of opposites or interaction of quality and quantity, *without* applying the dialectical method. Engels' book was devoted to the 'application of dialectical method to natural science' (Deborin 1925/1926, p. 429). Dialectics *of* nature, by contrast, is 'the methodology in natural science' (Deborin 1925/1926, p. 430). Along with 'materialist dialectics as the general scientific methodology (including theory of knowledge)' and 'dialectics of history' (historical materialism), 'dialectics of nature' constitutes 'Marxism or dialectical materialism' as a 'closed worldview' (Deborin 1925/1926, p. 430).

Philosophically, there was a draw-result between Deborinites and Mechanists, but Deborin managed to strike at his opponents by other means. In 1929, when the second All-Union Conference of Marxist-Leninist Scientific Institutions was organized, Deborinites used this venue as an opportunity to assault Mechanists and to force the final conference resolution to condemn them as an idealist deviation from Marxism ([Anonymous] (1929), pp. 127–128). Mechanists were not consulted on the resolution ([Anonymous] (1929), p. 126), and Deborinites became judge and jury in their own cause. They were certainly naïve to think that philosophical principles can be established by a conference resolution, but they were no less innocent than their successors, a third group, with a certain distance from both Deborinites and Mechanists, who applied the same conciliarism[41] to the Deborinites themselves.

Pod Znamenem Marksizma in general and the Deborinites in particular were accused, first, by three fresh graduates of the Institute of Red Professors (Mitin et al. 1930, pp. 3–4), and then by the *Society of Militant Materialists and Dialecticians* (OVMD 1930, p. 216), of dismissing the practical concerns of the transition period of the newly established Soviet state and economy when it was suffering from idealist, formalist and Trotskyist tendencies.[42] Stalin's pejorative term 'Menshevizing idealism' was employed to demarcate this tendency from what was considered Marxism-Leninism (Peredovaia 1930, p. 5; IKP 1930, pp. 15–24; Iudin 1930, pp. 6–7; [Anonymous] 1931a, pp. 2–3; b, pp. 15–22). After a brief shock period, Deborin (1933, p. 144) admitted in his self-criticism to having ignored social issues and having fallen prey to Hegelian idealism, particularly in making use of 'reconciliation of opposites' (*primirenie* [*Versöhnung*] *protivopolozhnostei*), which in political terms amounted to confirming a harmonious coexistence between bourgeois and proletarian classes.

Despite the dismissive attacks against, and the retreat of, Deborin, there were minor philosophical differences between both camps. Much of what the Deborinites had argued against the Mechanists in the 1920s were later adopted by Stalin, Mitin, Ral'tsevich and Iudin, though Stalin, on one side, and Mitin et al., on the other, were not in full agreement either. While the special section on 'the laws of materialist dialectics' in the entry 'dialectical materialism' edited by Mitin and Ral'tsevich for the *Great Soviet Encyclopedia* regarded 'negation of negation' as one of the laws of natural dialectics, Stalin neglected it in his article *On Dialectical and Historical Materialism*.[43] Furthermore, two out of four 'principal

features of Marxist dialectical method' (universal interconnection and reciprocal determination, eternal motion and change, gradual and rapid transition between quality and quantity and contradictions in nature), which Stalin (1997, pp. 254–257) enlisted there, were specifically Deborinite theses that had been originally formulated by Deborinites against Mechanists.[44] Deborin was given no credit for his contributions, but his legacy silently lived on in writings that were labeled 'official' and unique to 'Soviet Marxism'.

The Marx-Engels Problem

What the early Lukács did not 'cause' in the strong sense of the term but certainly gave rise to or contributed to, which he later strongly resisted, was a misconception of ascribing idealism to Marx and materialism to Engels, or conversely. This was an existentialist-idealist current that was largely uninformed about and ignorant of the internal contradictions of what it labeled as 'Soviet Marxism' from which it tried to distinguish itself.

It was probably Sidney Hook ([1950] 1962, p. 75) who first articulated this position in the Anglophone world, though neither Hook nor anyone else sharing this view had anything new to say that had not been said in the earlier debates. The 'attempt to apply the dialectic to nature must be ruled out as incompatible with a naturalistic starting point. Marx himself never speaks of a *Natur-Dialektik*.' Marx's dialectics 'expresses the logic of historical consciousness and class action'. Nature is 'relevant to dialectic only when there is an implied reference to the way in which it conditions social and historical activity' (Hook [1950] 1962, p. 76). Lichtheim (1972, p. 212), by contrast, believed that 'Marx's naturalism', along with 'Hegel's logic and contemporary positivism', were components of Engels' dialectics. Using a more idealistic tone, Kołakowski (1968, pp. 43–44) argued that a mind-independent reality 'cannot be an object of cognition since it is not an object of human activity'. In fact, he openly asserted that 'one can admit the validity of the idealists' traditional argument: "A situation in which one thinks of an object that is not thought of is impossible and internally contradictory."' 'Whereas Engels … believed that man could be explained in terms of natural history, and the laws of evolution to which he was subject, and which he was capable of knowing in themselves, Marx's view was that nature as we know it is an extension of man, an organ of practical activity' (Kołakowski 1978, p. 401). Engels' theory of nature violates this principle, for a 'unity of theory and practice'

cannot be 'formulated so as to relate to nature in itself as it presupposes the activity of consciousness' (Kołakowski 1978, p. 400).[45] The same argument was repeated by Shlomo Avineri (1968, p. 65), Jean-Yves Calvez (1964, p. 330), John Lewis (1972, p. 65) and others over and over again.

From this perspective, however, it is perhaps surprising to read in one of Marx's letters where he states that 'my method of exposition is not Hegelian, since I am a materialist, and Hegel an idealist' (Marx 1974b, p. 538; 1987c, p. 544). In his second postface to *Capital*, he similarly notes that Hegel transforms 'the process of thinking … into an independent subject under the name of Idea' and becomes a 'demiurgos of the real'. 'With me, on the contrary, the ideal is nothing but the material that is reflected and translated by the human mind' (Marx 1987a, p. 709; 1996, p. 19). In *The German Ideology*, Marx and Engels write that '[i]t is not the consciousness that determines life, but it is life that determines consciousness' (Marx and Engels 1975, p. 37; 2017, p. 136). In *A Contribution to the Critique of Political Economy*, Marx (1977, 1980, p. 100) reiterates this contention: 'It is not the consciousness of men that determines their existence, but their social existence that determines their consciousness.'

A slightly more sophisticated debate took place in French intellectual circles. It opened with articles by Jean-Paul Sartre and by Maurice Merleau-Ponty in the 1940s and reached its peak at a 1961 conference. Engels' dialectics of nature, Sartre (2004, p. 27–28) claimed, was an 'absolute principle' or 'a priori and without justification', that is, it is 'not open to verification at all'. Accordingly, 'dialectic moves in the opposite direction from science' (Sartre 1947, p. 165). Merleau-Ponty (1947, p. 173) wrote that if nature 'is dialectical, it is dialectical because we are dealing with nature as perceived by man and inseparable from human action'. The 'adventurous idea of a dialectic of nature' as 'Engels took from Hegel' should be dropped. On Roger Garaudy's account, Sartre, or anyone following him, naively assumed that 'there exists a list of complete and immutable laws of dialectics'. In doing so, he isolated the texts from their context and treated them as if they were intended for publication. Regarding the Marx-Engels relationship, their 'correspondence proves that Marx knew very well the work of Engels on the dialectics of nature, and he approved and accepted' it (Sartre et al. 1962, pp. 27–28). Jean-Pierre Vigier, in turn, drew attention to Heraclitus' dialectics, suggesting the following solution: if everything is in motion and if motion is dialectical, then dialectics applies to nature. 'Internal antagonisms' which

'illustrate the notion of contradiction', 'unity of contraries', the resolution of the former, and the emergence of new contradictions, are all particular forms of dialectics of nature (Sartre, Garaudy, Hyppolite, Vigier and Orcel 1962, pp. 58, 62).[46]

Summary

John Hoffman (1977, p. 11) correctly points out that the Engels debate is not limited to Engels' science; 'it is also a *political* debate'.[47] Defending or attacking Engels' dialectics stands or falls with confirming or denying the internal coherence of theoretical propositions and the practical positions of a scientific worldview in what is called 'Marxism'. Engels' intellectual reputation, or the political dignity of his defenders, were certainly under attack, but challenging one of the significant conceptions, such as dialectics of nature, which was presumably compatible with the entire theoretical body of Marxist thinking, was perceived either as a threat to Marxism or as a useful means to bury one of its 'defectors' in order to establish an 'authentic' Marxism. Hence the name-calling ('Soviet', 'vulgar', 'deviator', 'renegade', 'Trotskyist', 'Stalinist', 'idealist' etc.).

To be sure, both friends and foes of Engels thought that their own version of Marxism was 'authentic' in contradistinction to what was seen as 'counterfeit' or 'bogus'. Historically, however, these later assessments arose from a quarrel about the productive use of Hegel's philosophy in the realm of socialist theory. Whatever 'sins' Hegel might have committed, according to the early thinkers, these were all projected by later readers into Engels' 'distortions'. Timparano's talk of a 'scapegoat mechanism' is therefore justified. The problem of application of dialectics to nature seems to have provided a mere means to that end.

That Hegel ascribes a privileged role and a somewhat dubious primacy or supremacy to the so-called dialectical method as the way in which logically correct and metaphysically true thinking proceeds was originally treated by early Hegel scholars with great contempt (Trendelenburg, Hartmann, Barth). For this reason, it was rather redundant to object to those who claim that there is a real equivalent of 'contradiction' as it emerges as a substantial moment in Hegel's *Logic* (Dühring). A great variety of logical (identity, difference, opposite etc.), modal (real, possible, probably, necessary etc.) or real (force, relation, law, production, reproduction etc.) categories are applied both to nature and society, while 'contradiction' has been dismissed. Dühring's attempt to replace 'contradiction'

with 'antagonism' proves that there is a need for a conceptual reference point for whatever the term stands for, even if he forbids us to speak of 'real contradictions'.

Lange's account is interesting in so far as he develops some sort of probabilistic ontology of contradiction, though he does not link it to dialectics. Engels could easily have argued that dialectics applies to nature in this particular case, although it is questionable whether it *must* be called 'dialectical'. For Zhitlovskii, one can try to find as many examples as one likes. Marx and Engels' dialectics are nevertheless doomed to fail because contradictions in nature or, more generally, in reality are a sheer illusion. Unlike Lange, Zhitlovskii takes it for granted that real contradictions and dialectics are necessarily connected. This line of reasoning is followed by Bernstein and Kautsky. The controversy between those two figures revolved around the problem of application in the sense that if there are no contradictions in nature, then dialectics does not apply to nature. Contradictions and opposites were used interchangeably in this context. Later Kautsky distanced himself from his earlier position when he identified the Hegelian triad of thesis, antithesis and synthesis with regard to the functioning mechanisms of social development. His argument was not that there are no contradictions in nature but that the contradictions peculiar to society are not present in nature, which for him amounted to a rejection of a dialectics of nature.

In order to point out the Hegelian overtones in Marx, Struve spoke of *dialectical* contradictions, constituted by opposites that fight to a final decision. 'Conflict' and 'contradiction' were used interchangeably here, while opposites were demarcated as polar components of contradictions. He erected and attacked this general formula of dialectics at once without any particular concern with *natural* dialectics. Adler was more generous in this regard, for he at least admitted the terminological benefits of 'antagonisms' and opposites, if not contradictions, for social analysis. Plekhanov went very boldly against the grain and made the application of dialectics to, and the existence of, contradictions in nature obligatory for a principled defense of Marxism. He certainly earned the epithet 'father of Russian Marxism', even if he had as many foes as friends among Russian Marxists.

Soviet and other East European anti-philosophers (Minin, Enchmen) and Mechanists (Timiriazev, Var'iash, Stepanov etc.), on one side, and dialecticians (Deborin, Sten, Karev etc.), on the other, were divided on the question of the status of philosophy and its relation to the natural sciences. The later assaults on Deborin and his school were rather political in nature,

although Deborinite dialectics was largely adopted without much substantial modification (Stalin, Mitin, Iudin etc.).

While much of what Lukács had to say on dialectics, including his emphasis on dialectical methodology and philosophical holism, was quite compatible with Deborin and Rudas, it was rather curious that he could come to conclude that Engels was mistaken to apply dialectics to nature. When he asserted this claim, which he later regretted, he was perhaps responding to a mechanistic reduction of natural to social science as in Social Democratic receptions of the Darwinian theory of evolution, or cybernetic theories of equilibrium in nature and society, as in Bogdanov and Bukharin. In this context, the issue at stake was less the existence of contradictions than the specific features and dynamics of society in contradistinction to that of nature.

The post-World War II anti-Engels camp was as heterogeneous as its Soviet counterpart. There were those who ascribed idealism to Marx and materialism to Engels (Kołakowski, Avineri, Calvez etc.) or conversely (Hook, Lichtheim etc.). As is evident in the French debate, the application problem was revived in the terminological realm of oppositions, contraries and antagonisms in nature. For Vigier, to name an example, there was no such problem as dialectics of nature, and for Garaudy, Marx had no reason to doubt the internal coherence and fruitful potential of Engels' project. The later debates that followed these episodes repeated similar or same arguments and gave them a quotological turn (Carver, Hoffman, Stanley etc.).

Overall, the contributors seem to have largely invested their energies into rescuing or burying Engels. I am afraid that a greater scrutiny of semantical, philological, historical and political-functional aspects of Engels' natural dialectics in his text and context has become a peripheral matter. In other words, I fail to find thorough insights into the questions of, say, why Engels had undertaken such a gigantic task as *Dialectics of Nature*, that is, to reassess dialectics philosophically, on one side, and to broaden its scope toward the philosophy of nature and natural sciences, on the other; and why he decided to make use of such a troubling figure as Hegel instead of, say, Aristotle or Kant.

Given the relatively long history of the debate, it is also quite disappointing that the incompleteness of Engels' work is taken at face value without really questioning why we do this in the first place. There were certainly those like Deborin or Kedrov who called *Dialectics of Nature* a 'book', imposing some sort of completeness that was then reflected in the

form and content of later editions. Incompleteness was admitted only with regard to some formal facets, such as the fragmentary nature of Engels' sketches, or to biographical reasons because the work had been interrupted by Marx's death and by Engels' efforts to edit and publish Marx's economic manuscripts afterward.

Another shortcoming is the naïve presumption that Engels had a single intention, a single standpoint and a single audience over the years, whatever they might be. Furthermore, I am tempted to ask: had he 'finished' the work, would he have called it 'Dialectics of Nature' instead of, say, 'Dialectics and Natural Sciences'? Editorially, another title such as 'Philosophical—Natural Scientific Manuscripts' could have been selected. Its similarity to the title given editorially to Marx's *1844 Manuscripts* is obvious. Alternatively, Marx's reference to it as a 'nature-philosophical work' comes to mind. In an 1877 letter, Marx (1966a, p. 145; 1991b, p. 145) asked one of his correspondents to remind Moritz Traube, a German physiologist who had 'succeeded in making artificial cells', that 'he had promised to send me the *titles* of his various publications. This would be of great importance to my friend Engels, who is engaged on a work on natural philosophy [*naturphilosophisches Werk*] and intends to give more weight to Traube's achievements than has hitherto been done' (Marx 1966b, p. 246; 1991c, p. 192).

In succeeding chapters, I will offer some answers to the aforementioned questions, and also position myself against previous attempts to characterize or make sense of Engels' project, as I will mainly focus on the theoretical function and conceptual genesis of *Dialectics of Nature* in Engels' text and context.

Notes

1. Note here that the most crucial detail on this line is mistranslated in the English edition. Lukács speaks of the application of method to the *knowledge* of nature (*Erkenntnis der Natur*), not to nature alone. The footnote appears in the 1919 essay 'What is Orthodox Marxism?' that was slightly revised for the 1923 book. The present author does not have access to the original version. In any case, the controversy breaks out with the publication of *History and Class Consciousness*.
2. Admittedly, the footnote has enjoyed the greatest attention. Nevertheless, he enforced the same argument, if less directly, elsewhere. See Lukács (1971b, pp. xlii, 3); (1977, pp. 164, 173).

3. A typical example that empirically falsifies both epithets is the case of first generation MEGA[1] editor Karl Schmückle who prepared Marx's *Economic-Philosophical Manuscripts* for publication. Cf. Kangal (2018). Calling 'Western Marxists' 'authors from North America and Western Europe' does not make van der Linden's case either. I ignore here the issues of race (white) and gender (male).
4. Commenting on the mathematical parts in *Anti-Dühring*, H.W. Fabian (1975, p. 628) wrote to Marx in 1880 that he can hardly make sense of Marx's 'mode of presentation' with regard to 'the dialectical method', even less so when it comes to Engels' remarks on the square root of negative one. *Contra* Engels, Fabian wrote that minus one, let alone the square root of it, is a 'logical inexistence' (*logisches Unding*). That Fabian went behind Engels' back had provoked the latter. As he wrote to Kautsky in 1884, Fabian 'went for my dialectical approach to mathematics and complained to Marx that I had defamed $\sqrt{-1}$'. Cf. Engels (1995a, p. 191; 1995b, p. 295; 1995c, p. 124). In the second preface to *Anti-Dühring*, he was more generous and called Fabian rather modestly 'an unrecognized great mathematician'. Cf. Engels (1988, p. 494). H.M. Hyndman (1911, pp. 248, 231, 256) referred to Marx as 'an extraordinary combination of qualities' and 'the Aristotle of the Nineteenth Century', while he called Engels less generously 'our Teutonic "Grand Llama of the Regent's Park Road" … by reason of the secluded life he led and the servile deference he exacted', not to mention his 'overbearing character and outrageous rudeness'. Although he never met or spoke to Engels, he had a 'most unfavourable view of his character … he was exacting, suspicious, jealous, and not disinclined to give full weight to the exchange value of his ready cash in his relations with those whom he helped'.
5. For instance, Ernst Untermann (1910, p. xxi) wrote that 'Marx's many-sidedness is based on the speciality of social sciences in political-economic aspect, while Dietzgen's speciality is the universality of thought and nature'. Untermann (1910, p. xxiii) calls 'Marx, Engels and Kautsky' 'our teachers in the historical-economic area'. With regard to Engels' remarks on his natural scientific studies in the 1885 preface to *Anti-Dühring*, Untermann (1910, p. 8) emphasizes that Engels did not finalize his natural scientific studies. Contrary to the well-established 'dialectics of society' (*Gesellschaftsdialektik*), 'a monist world-dialectics and theory of knowledge' was missing in the Marxist literature (Untermann 1910, p. 10), a problem which was 'not solved completely by Marx and Engels' (Untermann 1910, p. 24). 'Engels' scheme of a conscious and unconscious side of nature-dialectics is more metaphysical rather than materialist' (Untermann 1910, p. 38). Cf. Engels (1988, p. 494). Regarding Dietzgen's fame in the British working-class associations, cf. Macintyre

(1986, pp. 129–140), Rée (1984, pp. 31–45). Popularization of Engels in Britain owes perhaps a great deal to the establishment of The Engels Society under J. B. S. Haldane, J. D. Bernal and Maurice Cornforth's influence. Cf. The Engels Society (1949a, b). Also note that the term 'dialectical materialism' probably originates from Dietzgen. Cf. Dietzgen (1920, p. 203).

6. Also Kautsky (1927, p. 26) speaks of 'the dialectical or genetic method', but he, unlike Trendelenburg, takes them to be synonyms, not opposites.
7. Chinese scholar Zhou Lindong (2008, pp. 2–4) speculates that Engels' title *Naturdialektik* was probably inspired by Dühring's *Natürliche Dialektik*, although he does not seem to be aware of the passages just cited. Besides the fact that Dühring did not intend to develop a dialectical method applicable specifically to nature, Zhou seems to get lost in translation, for *Natürliche Dialektik* and *Naturdialektik* are both translated into Chinese as *ziranbianzhengfa* (dialectics of nature), which ignores the distinction between adjective (natural) and noun (nature). However, he points out the two different formulations *Naturdialektik* and *Dialektik der Natur*, even if he is not able to explain why we came to have these quite similar, if unidentical, expressions in the first place.
8. Lange (1968b, p. 661) considered Marx, along with Engels and Liebknecht, 'the most significant theoretician living today, the spirit of the International Workers' Association in London'. See also Lange (1968a, p. 46).
9. This is a 1858 letter quoted from O.A. Ellissen (1894, p. 106). See also Lange (1887, p. 429).
10. To my knowledge, Dirk J. Struik was the first Marxist who attempted to develop a dialectical materialist theory of probability that paid particular attention to the mutual exclusion principle. Cf. Struik (1935). This article was a modified version of Struik (1934). See also Kangal (2015).
11. Bernstein (1892) had taken this novelty in Lange into account. However, it is not clear whether Bernstein (1921, pp., 44, 53–4, 33, 35) saw an interconnection between probability and weak determinism in contradistinction to the 'strict determinism' of 'philosophical or nature-scientific materialism' which he criticized in the 'Marxist conception of history'.
12. Such formulations as 'development in opposites' can be found in his *Materialism* book, though they are discussed always separately from the question of contradictions in probability. Although he admitted the significance of the Hegelian concept of opposites, and also that the opposites indeed transition into one another, he used this concept almost always with regard to the history of culture and intellectual heritage. Cf. Lange (1887, p. 70, 770).

13. The earliest Russian attacks on Engels' dialectics might have come from Nikolai I. Ziber (Sieber), who had translated some parts of *Anti-Dühring* into Russian, and Nikolai K. Mikhailovskii. Cf. White (2009).
14. I borrow the English translation of this passage from Weston (2012, pp. 5–6). See also Kangal (2017a, b).
15. At that time, a more convenient term with regard to the Hegelian logic of real contradiction, that is, *Realdialektik*, was already in use. Cf. Bahnsen (1882), Hartmann (1885, pp. 261–298) and Fechter (1906).
16. Kautsky also failed to distinguish his position from that of other Social Democrats such as Ludwig Woltmann, who publicly suggested dropping the term 'dialectics', and adopting a 'much more precise and rich concept such as "development"'. Socialists stand much closer to the 'great Darwin … than Hegel'. Quote from Steinberg (1967, p. 58).
17. Bernstein to Plechanow (23 September 1898), originally published in *Der Kampf*, 18 (1925), quoted from Sandkühler (1974, p. 19).
18. Several years before, he had written a lengthy study that attempted to prove the opposite claim, that there is development both in nature and society. Cf. Kautsky (1910). Such views are to be read against the political context in which human autonomy and free will in social agents were played off against the allegedly crude determinism of the natural sciences.
19. That Adler's terminological choices are by no means arbitrary is clear from his short piece on Hegel and Marx's dialectics. Cf. Adler (1990, pp. 849–858).
20. Kautsky an Bernstein. 5. Oktober 1896; Kautsky an V. Adler. 26. Januar 1893. Quotes from Steinberg (1967, p. 58).
21. Note here that Hegel uses the term 'dialectical contradiction' only once in his entire *oeuvre*. Cf. Hegel (1986b, p. 43). For Marx's usage of the term, see Marx (1974a, p. 540; 1984, p. 136).
22. Curiously enough, David Joravsky's assessment points to the opposite when he writes that Bogdanov considered dialectics 'a needlessly confused version of the commonplace idea that opposing forces can sometimes produce motion and change'. Cf. Joravsky (2009, p. 137).
23. Lukács reviewed the German edition of the book.
24. Also note here the English mistranslation of the chapter title 'Dialektik in der Natur' ('Dialectics *in* Nature') as 'Dialectics of Nature'. Cf. Lukács (1999, p. 114; 2000, p. 94).
25. Paul Burkett (2013, p. 3; 2001, p. 130) once curiously claimed that Lukács did not deny dialectics of nature. He also asserted that 'Lukács did not apply the dialectic to nature *as well as* society, in fact he viewed the application of dialectical method to nature as a concession to positivism'. See also Kangal (2015).

26. It is not clear from the letter whether Nikolaevskii was referring to one of the four convolutes or to all manuscripts concerning *Dialectics of Nature*. Although Bernstein had signed a formal confirmation of transfer for the copyrights, he later changed his mind, claiming that he was the sole heir to Engels' papers. Cf. Weil (2000c, p. 175), Bernstein (2000a, pp. 404–406) and Jäger (2000, p. 415).
27. Foster (2000, p. 229) wrongly dates the first edition back to 1927. Levine (2006, p. 3) is mistaken in saying that it was 'printed in the Soviet Union in full in 1927'. The complete edition was published by MEGA^2 in 1985 in East Berlin. An anonymous entry in a recent Chinese Marxism dictionary wrongly claims that all manuscripts were published by 1925. The claim that the complete edition covers the years 1873–1882 is also mistaken. The latest piece of text in the 1925 edition dates to 1892 (Engels' article on Carl Schorlemmer), in the MEGA^2 edition to 1886 (passages originally written for the *Ludwig Feuerbach* article). The editorial subtitle of MEGA^2 '(1873–1882)' is misleading in so far as the previously mentioned 1886 fragment found a place in Engels' 'book', and the four convolutes were prepared either in 1886 or shortly afterward. Cf. Engels ([1927] 1969, pp. 386–388) and Xu (2017, p. 331). Kangal, Karl Schmückle and Western Marxism, pp. 74–5.
28. This contradicts Rolf Hecker's account that it was planned for volume 15. Cf. Hecker (2000, pp. 75, 77). According to the 1931 plan for MEGA^1, 'Dialectics of Nature', along with *Anti-Dühring*, was planned for publication in volume 18. See [Anonymous] (2001, p. 270), and Griese and Pawelzig (1995, p. 46). Rudas and Falk-Segal' (2001, pp. 292, 297).
29. By 1936, MEGA^1 was planned to consist of five sections, including a separate section for excerpts by Marx and Engels. Cf. Rudaš and Falk-Segal' (2001, p. 295).
30. Note here that 'Naturdialektik' and 'Dialektik der Natur' are different formulations, even if they are semantically hard to distinguish. Russian and English do not follow this difference.
31. Vladimir K. Brushlinskii was in charge of the Russian translation. Cf. Hecker (2001, p. 267).
32. The two plans appeared under the editorial headings 'Draft of General Plan' and 'Draft of Particular Plan'. Cf. Engel's (1941, pp. 3–4).
33. The latest version appeared in MEGA^2 in 1985 in both chronological and systematical order. Unlike previous versions, this edition consisted of everything transmitted from Engels via Bernstein to Riazanov, without any omission whatsoever. Notwithstanding, it is curious that a single volume presents two different versions of the same text. The decision for a bi-versioned edition goes back to a discussion between Russian and German editors in the 1980s. A systematic ordering of the manuscripts was

against the editorial principles of the historical-critical edition. But the former version, unlike the latter one, presents 'the logical structure of the work' much better. The debate ended with the compromise of publishing both versions. Cf. Griese and Pawelzig (1995, p. 56). It is also questionable that 'Dialectics of Nature' was integrated into section I (works, articles, drafts) rather than section IV (excerpts, notes, marginalia), because the manuscripts for the most part contain Engels' reading notes. There is also Kedrov's less well-known Russian/German editions (1973/79). Kedrov called them 'Friedrich Engels on Dialectics of Natural Science'. The manuscripts there were arranged differently, distributing them to three sections: (1) dialectics of natural sciences, their historical development, issues concerning interdisciplinarity, dialectical philosophy and philosophy of nature; (2) mathematics, physics, chemistry, biology, and so on; (3) critique of anti-dialectical conceptions of natural science, from vulgar materialism and mechanism to spiritualism and agnosticism. On Kedrov's account, this reorganization lent a more complete character to what Engels had left behind. If Engels had finished the book, it would have looked like this. And what it indicates in this form is that Engels' enterprise is not really about a dialectical ontology of nature but an epistemology of natural sciences. Hence the new title. Cf. Kedrov (1979, pp. 13, 506). This view gave rise much later to another debate in Germany on 'dialectics of nature' versus 'dialectics of natural science'. Cf. Holz (2005, pp. 552–556). Holz (2005, p. 562) also distinguishes dialectics *of* nature from dialectics *in* nature. While the former term refers to a dialectical concept of totality, the latter suggests dialectical structures existing in nature. The former is subject matter for philosophy, the latter for natural science. If dialectics applies to natural science in any meaningful way, it does so under the premise of the existence of such structures in natural reality.

34. In this regard, the editorial history of *Dialectics of Nature* shares some similarities with *The German Ideology*. Cf. Carver and Blank (2014).
35. The German edition of the journal (*Unter dem Banner des Marxismus*) printed selected translations from *Pod Znamenem Marksizma*.
36. There was no mention of this alliance in the German editorial forward. What the latter indicated was rather the opposite: that the journal was assigned the task of producing Marxist philosophy. Indeed, the journal was introduced to the German reader with a declaration of war against German and Austrian social democrat ideologies. It assured the readers that 'the hegemony of Marxism has been established in the Soviet states' [Editorial] (1925, p. 6).
37. Neither the editorial introduction nor Lenin's remark made clear what is meant by 'communist', let alone 'materialist'. This vagueness reveals itself in the Deborinite controversy when opposite sides charge each other with

idealism and non- or anti-Marxism. With regard to 'non-Communist', Deborin comes to mind. Although he became a Party member in 1928, he had converted from Menshevism to Bolshevism after the October revolution. And inclusiveness was still the case when the editorial permitted the publication of articles which it partly or entirely disagreed with. Such disagreements were always mentioned in a footnote to the article, insuring a forthcoming critique of it. It goes without saying that the ultimate goal of this alliance was not to promote non-communist philosophy but rather to win its proponents to communism, on one side, and to widen the scope of investigation and exploration of Marxist science, on the other.

38. This group was one of the three tendencies predominant around 1925. On Luppol's view (1930, p. 144), there were those who claimed that '(1) Marx and Engels were dialecticians, but not materialists; accordingly, dialectics is valid in society alone … Lukács, Korsch, Fogarasi … (2) Marx and Engels were mechanists or mechanical materialists as they should be; mechanics results from dialectics … I. Stepanov, A. Timiriazev, K. Aksel'rod … (3) Marx and Engels were mechanical materialists, which they should not be; a transition to empirio-criticism was inevitable … O. Jenssen.' Luppol probably refers to Jenssen's editorial introduction to *Marxism and Natural Science*, a collection of articles by Engels, Gustav Eckstein and Friedrich Adler. Cf. Jenssen (1925). Interestingly, Engels is called a 'natural scientist' in the subtitle of the book. On Deborin's count (1925, p. 5), there were four tendencies: vulgarizers of Marxism and dialectics, mechanical materialists, anti-dialectical positivists and Hegelian idealists.
39. There Stepanov uses Riazanov's misdating (1881–1882) of Engels' 159th manuscript *Noten* that was actually written in November 1877. Cf. Stepanov (1928, p. 145) and Griese (1985, p. 606).
40. For a similar account of coincidence see Var'iash (1928, pp. 97–98).
41. I borrow the term from Joravsky (2009, p. 227).
42. Note here that this resolution was not mentioned in the contents of that journal issue.
43. Other laws in the entry were unity of opposites (*edinstvo protivopolozhnostei*), transition of quantity into quality and vice versa (*perekhod kolichestva v kachestvo i obratno*), essence and phenomenon (*sushchnost i iavlenie*), basis and condition (*osnovanie i uslovie*), form and content (*forma i soderzhanie*), law and causality (*zakon i prichinnost'*) and possibility and reality (*vozmozhnost' i deistvitel'nost'*). Cf. Mitin and V. Ral'tsevich (1935, pp. 147–198). Stalin's negligence regarding the 'negation of negation' remained a mystery for later Soviet philosophers. See in this regard Chertkov (1953, p. 40), Moroz (1953, pp. 171–172) and Rozental' (1967, pp. 267–79). Herbert Marcuse (1969, pp. 136–137) was therefore wrong to believe that 'negation of negation' had disappeared from the 'dialectical vocabulary' of Soviet Marxist philosophy.

44. While Trotsky embraced the idea of natural dialectics, he was less generous than Stalin in terms of the variety of its principles. In his *Philosophical Notebooks*, Trotsky (1986, p. 88) associated opposites and negation with cognitive operations of scientific thinking. However, he singled out '*the conversion of quantity into quality*' as '*the fundamental law of dialectics*', that is, 'the general formula of all evolutionary processes—of nature as well as of society'. I am tempted to ask: given his criticism of Soviet Union, political biography and appreciation of natural dialectics, should Trotsky be considered a 'Western' or 'Soviet Marxist'?
45. For a critical overview of the idealist accounts of Marx's philosophy, see Wood (2004, pp. 189–194). Commenting on some of the aforementioned literature, Wood (2004, p. 192) observes 'how Marx can be transformed into an idealist (even a rather demented one) simply by attributing to him a requisite degree of the commentator's own philosophical confusion'.
46. For further commentary on this debate see Gretskii (1966), Schmidt (1965), Novack (1996, pp. 231–255) and Remley (2012). However exhausting, the depiction above is far from complete. Due to the formal limits of this chapter, I ignore the 1977 debate in the British journal *Marxism Today*, the German debates in *Deutsche Zeitschrift für Philosophie* from the 1950s onward, in *Dialektik* and *TOPOS* after the 1990s, and the most recent Anglophone debates on Engels' contributions to contemporary ecology with regard to evolutionary biology and thermodynamics.
47. Given the long list of insults, it is sometimes hard to tell whether one is dealing with a 'debate' or a 'fight'.

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CHAPTER 4

Dialectics of Nature Between Politics and Philosophy

Wilhelm Liebknecht said once that Engels 'was a *leader* and *fighter*, theory and practice blended with him into one' (Kunina 1987, p. 433). Paul Lafargue characterized him as the 'General'. '[T]he battle fought by Marx and Engels as leaders of the countless army of proletarians, continues. Inspired by their ideas, their slogans, the proletarians of all countries have united, will continue to strengthen their union, and will triumph in the end' (Kunina 1987, p. 433). Engels was praised by his contemporaries not only for his political qualities but also for his intellectual services. After Marx's *Capital*, *Anti-Dühring* was conceived as 'the most important and instructive book in our party literature' (quoted in Henderson 2006, pp. 589–590). Kautsky stated that 'only after the publication of Engels' *Anti-Dühring* did we begin to make a thorough study of Marx's doctrines and to think and act like Marxists'. '[N]o book has played a greater part in promoting an understanding of Marxism' (quoted in Henderson 2006, pp. 590, 599). Engels' *Socialism: Utopian and Scientific* (1880), a shorter version of *Anti-Dühring* originally prepared for French (upon Lafargue's suggestion and with Marx's foreword), then later for Italian and English audiences, was presented by *Der Sozialdemokrat* as a 'new propaganda brochure' (quoted in Henderson 2006, p. 599).

These anecdotes make clear that Engels' philosophical undertaking was in effect very rewarding, but they alone do not explain why he initiated it in the first place. In comparison to *Anti-Dühring*, *Dialectics of Nature* (1873–1886) was Engels' larger and 'more substantial work' (cf. Engels

K. Kangal, *Friedrich Engels and the* Dialectics of Nature, Marx, Engels, and Marxisms, https://doi.org/10.1007/978-3-030-34335-4_4

1991b, p. 362).[1] He was occupied with it before, during and after *Anti-Dühring* (1876–1878). In *Anti-Dühring* and *Ludwig Feuerbach*, Engels made extensive use of the material he had gathered originally for *Dialectics of Nature*, which were then partially integrated back into *Dialectics of Nature*. Unlike *Dialectics of Nature*, however, Engels wrote *Anti-Dühring*, *Socialism* and *Ludwig Feuerbach* upon others' requests or suggestions.

It was Liebknecht and other leaders of the German labor movement who urged Engels to subject Dühring's views to a critical examination. 'They thought this absolutely necessary if the occasion for sectarian divisions and confusions were not once again to arise within the Party, which was still so young and had but just achieved definite unity' (Engels 1987a, p. 5). 'It thus became necessary to take up the gauntlet thrown down to us, and to fight out the struggle whether we liked it or not' (Engels 1990b, p. 278). In Marx's words, Dühring had to be criticized 'without any compunction' (Marx 1991, p. 119). Engels' take was initially responsive in character; it was 'by no means the fruit of any "inner urge"' (Engels 1987a, p. 5). He nevertheless used this occasion 'as the opportunity of setting forth in a positive form my views on controversial issues which are today of quite general scientific or practical interest' (Engels 1987a, p. 6).

In 1885/86, he was asked by the editors of *Die Neue Zeit* to write a piece on Feuerbach's place in the development of historical materialism (Engels 1962, p. 263). This was a timely request for Engels, because he and Marx had expressed themselves 'in various places regarding our relation to Hegel, but nowhere in a comprehensive, connected account'. Feuerbach was referred to even less than Hegel, although Feuerbach had formed 'an intermediate link between Hegelian philosophy and our conception'. With the recent revival of an interest in Hegel, it appeared to Engels 'to be required more and more' to offer 'a short, coherent account of our relation to the Hegelian philosophy, of how we proceeded, as well as of how we separated, from it' (Engels 1962, pp. 263–264).

Engels was usually very explicit about the motives and goals that occasioned *Anti-Dühring*, *Socialism* and *Ludwig Feuerbach*, as he had articulated them in his forewords to these works. Nevertheless, this is not the case in *Dialectics of Nature*, probably for the simple reason that he did not finish it, and a foreword to *Dialectics of Nature* was never written. I am aware of only a single passage from a September 1879 fragment in *Dialectics of Nature* where he *explicitly* speaks out his aim: 'We are concerned here … only with showing that the dialectical laws are real laws of development of

nature, and therefore are valid also for theoretical natural science' (Engels 1985a, p. 175; 1987b, p. 357). Another issue that might be said to have occupied *Dialectics of Nature* was mentioned in the preface to *Anti-Dühring*: to 'rescue conscious dialectics from German idealist philosophy [and gain it] to the materialist conception of nature and history' (Engels 1987a, p. 11; 1988, p. 494; translation modified).

In this chapter, I will ask, and try to answer, the following (rather naïve) questions: where did these tasks ('showing that the dialectical laws are real laws of development of nature' and rescuing 'conscious dialectics' from Idealism) come from, and why did Engels regard them as crucial issues to be solved? To be sure, in a way it is not self-evident why Engels decided to invest his time and energy in philosophy of nature and theoretical natural science rather than in political, economic and military affairs. His letter exchanges with Marx and with other correspondents up until the 1870s show that he had a certain penchant for following developments in contemporary philosophy and natural sciences which he read from a critical-Hegelian angle. But this does not explain yet why Engels and Marx considered a materialist-dialectical account of philosophy of nature and natural sciences to be of great importance. Note here that both proponents and opponents of Engels contend, in effect, for opposite reasons that *Dialectics of Nature* was a self-evident outcome of Engels' philosophy—'it had to be written': (a) because Engels' philosophy was entirely different from that of Marx (anti-Engels camp) and the 'book' *finally* embodied this difference; (b) because someone (if not Engels, then Marx) *had* to write it (pro-Engels camp). Against these views, I argue that Engels' enterprise is by no means self-evident from the outset. Therefore I ask for reassessing the motives that are behind that 'book'.

I believe that a plausible explanation of Engels' intentions ought to take into account the 'blend of theory and practice', reconsider the practical function which Engels (and Marx) consigned to theory and delineate the place of philosophy and natural sciences in it. In other words, I propose to gauge Engels' undertakings against the backdrop of political tasks and philosophical and scientific issues that he had set for himself, thus relocating his achievements within the context of political function of theory, and figuring out the relevance of philosophy and natural sciences to it.

To this end, I will investigate two constitutive premises of Engels' philosophy: the function of theory and the role of intellectuals in the working-class movement. These factors cannot be avoided, because Engels' project results from, and makes up, a significant component of the role which

socialist theory and revolutionary theoreticians play in class struggle. It is class struggle that calls for theory-work. 'Ideas', however, '*cannot carry out anything* at all. In order to carry out ideas[,] men are needed who can exert practical force' (Engels and Marx 1975, p. 119). Therefore political praxis is binding, and it works as a solid criterion against which Engels measured his achievements and due to which he set his tasks, scientifically, politically and philosophically. Only at this point will I be able to appreciate his account of philosophy and natural sciences.

The questions I hereby pose are slightly different from those posed in past accounts which had far-reaching consequences. For I am concerned with the purposes and goals, effects and results, of Engels' work, anticipated or otherwise, rather than with Marx's presumed (dis)agreement with Engels. I emphasize the importance of a greater focus on the *problems* rather than the *alleged solutions* that ultimately define the substance and character of his work. With this methodological shift, I hope to avoid a predominant fallacy of dogmatic completeness and finality attached both to Marx and Engels. To put it differently, this approach has the advantage of doing better justice to the philosopher without projecting present readers' views, positive or negative, into his work. An inquiry into Engels' motives to take up natural dialectics offers to present readers the choice to decide whether Engels' intentions and problems or his achievements and solutions are (in)admissible in respect to, and (in)compatible with, the political program and philosophical worldview of the working-class movement.

My thesis is that *Dialectics of Nature* initially resulted from Engels' shift of focus from practical needs for a viable theory to the search for deeper insights into the foundations, constitutive conditions and internal adequacy of theory. Engels as well as Marx was fully aware of the theory-intrinsic demand for a rigorous explication and self-critical examination of their theoretical instrument in use. They were also equally receptive to the revolutionary power of theoretical natural sciences in the realm of predominant ideological and religious dogmas in the contemporary society. If worked out adequately, the critical potential of natural scientific philosophy could be transformed into a new arena in the battlefield of theory. But it was Engels, not Marx, who investigated, and specified the conditions of, the origins and application of 'materialist dialectics, … our best working tool and our sharpest weapon' (Engels 1962, p. 292), in the context of natural philosophy and theoretical natural sciences ('Nature is the proof of dialectics') (Engels 1987a, p. 23). Translated back into the language of class politics, Engels' attempt can be viewed as an investment in, or a contribution

to, opening a new philosophical-theoretical front and expanding the sphere of influence of Marxism in the realm of ideas. Marx was well informed about, and fully supportive of, this *aim*. Whether and to what extent Engels realized his goals in the 'book' are the subjects of the next chapter. The present chapter pursues this argument: *Dialectics of Nature* arose from a need for establishing proletarian 'counter-hegemony' not only politically, but also philosophically.

Function of Theory

In a broad sense, political theory articulates social interests; it explains factual circumstances that give rise to, and are affected by, large-scale social movements; and it provides a rationale for self-correcting political agency that reflects upon its own initial effects within a relation to other political actors. Objective description, factual explanation and reliable prediction are all required to establish a mutual correspondence between solid theoretical knowledge and effective political action. Conversely, to act effectively upon the social circumstances to which political actors belong, theory needs to be able to offer the conceptual apparatus that explains the (changing) patterns of the relation between social structures and political agency.

The specific form of theory developed within Marxism takes social classes, their struggles and the self-emancipation of the working class to be the predominant dynamic structures and objective tendencies in the present society. These 'givens' shape the political program of the working-class movement that makes objective political aims theoretically explicit that are already implicit in the movement. In a way, it turns 'the *unconscious* tendencies … into more or less concrete conscious plans' (Engels 1979a, p. 79). 'Communism, insofar as it is a theory, is the theoretical expression of the position of the proletariat in this struggle and the theoretical summation of the conditions for the liberation of the proletariat' (Engels 1976a, pp. 303–304). 'The theoretical conclusions of the Communists … merely express, in general terms, actual relations springing from an existing class struggle, from a historical movement going on under our very eyes' (Marx and Engels 1976, p. 498).

The function of theory is to enable workers to grasp their own agency within the social and political setting of class struggle. Theory meets its basic criterion when it supplies the political actors of the movement with the conceptual tools that enable them to enlighten themselves about, and become conscious of, the position they occupy in society, and to develop

an awareness of it as being objectively theirs (cf. Habermas 1974, pp. 32–33; Shandro 2014, pp. 3–6). 'We merely show the world what it is really fighting for, and consciousness is something that it *has to* acquire, even if it does not want to' (Marx 1975b, p. 56). 'The experience of real life and the political oppression imposed on them … force the workers to concern themselves with politics, whether they wish to or not' (Engels 1986, p. 417). Theory attempts to achieve an elaborate 'understanding [of] the line of march, the conditions, and the ultimate general results of the proletarian movement' (Marx and Engels 1976, p. 497). '[O]ur duty' as communists is 'to provide a scientific substantiation' for this theory (Engels 1990c, p. 318). As soon as it grips the masses, 'theory … becomes a material force' (Marx 1975a, p. 182). It is therefore not surprising that Marx (1985a, p. 193) considered his theoretical enterprise to have an 'expressly revolutionary function' with the 'hope to win a scientific victory for our party' (Marx 1983c, p. 377). His *Capital* will 'deal the bourgeoisie a theoretical blow from which it will never recover' (Marx 2002, p. 7).

In order for the proletariat to 'come to consciousness of its own class situation', it must absorb 'all the educational elements of the old society' into it, and thus attain an 'understanding in theoretical terms of the lines of development of a communist revolution' ([Anonymous] [Marx and Engels] 1960, p. 563). Such 'educational elements' stem primarily from 'political action' which 'gives the workers the education for revolution and without which the workers will always be duped' by their political opponents (Engels 1986, p. 417). Strikes, for instance, function as 'the military school of the workingmen in which they prepare themselves for the great struggle' (Engels 1975, p. 512), although workers 'fail generally from limiting themselves to a guerilla war against the effects of the existing system, … instead of using their organized forces as a lever for the final emancipation of the working class, that is to say, the ultimate abolition of the wages system' (Marx 1985b, p. 149). In organizing itself as a class, the proletariat carries on its daily struggles with capital, 'in which it trains itself' (Engels 1991a, p. 63).

'Where the working class is not yet far enough advanced in its organization to undertake a decisive campaign against … the political power of the ruling classes, it must at any rate be *trained* for this by continual agitation against … the policies of the ruling classes. Otherwise it remains a plaything at their hands' (Marx 1989b, pp. 258–259; my emphasis). The 'movement turns the workers into an independent force' (Engels 1985b, p. 75), and by retaining control of its own political organization, the

working class will 'secure for itself a position commanding respect, educate the individual workers about their class interests and when the next revolutionary storm comes … it will be ready to act' (Engels 1985b, p. 78).

> The extraneous objective forces that have hitherto governed history pass under the control of man himself. Only from that time will man himself, with full consciousness, make his own history – only from that time will the social causes set in movement by him have, in the main and in a constantly growing measure, the results intended by him. It is the humanity's leap from the kingdom of necessity to the kingdom of freedom. To *thoroughly comprehend* the historical conditions and thus the very nature of this act, to impart to the now oppressed class a *full knowledge* of the conditions and of the meaning of the momentous act it is called upon to accomplish, this is the *task* of the *theoretical expression* of the proletarian movement, *scientific* socialism. (Engels 1987a, pp. 270–271; my emphasis)

Role of Intellectuals

In distilling the lessons of the previous struggles, evaluating the present and anticipating the future revolutionary waves, the working class also needs educational elements from without. This is where the contributions of intellectuals, organic or otherwise, enter the picture. The role of intellectuals can be divided into theory-internal and theory-external contributions. Theory-internal contributions stand and fall within the scientific establishment, whereas the elaboration and clarification of political consciousness proceeds in correspondence with political practice. Theory-external contributions have to do with a wide range of social, economic and political activities from technical and intellectual services in workers' media and educational institutions to parliamentary representation of the working class in politics.

The indispensable role which intellectuals are expected to play in the movement is to provide the working class with clarity of political consciousness. They are assigned the difficult task of working out the problems and goals of the movement, and engaging with, and overcoming, the obstacles, misconceptions and distortions that intrude on the political consciousness of workers. Theory can genuinely function as a 'guide to action' in so far as it meets these needs. Furthermore, theory does not acquire knowledge for undifferentiated purposes; it is not merely a truth-seeking activity. It is supposed to address the issues faced by the movement and to offer various ways out of the obstacles hindering the working class in order to situate

itself properly within the context of ongoing political and social struggles and to realize its final emancipatory goal.

Now the problem is that intellectuals are to bring 'educational elements' from without, not within. This duality (working class and intellectuals) is historically constituted by the very conditions of the social division of labor (mental and manual), and this gives birth to the objective ambiguity of the unequal distribution of theoretical knowledge between different classes. When political struggle goes through specific historical stages, it achieves progress, or alternatively suffers from regress, in tandem with successful or failed attempts by theory to fulfill its tasks. The ideal situation is a synchronous maturation of practice and theory, but experience shows that this is not always the case.

Engels contends that an 'academic education' gives intellectuals 'no officer's commission with a claim to a corresponding post in the party'. In 'our party, everyone must serve in the ranks'. The 'posts of responsibility in the party will be won not simply by literary talent and theoretical knowledge'. What is required is a 'thorough familiarity with the conditions of the party struggle and seasoning its forms, tested personnel reliability and sound character'. Intellectuals 'have far more to learn from the workers … than the latter have to learn from them' (Engels 1977a, p. 70). In order 'to be of use to the proletarian movement, they must introduce genuinely educative elements' (Marx and Engels 1989, p. 268). '[T]hey should not bring with them the least remnant of bourgeois, petty-bourgeois, etc., prejudices, but should unreservedly adopt the proletarian outlook' (Marx and Engels 1989, p. 268).

These remarks were meant to be warnings that point out an obvious alienation or even hostility between workers and intellectuals. Marx observed that 'the workers seem to want to take things to the point of *excluding* any literary m[e]n, etc., which is absurd, as they need them in the press … Conversely, the latter are suspicious of *any workers' movement*, which displays hostility towards them' (Marx 1987b, p. 109). There were at least two harmful tendencies: a standpoint setting itself 'in hostile contradiction to all writing activity' ([Anonymous] [Marx and Engels] 1960, p. 563), and another one, 'suppressing the proletarian character of the party and trying to replace it with a crass-esthetic-sentimental philanthropism' (Engels 1979c, p. 328). Dühring exemplified this kind of intellectual who came forward as one of the 'scientific representatives of the party', though he sent 'the greatest nonsense into the world on a mass scale' (Engels 1966, p. 316). Fabians, to name another example, viewed

workers as 'a raw and uneducated mass' which 'cannot free itself', hence they are willing to 'emancipate the proletariat from above' (Engels 1968a, p. 166). Lassalle behaved 'with an air of great importance bandying about phrases borrowed from us—altogether as if he were the future workers' dictator' (Marx 1974a, p. 340). An extreme version of this 'children's disease' (Engels 1966, p. 316) was summarized as follows:

> the working class is incapable of emancipating itself by its own efforts. In order to do so it must place itself under the direction of 'educated and propertied' bourgeois who alone have 'the time and the opportunity' to become conversant with what is good for the workers (Marx and Engels 1991, p. 403). It is always these people who consider their bit of an education as absolutely indispensable, thanks to which the workers are not to emancipate themselves but rather gain salvation through it; the emancipation of the working class is, to them, possible only by the eddicated [*sic*] [*jebildeten*] bourgeois philistine. (Engels 1967c, pp. 360–361; translation from Draper 1978, p. 523)

Engels once wrote to Marx that the 'supply of *heads* that were brought over to the proletariat from other classes up until '48 seems to have totally dried up'. 'It seems the workers must do it *themselves* more and more' (Engels 1965a, p. 441). The tension in the alliance between workers and intellectuals is clear here, but the desirable option was still a harmonious collaboration, as wisely suggested by a worker (James Carter) at the first congress of the (first) International: 'men who devote themselves completely to the proletarian cause are too rare for us to push aside. The middle class only triumphed when, rich and powerful as it was in numbers, it allied itself with men of science' (James Carter quoted in Draper 1978, p. 559).

The other theory-external aspect concerning intellectuals' role in the movement had to do with the professions which were closely related to social production, and which would be needed, especially in the beginning phases of establishing a new society.

> If we are to take over and operate the means of production, we need people who are technically trained and plenty of them. … [I]n the next 8 or 10 years we shall recruit enough young technicians, doctors, jurists and schoolmasters for the factories and large estates to be managed for the nation by party members … (Engels 2001a, p. 272). The bourgeois revolutions of the past asked nothing of the universities but lawyers, as the best raw material for their politicians; the emancipation of the working class needs, in addition,

> doctors, engineers, chemists, agronomists and other experts; for we are faced with taking over the running not only of the political machine but of all social production, and in that case what will be needed is not fine words but well-grounded knowledge. (Engels 1990d, p. 413)

The most crucial factor that marks the divergence between working class and intellectuals is the division between mental and manual labor. This is crystallized in the economic basis and ideological superstructure of society. Inside the bourgeoise classes,

> one part appears as the thinkers of the class (its active, conceptive ideologists, who make the formation of the illusions of the class about itself their chief source of livelihood), while the others' attitude to these ideas and illusions is more passive and receptive, because they are in reality the active members of this class and have less time to make illusions and ideas about themselves. (Marx and Engels 1975, p. 60)

This group of people was sometimes called 'liberal … middle class with its professors, its capitalists, its aldermen, and its penmen' (Marx 1986, p. 264). The division of labor emasculates 'the general intellect of the middle-class men by the circumspection of all their energies and mental faculties within the narrow spheres of their mercantile, industrial and professional concerns' (Marx 1984, p. 22). Marx underlines in *Capital* not only the miseries of theory but also the historically changing function of theory in the capitalist society.

> [T]he great capacity for theory, which used to be considered a hereditary German possession, had almost completely disappeared amongst the so-called educated classes in Germany, but that amongst its working class, on the contrary, that capacity was celebrating its revival (Marx 1996, p. 13). It was thenceforth no longer a question, whether this theorem or that was true, but whether it was useful to capital or harmful, expedient or inexpedient, politically dangerous or not. In place of disinterested inquirers, there were hired prize-fighters; in place of genuine scientific research, the bad conscience and the evil intent of apologetic. (Marx 1996, p. 15)

As for the process of capitalist mode of production, 'all intellectual labors' are 'directly consumed in material production. Not only the laborer working directly with his hands or a machine, but overlooker, [engineer], manager, [clerk], etc.' are 'required in a particular sphere of material production

to produce a particular commodity, whose joint labor (co-operation) is required for commodity production' (Marx 1989a, p. 20). Intellectual labor means here the 'application of the forces of nature and science … in the shape of machinery' (Marx 1994, p. 123). They 'confront the individual workers themselves as *alien* and *objective*', as '*functions of capital* and *therefore functions of the capitalist*' (Marx 1994, p. 123). '[V]is-à-vis the workers, realized science appears in *the machine* as *capital*' (Marx 1994, p. 124).

A comprehensive understanding of the functioning mechanisms of the relations and forces of production naturally encompasses intellectual labor, either in the form of ideological propaganda by the dominant classes or in the form of science as a productive force. It is theory that depicts the interdependence and interconnection of political, social and economic agents in their entirety, and this includes the class origin of intellectuals and the class character of their labor in the political, ideological and economic spheres. In order to establish theory as such, it must be structured in certain ways so as to reach the capacity to represent social reality. To this end, theory needs to take a form through which its object of representation becomes 'visible' and 'accessible'. This brings us back to the internal factors of Marxist theory.

Relevance of Philosophy

Politically conscious action is the opposite of merely random activity or a blind response to a given situation. Consciousness indicates an awareness of circumstances under which deliberately chosen actions can bring about desired outcomes. The degree of correlation between potential choices under consideration, on one side, and realized goals, on the other, depends on the internal coherence and logical consistency of the thinking that directs the action. The rational capacity to judge, evaluate and foresee is put to test in practice.[2] In order to pass this test, theoretical thinking has to explicate the scientific criteria that serve to order knowledge rationally, integrate past and present experience to its corpus, and articulate the very conditions that constitute the conceptual framework that holds interest, knowledge and experience together. Philosophy is relevant to theoretical thinking insofar as it occupies itself with categorial schemes or systematic frameworks to which beliefs and actions are intimately tied; it formulates and justifies premises based upon which theoretical claims are asserted and practical actions are undertaken. Philosophy can be viewed as a set of systematically interconnected propositions with a varying degree of generality

and abstraction. It fulfills its task if it can order and link up such propositions from less general assertions to more fundamental postulates. If theory is a practical tool of explanation and anticipation in use, it is rationally controlled and critically examined through a more fundamental framework that enables theory to function as a 'guide to action'. The thought content, character and goal of this 'guide' are determined by a philosophy that resides in the backdrop of any theory. In short, philosophy is a 'guide to theory'.

Note here that Engels and Marx rejected the reverse order whereby practice is subordinated to theory and philosophy. 'The true theory must be made clear and developed within concrete circumstances and in the existent relations' (Marx 1975c, p. 31). 'Communism is not a doctrine but a *movement*; it proceeds not from principles but from *facts*. The Communists do not base themselves on this or that philosophy as their point of departure but on the whole course of previous history' (Engels 1976a, p. 303). '[T]heoretical conclusions of the Communists are in no way based on ideas or principles that have been invented, or discovered, by this or that would-be universal reformer' (Marx and Engels 1976, p. 498). 'They do not set up any sectarian principles of their own, by which to shape and mold the proletarian movement' (Marx and Engels 1976, p. 497). '[W]e do not confront the world in a doctrinaire way with a new principle: Here is the truth, kneel down before it! We develop principles for the world out of the world's own principles. We do not say to the world: Cease your struggles, they are foolish … We merely show the world what it is really fighting for' (Marx 1975b, p. 56). The masses 'cannot be tutored in a doctrinaire and dogmatic fashion, even if one has the best of theories' (Engels 1967e, p. 320).

The philosophy that informs Marxist theory bears different names such as 'materialist dialectics' (Engels 1962, p. 292), 'scientific dialectics' (Marx 1962, pp. 28, 31), 'historical materialism' (Engels 1967a, p. 490; 1967b, p. 437; 1967f, p. 464; 1968b, p. 25; 1987c, p. 527), 'practical materialis[m]' (Marx and Engels 1978b, p. 42) or 'communist materialis[m]' (Marx and Engels 1978b, p. 45). 'The whole theoretical corpus' of the 'German proletarian Party' was 'derived from the study of political economy' that is 'essentially based on the *materialist conception of history*' (Engels 1961, p. 469). Its basic proposition suggests that the 'mode of production of material life determines the social, political and intellectual process of life as a whole' (Marx 1961b, pp. 8–9). '[A]ll theoretical conceptions which arise in the course of history can be understood if the material conditions of life

obtaining during the relevant epoch have been understood and the former are derived from these material conditions' (Engels 1961, p. 470).

The emphasis on the historicity of the human society in particular and that of reality in general indicates a categorical dissolution of all final and absolute truths, for 'nothing is final, absolute, sacred'. The particular theoretical discipline that 'reveals the transitory character of everything and in everything' and articulates 'the uninterrupted process of becoming and of passing away' is called 'dialectical philosophy' (Engels 1962, p. 267). The categorial framework that reproduces reality in its own abstract ways takes the shape of a 'dialectical formation process' of concepts which is nothing but 'an ideal expression of the real movement' (Marx 1961a, p. 231). This line of thinking opposes the 'metaphysical, i.e., anti-dialectical way of philosophizing' which is characterized by its 'incapacity to grasp the world as a process, as a material [*Stoff*] understood in terms of being in a continuum of historical formation' (Engels 1962, p. 279). The economic laws of motion in contemporary society are the vast field of investigation in which the 'materialist conception of history' is applied to 'the modern class struggle between proletariat and bourgeoisie' by means of a theoretical framework and its conceptual apparatus: 'dialectics' (Engels 1987e, p. 188) and 'dialectical method' (Marx 1965b, p. 379).

Concerning the biographical origins of the foundation of the materialist conception of social history, Marx remarks as follows:

> Fr[iedrich] Engels, with whom I maintained a constant exchange of ideas by correspondence since the publication of his brilliant essay on the critique of economic categories … arrived by another road (compare his *Condition of the Working-Class in England*) at the same result as I, and when in the spring of 1845 he too came to live in Brussels, we decided to set forth together our conception as opposed to the ideological one of German philosophy, in fact to settle accounts with our former philosophical conscience. The intention was carried out in the form of a critique of post-Hegelian philosophy. (Marx 1987a, p. 264)

The first results of this collaboration were *German Ideology* and *Holy Family*. Throughout the years, the focus of research shifted from philosophy to political economy, but Engels and Marx never fully put Hegel aside. Even in the final years of Engels' life, one still encounters the 'master' in greater or lesser works, or in the letter exchanges. The relevance of Hegel's philosophy to Marxist theory originates from its use for rationally controlled and scientifically solid theory construction.[3]

> What distinguished Hegel's mode of thinking from that of all other philosophers was the exceptional historical sense underlying it. … He was the first to try to demonstrate that there is development, an internal interconnection in history … This epoch-making conception of history was the direct theoretical premise of the new materialist outlook, and already this constituted a connecting link with the logical method. (Engels 1961, pp. 473–474)

His 'great merit' was to have depicted 'the whole natural, historical and intellectual world as a process', that is, being in 'constant motion, change, transformation, development', and to have attempted to 'trace out the internal interconnection of this motion and development' (Engels 1987a, p. 24; 1988, p. 234; translation modified). With the 'logical material' he has provided, Hegel served 'as a point of departure' for the Marxist materialism (Engels 1961, p. 473).

The problem, however, was that Hegel was an idealist. He conceived of reality as a manifestation of an all-encompassing rational Idea. The Idea develops and externalizes itself into nature and society. It is due to Idea's own history that we come to speak of a history *in* nature and society. Materialist dialectics, by contrast, denies there is such an Idea; instead, it suggests the ontic primacy of being over its cognitive reflection-forms (Engels 1962, pp. 272, 279, 292; 1979b, p. 204). The ontological foundation of the relation between being and thought is reversed by materialism in that the particular content of human thought and consciousness is defined as a representation of reality. Reality is what is thought *of*; it is an existential condition that enables thought content to exist without which no thinking would be possible. The primacy of being is indeed built into the very term 'thinking', for there is no 'thinking as such', but only thinking *of* something; language testifies to the accuracy of the foundational setting of materialist ontology. With this proposition, materialism argues against idealism that reality, social or natural, has its *own* history; it is not a history of the self-development of Idea, so that particular stages that the Idea goes through can be 'read off' in the 'mirror' of reality. The factual principle which materialism adopts and which idealism rejects is that nature and society themselves are subject to development (not just mere motion or change), independent of how they were conceived of by any particular thinker.

Despite Hegel's shortcomings, Engels and Marx encouraged readers not simply to put Hegel aside. On the contrary, their materialism was 'tied in with his … revolutionary side, with the dialectical method. But this

method was unusable in its Hegelian form' (Engels 1962, p. 292). It was to be 'freed from its idealist trimmings' (Engels 1962, p. 293). Against Barth's reading, Engels emphasized that the purpose of his and Marx's materialist treatment of Hegel was 'to discover the truth and the genius beneath the falsity of the form and the factitious context' (Engels 2001c, p. 286). Hegel needs to be assessed 'in accordance with what is enduring and progressive in his work', not 'in accordance with what is of necessity transitory and reactionary' (Engels 2001b, p. 213).

In a similar vein, Marx asserted that '[t]he true laws of dialectics are already contained in Hegel, though in a mystical form. What is needed is to strip this form' (Marx 1988, p. 31). 'Dialectics is absolutely the last word of all philosophy', and precisely for this reason 'it is necessary to free it from the mystical shell it has in Hegel' (Marx 1978b, p. 561). '[T]he Hegelian contradiction' is 'the source of all dialectics' (Marx 1983a, p. 481). Against Proudhon, Marx argued that in any attempt to 'present the *system* of economic categories dialectically', one has to introduce 'the Hegelian "contradiction" as a means of [categorial] development' (in place of 'Kant's insoluble "antinomies"')' (Marx 1962, pp. 27–28).

The fruitful potential of Hegel's philosophy was so promising that Engels went so far as to claim that 'Hegel's method … was essentially idealist', but 'it was more materialist than all previous [idealisms]'. The 'Hegelian system represents a materialism idealistically turned upside down in method and content' (Engels 1962, p. 277).

> Marx was and is the only one who could undertake the work of extracting from the Hegelian logic the kernel containing Hegel's real discoveries in this field, and of establishing the dialectical method, divested of its idealist wrappings, in the simple form in which it becomes the only correct mode of the development of thought. (Engels 1980, pp. 474–475)

These statements reveal that Engels and Marx were in full agreement on how to approach, and what to adopt in, the legacy of 'German Idealism' that they claimed. The shared purpose of this intention was to transform or modify a past philosophy in order to meet the conceptual needs of their present theory. Despite their overall attempts to make this procedure intelligible, they were irritated by the misconceptions which their contemporaries could derive from Hegel's philosophy and the Marxist appropriation of it.

Marx's Unwritten 'Dialectics' and Engels' Project

Marx felt it necessary to write a separate compendium on philosophical dialectics that would directly address these issues. Such a work would have had pedagogical benefits, on one side, and it would have enlarged the theoretical scope of Marxist politics, on the other. The pedagogical aspect concerns the difficulty of making dialectical terminology more accessible to laymen (workers as well as intellectuals) and foreign readers (mainly English-speakers) who could barely follow the dialectical rhetoric peculiar to German philosophical language. A compendium could also have served to avoid or at least minimize misunderstandings, prevent distortions and disprove inaccurate conceptions about Marxist philosophy. Regarding the theoretical benefits, it would have extended the critique of political economy to a critique of the methodological procedures of political economy. Furthermore, it would have offered a more complete criticism of Hegel by overcoming obstacles on his own terms, at the same level of conceptual sophistication.

In an 1858 letter to Engels, Marx (1983b, p. 249) wrote that, when working on the theory of profit, 'Hegel's *Logic*' was 'of great use to me as regards *method* of treatment'. 'If ever time comes when such work is again possible, I should very much like to write 2 or 3 sheets making accessible to the common reader the *rational* aspect of the method which Hegel not only discovered but also mystified.' Ten years later, he told Dietzgen that '[w]hen I have cast off the burden of political economy, I shall write a "Dialectic[s]"' (Marx 1988, p. 31). After Marx's death, the first bundle of manuscripts that Engels was looking for in Marx's archive was this promised work, 'an outline of dialectics which he had always intended to do' (Engels 1995, p. 3). Engels was going to find out soon enough that it had never been written.

This unwritten treatise could have addressed 'a great desire prevailing at present in the more refined circles [intellectuals] … to become acquainted with the dialectical method' (Marx 1987c, p. 464). 'What all these gentlemen lack is dialectics. All they ever see is cause on the one hand and effect on the other. What they fail to see is that … the whole great process takes place solely and entirely in the form of interplay … So far they are concerned, Hegel might never have existed' (Engels 2001d, p. 63). Such a summary would also have guided young socialists like Conrad Schmidt, who had an interest in philosophy and was willing to 'investigate the followed method in "Capital", prove it to be the only true

[method] and figure out the influence which Hegel's dialectics exercised upon it' (Schmidt 1979, p. 615). Marx's style had indeed caused a certain amount of confusion when his *Capital* was first published. According to I.I. Kaufman, a Russian reviewer of the book, Marx's 'method of presentation' was 'unfortunately German-dialectical', although his 'method of research' was 'strictly realistic' (Marx 1987e, p. 707). More significantly, Engels, long before Kaufman, criticized Marx for having 'committed the error not to have made clear the line of thinking of these rather abstract [categorial] developments by means of a larger number of short sections with their own headings'. '[Y]our philistine really is not accustomed to this kind of abstract thinking.' The version suggested by Engels 'would have looked somewhat like a school textbook, but a very large class of readers would have found it considerably easier to understand. The *populus*, even the scholars, just are no longer at all accustomed to this way of thinking, and one has to make it as easy for them as one possibly can' (Engels 1987d, pp. 381–382; Engels 1965b, p. 303; translation modified; see also Marx 1965a, p. 306). An additional obstacle was that it was 'damned difficult to make clear the dialectical method to the English who [will] read the reviews' of *Capital* which Engels was preparing to write (Engels 1965d, p. 37).[4]

Regarding the theoretical benefits, the compendium was to target vulgar accounts that offered short-cuts and ready-made answers to the problems that actually required much more sophisticated treatments. Recall Marx's dictum: 'There is no royal road to science, and only those who do not dread the fatiguing climb of its steep paths have a chance of gaining its luminous summits' (Marx 1872). At the bottom of all the confusions, there was a persistent confusion between Hegel's and Marx's dialectics. Marx repeatedly reminded his readers and correspondents that 'my method of development is not Hegelian, for I am a materialist, Hegel is an idealist. Hegel's dialectics is the foundational form of all dialectics, but only *after* stripping its mystical form, and precisely this distinguishes *my* method' (Marx 1965d, p. 538; see also Marx 1987e, p. 709). Marx protested against Dühring's attempt to rank his pursuit of dialectics alongside that of Lorenz von Stein, who 'assembles thoughtlessly the greatest trivialities in clumsy hair-splitting, with a few Hegelian category conversions' (Marx 1987d, p. 513). Lange, to name another example, hardly understood Hegel's method and Marx's critical usage of it. Lange naively marveled that 'Engels, etc. could take the dead dog [Hegel] seriously' after it was allegedly buried by Lange himself, Ludwig Büchner and Dühring

among others (Marx 1965c, pp. 685–686; see also Marx 1987e, p. 709). Lassalle's alternative adoption and application of Hegelian dialectics did not make things better, either. On Marx's view, Lassalle did not seem to be aware of the crucial distinction between applying 'an abstract, ready-made system of logic to vague presentiments of just such a system' and 'take a science to a point by means of critique in order to depict it dialectically' (Marx 1978a, p. 275). More importantly, Lassalle's uncritical adoption of Hegel's dialectics suffered from an internal flaw: 'the dialectical method is used *wrongly*. Hegel never called dialectics the subsumption of a mass of "cases" under a general principle' (Marx 1974b, p. 207).[5]

On Engels' view, such defective accounts originated from a tendency to degrade any philosophical term and to reduce it to a merely fancy phrase (Engels 1967b, p. 437). To take Hegel's system and method as a 'ready-made template' (Engels 1977b, p. 81) 'by means of which any subject could be shaped aright' (Engels 1980, p. 472) was a theoretical malpractice, an 'eclectic method of philosophizing endemic at German universities since 1848' (Engels 2010a, p. 463). But as he admitted much later, he and Marx were also to blame, for they had 'never given sufficient weight' to philosophical methodology; 'we neglected the formal in favor of the substantial aspect, i.e. the manner in which the said conceptions, etc., arise'. This was due to their 'main emphasis on the derivation of political, legal and other ideological conceptions, as of the actions induced by those conceptions, from economic fundamentals' (Engels 2010b, p. 164).[6]

Given the need for elaborating on philosophical dialectics, it is reasonable to think that Engels intended in *Dialectics of Nature* to cover this neglected aspect of his and Marx's scientific undertaking. However, Engels did not plan to offer a substitute for Marx's unwritten compendium, because nature, not society, was his object of investigation. Marx's unwritten 'Dialectics' seems to have been an occasion rather than a direct reason for Engels to initiate his own project. I believe that this is an important point because the view held by both the pro- and anti-Engels camp usually indicates that Engels aimed to write a textbook that addresses everything on dialectics, something which was clearly not on his checklist ('We are here not concerned with writing a handbook of dialectics') (Engels 1985a, p. 175; 1987b, p. 357). This also implies that he did not attempt to make dialectics more 'popular', if 'popularization' means writing a textbook on the 'ABC' of dialectics. However, he may very well be said to have 'popularized' philosophical dialectics in yet another sense: he participated in, and tried to give a particular shape to, a movement pioneered by natural

scientists to 'popularize' natural sciences *in general* in order to gain public support for their profession and to secure financial resources for research and teaching activities. In order to justify the status of natural sciences, some scientists openly challenged or even downplayed the importance attached to philosophy (cf. Bayertz 1982, 1983, 1985; Wahsner 2007; Ritzer 2000). Engels resisted this tendency, tried to turn it away from anti-philosophy and encouraged an active cooperation between philosophy and natural sciences. In a way, Engels tried to introduce a new set of philosophical conventions into the language of natural sciences. The primary audience was natural scientists, the secondary audience was laymen informed by the 'popular' natural scientific literature. The character and content of *Dialectics of Nature* were co-determined by this purpose, and perhaps it was meant to be quite different from a philosophical treatise on social dialectics.

Motives Behind *Dialectics of Nature*

From a vantage point taking in the function of theory, the role of intellectuals and the relevance of philosophy, it is plausible to assume that there were four reasons that led Engels to work on *Dialectics of Nature*:

1) Engels was responding to a tacit reliance of political actors (workers and intellectuals) as well as social and natural scientists on unacknowledged (philosophical) theories. To this end, he proposed a self-conscious adoption of a (philosophical) theory whose task was to articulate its own origins, constitutive elements and conditions of application in the first place. The present political goal was to win over all (potentially) progressive forces, including natural scientists, to the socialist cause. In this regard, he seems to have made a carefully scrutinized political choice for research: a victory in the battlefield of philosophical theory that would inform the natural sciences, a new area which Engels had yet to explore, could give natural scientists yet another reason to join the movement. This strategic move was thought to be a part of a larger process of transforming the working class from a mere recipient of theory, subordinated as they were to economic exploitation and ideological-political domination, into an active political subject producing and applying scientific knowledge by means of its historically transitory carriers, that is, a distinct group of social and natural scientists as well as philosophers. This transfor-

mative process contained a double difficulty: it had to win middle- and upper-class elements to the proletarian movement both in terms of scientific theory and political practice; and unlike the situation for the bourgeois class, it had to justify the class character of its own social, political and scientific enterprise (cf. Luporini 1980, p. 169; Bayertz et al. 1981, pp. 61–62).

2) In this context, Engels countered an anti-philosophical trend not uncommon among natural scientists at that time with this contention: a philosophy always informs natural sciences in theory or in applied practice. In a fragment of September 1874, he wrote the following: 'Natural scientists believe that they free themselves from philosophy by ignoring it or cursing at it.' Independent of whatever attitude toward philosophical theory they hold, natural scientists are, and always will be, under the domination of philosophy. The only question is 'whether they want to be dominated by a bad, fashionable philosophy or by a form of theoretical thinking which rests on acquaintance with the history of thought and its achievements' (Engels 1985a, pp. 32, 65; 1987b, pp. 490–491; translation modified). In his fragment *Old Preface to Dühring. On Dialectics* (May–June 1878), he mentioned the 'antidote' explicitly:

> it is precisely dialectics that constitutes the most important form of thinking for present-day natural science, for it alone offers the analogue for, and thereby the method of explaining, the evolutionary processes occurring in nature, inter-connections in general, and transitions from one field of investigation to another. (Engels 1985a, p. 167; 1987b, p. 339)

Engels intended to offer a well-informed account that proved not only of heuristic value but also revealed the methodological indispensability of philosophical dialectics in theoretical natural sciences. Dialectics was supposed to describe, explain and predict the objective and subjective conditions of *forms* of development within which a permanent change in the social and historical functions of the natural sciences takes place. A consensus on the positive use of dialectics was to be reached in order to organize social forces that would define the character, and control the direction, of that change.

3) The philosophy that dominated the natural (and social) sciences in the nineteenth century was 'the old metaphysical mode of thinking'. 'Hegel was forgotten and a new materialism arose in the natural sciences' that barely differed from the materialism of the eighteenth

century. The 'narrow-minded philistine mode of thinking' pioneered by the new materialists (most notably Ludwig Büchner, Carl Vogt and Jacob Moleschott) was theoretically 'demolished by Kant and particularly by Hegel'. However, the Hegelian-idealist alternative took pure thought as its point of departure, whereas the starting point of historical materialism was 'inexorable facts'. In its present form, Hegel's dialectics was 'inapplicable'. It had to be transformed in order to become congruent with Marxist theory (Engels 1980, p. 473). Marxist materialism was the philosophical outlook that could assuredly take the factual content of empirical laws into account, thus adjusting itself accordingly, and directing interest in, and growth of, knowledge in all the sciences. Natural sciences were no exception.

4) Critical adoption and modification of Hegel's dialectics represented significant steps toward a philosophical foundation for Marxist materialism, but these steps themselves did not mark a final dissolution of Hegelian idealism. Idealism had to be 'overcome critically': contrary to Feuerbach's attempt to smash Hegel's system single-handedly and to discard it, Engels asserted that 'a philosophy is not done away with by merely asserting it be false'. It has 'to be "sublated" [*aufgehoben*] in its own terms, that is, in the sense that its form is to be critically annihilated, while the new content which is obtained through [that form] is rescued' (Engels 1962, p. 273). This was intended to give a voice to the theoretical natural sciences with which Hegel's system had claimed to be in full conformity, and hence to put philosophical propositions to the test of the natural sciences. Engels intended to show that Hegel's dialectics fails this test in that it both confirms and denies development in nature. It confirms evolution in so far as dialectics articulates the logical structure of real development, and it denies it, because Hegel does not acknowledge natural evolution as a scientific fact. At this point, Darwin's theory of evolution self-evidently enters the picture. But Engels neither uncritically plays it off against Hegel, due to his own reservations about Darwin, nor does he confine this test to the biological origins of new species. His project rather ambitiously involves all natural development in astronomy, chemistry, geology and physics.

It goes without saying that the theory of evolution was also a strong weapon against religious dogmas; if used properly, influential religious and ideological views predominant in current society could be pushed back.

The indestructibility of motion and the transformation of energy in thermodynamics offered a similar potential for a counter-attack on creationism. Engels perceived both physics and biology as promising terrains which could be used politically in order to make Marxist theory influential. As a by-product, the Hegelian legacy would revive as well.

Having discussed the political-philosophical background of Engels' project, the next chapter will elaborate in more detail on the significant individuals and philosophical theories that shaped the text and context of his enterprise. It will focus on how he worked his way to a philosophy of nature, what role Hegel's philosophy was expected to play, and more importantly, which particular issues Engels hoped to address.

Notes

1. Engels (1991b, pp. 361–362): 'When, after being much pressed to do so, I decided to tackle the tedious Mr. Dühring, I told Liebknecht that this was positively the last time I would allow journalistic activities to interfere with my more substantial work unless political events made this absolutely imperative—something I alone must decide. During the nine years I have spent here in London, I have learnt that it's no good trying to complete more substantial works while simultaneously engaging in practical agitation. I grow no younger with the passage of time and must at long last restrict myself to definite tasks if I am to get anything done at all.' See also Engels (1992, p. 325).
2. One rather well-known example where Marx and Engels failed this test was their 1850 prediction of a '*new revolution*' that was supposedly '*possible only in consequence of a new crisis. It is, however, just as certain as this crisis.*' Cf. Marx and Engels (1978a, b, p. 510; emphasis in original). In his 1895 introduction to Marx's *The Class Struggles in France 1848 to 1850*, Engels (1990a, p. 512) acknowledged that the '[h]istory has proved us wrong, and all who thought like us. It has made it clear that the state of economic development on the Continent at that time was not, by a long way, ripe for the elimination of capitalist production; it has proved this by the economic revolution which, since 1848, has seized the whole of the Continent' and it 'still had a great capacity for expansion'.
3. However true, this was not the only reason. Engels also viewed Hegel as part of the claimed heritage of the European intellectual, political and cultural traditions. Cf. Engels (1962, pp. 187–8).
4. For the problem concerning English, French and Italian translations of dialectical and materialist terminology, see Engels (1965c, p. 309), Engels (1974, p. 28), Engels (1976c, p. 94), Engels (1976d, p. 40) and Engels (1987c), p. 527.

5. For Engels' agreement with Marx's criticism, see Engels (1967d, p. 386).
6. Engels iterates the same point shortly afterwards. Cf. Engels (2010b, p. 165). Elsewhere, he also mentions that the philosophical language he had employed was now largely outdated. Cf. Engels (1976b, p. 452).

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CHAPTER 5

Dialectics in *Dialectics of Nature*

I have been referring to *Dialectics of Nature* so far, rather loosely, as a 'book', 'work' or 'project' (in the singular). It is certainly true that what we have at hand is some sort of 'work' that was intended to be published at some point in some form (article, booklet, brochure or book). Nevertheless, this bulk of writings by no means amounts to a book manuscript. It rather contains a group of excerpts and reading notes. Exceptionally, one can also find several 'complete' articles in it. That we are used to thinking of *Dialectics of Nature* as a single project, a single book and a single work stems from its editorial presentations (especially in the post-Riazanov period) and readerly treatments (most notably, Deborin and Kedrov). According to the traditional framing, *the* 'project' was born around the time when Engels (1989, p. 500) wrote to Marx that '[t]his morning in bed the following dialectical points about the natural sciences came into my head'.[1] And it came to an end in 1882, when he remarked: 'Now … I must really go ahead and finish my *Naturdialektik*' (Engels 1967b, p. 119; 1992, p. 384; translation modified). A closer look at Engels' 'work in progress' unfolds, however, seven projects between 1873 and 1886 that are clearly interconnected, but unmistakably different from each other:

1. The initial project (February 1873–May 1876, Ms. 1–98) consists of the first 94 manuscripts (Ms.), which Engels grouped under the headings of *Naturdialektik 1-11* and *Naturdialektik references* (February 1873–January 1876). The *Introduction* (Ms. 98), written

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between November 1875 and May 1876, seems to be that of *Naturdialektik*. This is usually misinterpreted as the introduction to the whole bundle of manuscripts written until 1886.

2. Around the time when *Anti-Dühring* was finished, Engels prepared his *Plan 1878* (Ms. 164 from August/September 1878) which is commonly regarded as *the* plan of *Dialectics of Nature*. The clear division of the chapters in the *1878 Plan* indicates that the 'book' was to open with historical introductions to theoretical natural sciences. This was going to be followed by Engels' famous characterization of dialectics as the 'science of universal interconnection', with its particular laws, that were then to be illustrated in separate natural scientific disciplines. Due to the similarity of its content concerning the dialectical laws, the September 1879 manuscript *Dialectics* (Ms. 165) can be regarded as a partial elaboration of the *1878 Plan*. Therefore I take the Ms. 1–165 to cover the second project.
3. Then we have the *1880 Plan* (Ms. 166 from February/July 1880) in which Engels narrowed down his focus to natural forms of motion. Dialectical terminology predominant in the *1878 Plan* was almost gone there. While the MEW and MECW versions considered the *Plan 1880* to be a part of the *Plan 1878*, such an assumption was neither proposed in MEGA^2 nor implied by Engels. With this new plan, Engels seems to have intended to reduce the research material to a manageable size and to concentrate mainly on physical and chemical forms of motion. Until August 1882, Engels was mainly concerned with the physical conception of motion. This gives me the reason to believe that these two years were dedicated to the elaboration of the *Plan 1880*. Therefore, the third project might be assumed to have involved Ms. 1–192.
4. The latest rearrangement of the project is to be found in 1886 or later, when Engels distributed the manuscripts in four folders, naming them (1) *Dialectics and Natural Science* (largely February 1873–October 1877, January–July 1882), (2) *Natural Research and Dialectics* (May–August 1876, October–November 1877, December 1877–June 1878, December 1885/January 1886), (3) *Dialectics of Nature* (November 1875–May 1876, January–April 1878, February–July 1880, January 1882–August 1882) and (4) *Math[ematics] and Natural S[cience] Diversa* (May–September 1876, October–November 1877, August 1878–July 1880, and shortly after May or June 1882). Unlike the first and fourth folders, the second and third

folders bear lists of contents. The content of the fourth folder is similar to the headings of the *1880 Plan*. The third folder contains works on the concept of infinity, mechanical conception of nature, the *Old Forward to Dühring* and the *Ludwig Feuerbach* manuscript, among others. Curiously, the most voluminous folders are those without tables of contents (the first and third). The third folder (*Dialectics of Nature*) does not include much of the philosophical-dialectical writings. The *Plan 1878*, *Plan 1880* and *Dialectics*, usually viewed as the 'highpoints' of Engels' natural dialectics, are placed in the fourth folder (*Math[ematics] and Natural S[cience] Diversa*). Engels gives no hints as to why he reordered the manuscripts and according to what criteria. But his arrangement gives the impression that, similar to the *Plan 1880*, he aimed to reduce the whole of the textual material to smaller chunks, presumably for writing four shorter articles, rather than a single lengthy book.

Table 5.1 provides an overview of Engels' phases of writing, manuscript arrangements and dates of manuscripts of what I term his seven projects: (1) *Naturdialektik*, (2) *Plan 1878*, (3) *Plan 1880*, (4) *Dialectics and*

Table 5.1 Manuscript arrangement of *Dialectics of Nature*

Phase	*Ms. no.*	*Date*	*Folder content*	*ND no.*
1	1	February 1873	**1st folder**: 1–97, 100–101, 103–115, 118–121, 145, 159, 175–176, 178–184, 186–190 **2nd folder**: 99, 144, 160–161, 163, 193 **3rd folder**: 98, 162, 170–171, 177, 192 **4th folder**: 102, 116–117, 122–143, 146–158, 164–169, 172–174, 185, 191	**1:** 1–9 **2:** 10–18 **3:** 19–31 **4:** 32–43 **5:** 44–56 **6:** 57–63 **7:** 64 **8:** 65–77 **9:** 78–84 **10:** 85–89 **11[a]:** 90 **11[b]:** 91–93 **ND rf.:** 94
2	2–9	30 May 1873 and shortly afterwards		
3	10–64, 95–97	September–November 1874		
4	65–94, 98–103	November 1875–September 1877		
5	104–163	October 1877–May/June 1878		
6	164	August–September 1878		
7	165	September 1879		
8	166–177	February–July 1880		
9	178–192	January–11 August 1882		
10	193	December 1885–January 1886		
11	194–197	1886 or later		

Natural Science, (5) *Natural Research and Dialectics*, (6) *Dialectics of Nature* and (7) *Math[ematics] and Natural S[cience] Diversa*.[2]

Taking this textual complexity into account, this chapter will concentrate on three motives behind Engels' projects: (a) his implicit or explicit methodological *premises* largely articulated in *Dialectics of Nature* and elsewhere; (b) his implicit and explicit *goals* formulated in *Dialectics of Nature* and elsewhere; (c) his specific *procedures* in following methodological premises and reaching his goals in *Dialectics of Nature* only. The reason that I involve textual sources other than *Dialectics of Nature* in (a) and (b) is based on my conviction that premises and goals voiced outside of *Dialectics of Nature* are represented within *Dialectics of Nature*; Engels' natural dialectics embodies an attempt to follow those premises and to realize those goals fully, partially or minimally. The point (c), by contrast, is restricted to *Dialectics of Nature*, for I am concerned with how precisely he proceeded within that framework.

The degree of (in)compatibility within and between premises, goals and procedures will be used as a measure to decide whether, and to what extent, he accomplished or alternatively failed to realize his intentions. To this end, I will recapitulate some of the previously mentioned premises and goals, and bring in some others.

In the entire writing process, Engels largely works with two parameters of opposition: metaphysics versus dialectics, and idealism versus materialism. The theoretical arena in which he defends dialectics and materialism against metaphysics and idealism is shaped by a third pair of opposites, which he tries to overcome: natural sciences versus philosophy. Engels' orientation is intimately tied to a key problem that is usually called 'application of dialectics to nature'. More accurately formulated, Engels may be said to have found a problem in the question of a correspondence between Hegel's *Objective Logic* and natural forms of motion. Contrary to the common belief, the logical side of this correspondence is not limited to 'opposition' and 'contradiction'; it also involves quality/quantity, finite/in-finite or identity/difference, reciprocity/causality and so on. When Engels speaks of putting dialectics to the test of nature, he seems to have in mind an examination of the correspondence between a revised/rewritten version of *Objective Logic*, on one side, and the scientific illustration of real motion, change and development in nature, on the other.

Judging by Engels' own premises, goals and procedures, I will argue for what I call the 'incompleteness theorem'. This theorem suggests that

Dialectics of Nature remained incomplete. However tautological this may sound, it asserts that it is by no means self-evident that Engels' project was 'not finished'. The rather naïve explanation of incompleteness shared perhaps by all proponents and opponents (including MEGA[1] and MEGA[2] editors) of natural dialectics relies upon the formal aspects: Engels' manuscripts largely consist of sketches and notes, and he never came round to publishing his work. Note here that a work can be completed without being published. Conversely, published works are not necessarily 'complete'. In my account, the 'incompleteness theorem' is supported by the partial coherence of, and the partial incompatibility between, Engels' premises, goals and procedures. I view the ambiguities as single stages that Engels went through in his 'work in progress'. And I use them as a means to justify why I believe his work remained incomplete.

Establishing a correspondence between *Objective Logic* and nature in a materialist setting is a novel task, and Engels develops an attractive approach. But he does not meet its basic criteria which are forming an adequate conceptual framework and explaining the functioning mechanisms of nature depicted in it. What he left behind, instead, is a series of 'metacommentary' writings, that is, a large group of experiments on, and critical side notes to, philosophy and natural sciences. I contend that his overall attempt falls short of (1) establishing an ontology of nature, (2) defending dialectics and materialism against metaphysics and idealism, and (3) overcoming the divergence between philosophy and natural sciences. Points (1) and (2) are preconditions for point (3). Even if he had accomplished (1), he would still have to show why dialectics and materialism oppose, rather than complement, metaphysics and idealism. Without establishing (1) and (2), he cannot reach the standpoint for deciding how to bridge the divide between philosophy and natural sciences. Engels' views on (3) are indeed vague.

In elaborating on my contention, I will open this chapter with a reminder of Engels' overall intentions in his pursuit of natural dialectics. I will then highlight some ambiguities that arise from his intentions. Since *Naturdialektik* embodies a great majority of the intentions that determine the main direction of his later conduct, I will give the greatest weight to Engels' first project, but also discuss the problems peculiar to the second and third projects, and will then outline continuities and disruptions throughout his entire conduct.

Engels' philosophical ambiguities go as follows:

a) Although Engels lays claim to the entire Hegelian heritage in order to make it fruitful for materialist ends, his pursuit is strictly limited to the first two parts of the *Logic* and the *Encyclopedia*, respectively. While he takes only bits of these two works into consideration, the rest of Hegel's system is problematically abandoned.
b) Engels commits himself to annihilate the idealist conception of nature, according to which nature is understood as a manifestation of the Hegelian 'Idea'. He promises to meet this goal by means of revising Hegel's *Objective Logic* with recourse to contemporary natural sciences. It is questionable that this promise is kept, for he shows no genuine interest in explaining thoroughly why he thinks Hegel's *Logic* could be revisable, whether his own pursuit indeed requires such a revision, and what difference this new logic could make.
c) Engels advances an Aristotelian-Hegelian line of dialectics, but ignores the potential contradictions that arise from that alliance. It is a mystery what exactly is confirmed and neglected in Aristotle, and to what extent his account of Aristotle is compatible with what he adopts or drops in Hegel. This difficulty is complicated by his hostility toward Kant. For reasons Engels does not fully specify, he downplays the merits of Kant's dialectics against which Aristotle and Hegel are positioned. In this regard, Engels invents a binary of 'metaphysics vs. dialectics' based upon which all philosophical thinking is categorized. The danger of this framework is that Engels' dialectical commitment against metaphysics is not shared by his potential allies.
d) Engels' ambition to bury idealism is not argued within the terms of the proponents of idealism. Consequently, this contributes to Engels' aim to sublate past philosophies in their own terms much less than he thinks it does. However, when Hegel's own conception of idealism is cross-checked, one encounters a conceptual realism that argues for real infinity, a concept which Engels tries to justify against the contentions of contemporary natural scientists. This undercuts Engels' goal to establish a materialist account which he can play off against idealism. In effect, Engels generates a contradiction which he fails to resolve: materialism and idealism as 'frenemies'.
e) In the second project, Engels speaks of a varying number of dialectical laws. Whether they have any descriptive or explanatory value is open to debate. What we know for sure is that he goes so far as to

> parallelize his dialectical laws to Hegel's system which he also condemns. It is underdetermined whether this is meant to be Hegel's funeral or revival. In the third project, by contrast, he curiously drops his previous engagement with Hegel, remarkably reduces dialectical terminology to a minimum, and shifts his focus largely to physical forms of motion. This shift, along with his 1886 folder division, clearly signifies a new beginning, but he leaves it open as to what extent one can speak of the post-1880 period in terms of a continuity or break.

In each project, we are dealing with more or less the same problems structured in a different order and expressed with a different accent. That Engels narrowed down his focus in the later stages seems to be a consequence of coping with these difficulties. It is, however, doubtful that a mere manuscript rearrangement would have solved the aforementioned issues. What I earlier termed the 'seven projects' testifies to the obstacles which Engels struggled to overcome. When he said in 1882 that he would soon be done with '*Naturdialektik*', he was either mistaken or he had in mind a much smaller project than previously intended—as his 1886 folder division indicates.

General Premises and Goals

'[W]hen I retired from business and transferred my home to London, thus enabling myself to give the necessary time to it, I went through as complete as possible a "molting", as Liebig calls it, in mathematics and the natural sciences' (Engels 1987a, p. 11). Engels' personal motive to investigate natural dialectics was 'to convince myself also in detail – of what in general I was not in doubt – that in nature … the same dialectical laws of motion force their way through as those which in [social] history govern the apparent fortuitousness of events' (Engels 1987a, p. 11). These laws were developed by Hegel in an 'all-embracing but mystic form'; Engels aimed, by contrast, 'to strip of this mystic form and to bring clearly before the mind in their complete simplicity and universality' (Engels 1987a, pp. 11–12). For him, 'there could be no question of building the laws of dialectics into nature, but of discovering them in it and evolving them from it' (Engels 1987a, pp. 12–13).

Naturdialektik is the initial attempt to work out 'materialist dialectics … our best working tool and our sharpest weapon' (Engels 1962, p. 292)

in the realm of philosophy of nature and natural sciences. It is a selective 'work of extracting from the Hegelian logic the kernel containing Hegel's real discoveries' (Engels 1980, pp. 474–475); it aimed to receive 'what is enduring and progressive', not what is 'transitory and reactionary' in Hegel (Engels 2001, p. 213).

When Engels and Marx speak of '[t]he true laws of dialectics' that are 'already contained in Hegel' (Marx 1988, p. 31), they roughly refer to the first division (*Objective Logic*) of Hegel's *Greater Logic*. Hegel's 'mistake' is to have 'foisted' his laws 'on nature and history as laws of thought' instead of deducing the latter from the first (Engels 1985, p. 175; cf. Hegel 1986j, p. 36). Although Hegel seems to confine his 'laws of thought' to the second chapter (*Determinations of Reflection*) of the second part (*Logic of Essence*) of the *Objective Logic*, Engels and Marx take these laws to be covered by its first part (*Logic of Being*) as well: they speak of a 'dialectical law' of transition of quantity into quality (cf. Engels 1985, p. 175; 1987c, p. 382; Marx 1983a, p. 246; 1987, p. 385). However, they attach greater significance to *Logic of Essence* (*Determinations of Reflection* in particular) rather than to *Logic of Being*. This is not without good reasons. Hegel speaks in *Determinations of Reflection* not only of 'laws of thought' but also of identity (*Identität*), difference (*Unterschied*), opposite (*Gegensatz*) and contradiction (*Widerspruch*).

In *Grundrisse*, Marx (1961, p. 82) famously mentions a transition from 'difference' via 'opposite' to 'contradiction'. In his critique of Proudhon, and in *Capital*, he ascribes centrality to Hegel's concept of contradiction: in order to 'present the system of economic categories dialectically', one has to introduce 'the Hegelian "contradiction" as a means of [categorial] development' (Marx 1962, pp. 27–28). '[T]he Hegelian contradiction' is 'the source of all dialectics' (Marx 1983a, p. 481).

In a similar vein, Engels repeatedly emphasizes the importance of *Doctrine of Essence*. When working on physiology, chemistry and anatomy in 1858, he reminds Marx to send him Hegel's *Philosophy of Nature*. He considers the transformation of different forms of motion to be a 'material proof of how *Determinations of Reflection* are resolved into one another' (Engels 2003, pp. 181–182; italics are mine). In his 1865 letter to Lange, he underlines that the '*true* philosophy of nature is in the second part of *Logic*, in the *Doctrine of Essence*, the genuine core of the whole teaching' (Engels 2002, p. 263; italics, except '*true*', are mine). In 1874, he writes to Marx:

> I am deeply immersed in the '[*D*]*octrine of* [*E*]*ssence*'.[3] His recent readings on natural sciences brought me back again … to the theme of dialectics. In view of the feeble mind of the natural scientists, the [*Greater*] *Logic* can only be used sparingly, although as far as dialectics are concerned, it goes much more nearly to the heart of the matter. But the account of it in the *Encyclopedia* … could have been tailor-made for these people … because of the more popular presentation. (Engels 1991, p. 50)

In his letters to Conrad Schmidt in the 1890s, he praises Hegel's *being-logical* investigations on quality, quantity and measure. However, 'the *Doctrine of Essence* is the main part: the dissolution of abstract opposites into their insubstantiality when, as soon as one tries to grasp one aspect alone, it transforms imperceptibly into the other, etc.' (Engels 1979a, p. 203; italics are mine). Showing the '[i]nseparability of identity and difference[,] … transitions of one category or opposite into the other' are some of the merits of *Doctrine of Essence*, although the Hegelian form and sequence of their derivation are 'arbitrary' (Engels 1979a, p. 204). 'Just translate the sequence in the *Doctrine of Essence* into another language, and the transitions will be impossible for the most part' (Engels 1979b, p. 269). Despite the weaknesses of Hegel's 'closed sequence of conceptual development' (Engels 1979b, p. 269), one can find 'good parallels' between 'the development from commodity to capital in Marx' and 'that of from being to essence in Hegel' (Engels 1979a, p. 204).

These remarks suggest that Engels viewed Hegel's *Objective Logic* as a provisional model to be revised and adjusted to its correlate, that is, nature. This account promises to be a potentially fruitful approach, and it is also in accord with Marx's methodology. So far so good. Now, the problem is this: Engels does not show us where exactly Hegel got things wrong, and what he himself proposes instead. On one side, he gives the impression that, with the idealist premise of the externalization of the Idea into nature removed, the logical model of nature will be structured differently. On the other side, he not only speaks of a structural similarity between Marx's *Capital* and Hegel's *Logic* but regards the new discoveries in natural sciences as proofs of Hegel's logical propositions.

For example, in the 1858 letter to Marx, Engels brings up 'the discovery of cells, in the plants by [Matthias] Schleiden, in animals by [Theodor] Schwann'. 'Everything is cell. The cell is the Hegelian being-in-itself [*Ansichsein*], & goes in its development through exactly the Hegelian process until finally the "Idea" that develops each complete organism from it'

(Engels 2003, p. 182). Exceptionally, the figure of 'Idea' is mentioned here. 'Idea' is the subject in the third part (*Logic of Concept*) in the second division (*Subjective Logic*) of the *Greater Logic*. Engels does not elaborate on how he links up the two divisions (*Objective* and *Subjective Logic*) or the three parts (*Logic of Being*, *Essence* and *Concept*) of the *Greater Logic* in the context of cell biology here or elsewhere, nor does he apply the same model to any other scientific discipline.

In the 1858 letter, Engels adds the following:

> Another result that would have pleased the old Hegel is the correlation of forces in physics, or the law that, under given circumstances, the mechanical motion, that is mechanical force (for example by means of friction) is transformed into heat, heat into light, light into chemical affinity, chemical affinity … into electricity, this into magnetism. These transitions can be made forwards or backwards. It has been now proven by an Englishman whose name I cannot remember [William Grove] that these forces transition into one another in quite certain quantitative relations. (Engels 2003, p. 182)

This stress on continuous transformation and metamorphoses in nature is congruent with the legacy of *Logic of Being* and *Essence* as claimed by Engels, but it does not specify a particular position relating to *Determinations of Reflection*. What the passage pinpoints instead is an interest in the structures of self-determination and reciprocity that are originally subject to *Movement of Reflection* (*Reflexionsbewegung*) and *Reciprocal Interaction* (*Wechselwirkung*) in the first and last chapters of the *Logic of Essence*.

Several years later, Marx rediscovered Grove on his own. He recommends Grove to Lion Phillips and Engels. 'He is definitely the most philosophical among the English (a[nd] also German) natural researchers' (Marx 2013, p. 620). This 'very important scientific work [*The Correlation of Physical Forces*] … demonstrates that mechanical motive force, heat, light, electricity, magnetism and chemical affinity are all in effect simply modifications of the same force, and mutually generate, replace, merge into each other' (Marx 1983b, p. 551). In the 1865 letter to Lange, Engels makes the same point with *essence-logical* overtones. 'The modern natural scientific doctrine of reciprocity [*Wechselwirkung*] of natural forces (Grove, Correlation of forces …) is just another expression or rather the positive proof of the Hegelian development on cause & effect, reciprocity, force etc.' (Engels 2002, pp. 363–364).

I will start examining in a moment what parts of the *Logic* are taken into account in *Dialectics of Nature* and how they were thought by Engels to be transformed. Before that, it is important to recapitulate Engels' overall premises and goals, according to which he was proceeding. He resists any attempt to treat *Logic* as a 'ready-made template' (Engels 1977, p. 81) 'by means of which any subject could be shaped aright' (Engels 1980, p. 472). Paraphrasing Marx, he may be said to be prepared to take natural science 'to a point by means of critique in order to depict it dialectically' (Marx 1978, p. 275). At least, Engels is informed about others' errors who use 'dialectics' to subsume 'a mass of "cases" under a general principle' (Marx 1974, p. 207). His 'golden rule' is this: a philosophical theory 'is not done away with by merely asserting it be false'. It has 'to be "sublated" in its own terms' (Engels 1962, p. 273).

Engels' invariant purpose is to show that 'dialectical laws are real laws of development of nature, and therefore are valid also for theoretical natural science' (Engels 1985, p. 175; 1987b, p. 357). This involves the task of rescuing 'conscious dialectics from German idealist philosophy [and attach it] to the materialist conception of nature and history' (Engels 1987a, p. 11; 1988, p. 494; translation modified). In assimilating the results of its own developments, natural scientists cannot avoid 'working with concepts' (Engels 1987a, p. 14). For this reason, they have to go through a process of learning what concepts they need to adopt, form and transform. This is where philosophy comes in. It is philosophy that provides the conceptual tools and guidelines to be used by, and adjusted to, the natural sciences. Once the necessity for the collaboration of philosophy with natural sciences is acknowledged, traditional 'philosophy' existing apart from, and ruling over, natural sciences will be dethroned (Engels 1987a, p. 15). The ultimate aim of this collaboration is to 'arrive at a "system of nature"'. To this end, particular sciences should be arranged in such a way as to 'demonstrate the interconnection between the processes in nature not only in particular spheres but also the interconnection of these particular spheres on the whole' and to 'present a comprehensive view of the interconnection in nature in an approximately systematic form' (Engels 1962, p. 295). This is to say that 'special science[s] [are] bound to make clear [their] position in the great totality of things and of our knowledge of things'. A separate philosophy that deals with this 'totality' will therefore be unnecessary (Engels 1987a, p. 26). What survives from the earlier philosophies will be 'the science of thought and its laws – formal logic and dialectics' (Engels 1987a, p. 26). Anything else will be 'subsumed in the positive science of nature and history' (Engels 1987a, p. 26).

Hegel in *Naturdialektik*

Out of 133 Hegel references in *Dialectics of Nature*, the 'master' is mentioned or quoted thirty-seven times in *Naturdialektik*. Here and elsewhere, Engels mainly works with the *Shorter Logic* and *Philosophy of Nature* in Hegel's *Encyclopedia* (Engels 1985, pp. 5, 9, 11, 12, 13–17, 19–20, 57). Occasionally, he returns to the *Greater Logic* for extended explications of logical categories (Engels 1985, pp. 13–14, 17). In addition, he consults *Lectures on the History of Philosophy* for further illustrations of nature-philosophical configurations or deeper insights into the problem history of dialectics (Engels 1985, pp. 26, 35. 60–62). He does not take into account the trilogy of Hegel's system (*Phenomenology*, *Logic*, *Encyclopedia*), presumably because he regards the 'system' as 'the weakest' aspect of Hegel's philosophy (Engels 1979b, p. 269).

'*Phenomenology of Spirit* is the science of consciousness' and 'consciousness has the concept of science, that is, pure knowledge, for its result' (Hegel 1986i, p. 67). The initial point of departure of the *Phenomenology* is the 'empirical, *sensuous* consciousness, and it is this consciousness which is the genuine *immediate* knowledge'. The 'immediate consciousness' is the 'presupposition' of '*Logic*', that is, the science of 'pure knowledge in the full compass of its development' (Hegel 1986i, p. 67). The *Phenomenology* provides the *Logic* with the cognitive material that arises from 'the becoming knowledge' (*das werdende Wissen*). *Logic* is followed by 'the two remaining parts of philosophy, the sciences of nature, and of spirit' in *Encyclopedia* (Hegel 1986g, p. 593). The *Encyclopedia* opens with a shorter version of the *Logic*. Then, Hegel introduces his *Philosophy of Nature*. The great cycle is closed with the second part of *Encyclopedia*, that is, *Philosophy of Spirit*.

The *Phenomenology* deals with the worldly manifestations of an all-encompassing reason ('Spirit') in forms of consciousness, self-consciousness, understanding and reason and so on. The *Logic* generates a categorial system that reproduces the forms of development of knowledge that are originally subject to *Phenomenology*. The ultimate product of the *Logic* is Hegel's concept of totality ('Idea'). The *Philosophy of Nature* is dedicated to the task of demonstrating that 'Spirit' transitions into 'Nature' via 'Idea'. The 'externalization' of 'Idea' into 'Nature' not only establishes a correspondence between logic and nature, it also argues for 'Spirit' giving life to 'Nature'. Natural agents owe their motion, interaction and other activities to the pre-existing 'Spirit'.

Engels does not take this mystical theology seriously. Instead, he 'reverses' the direction of Hegel's 'externalization': he acknowledges the primacy of nature over logic and engages in writing a revisable *logic* anew that explicates the *ontic* structures of nature.

Here and elsewhere, Engels leaves the theoretical status of the *Phenomenology* undecided. It is unclear whether Engels, in following the reverse ordering of Hegel's 'externalization', does not proceed to derive a new phenomenology from logic, nor does he deny any significance to a (dialectical) phenomenology of nature, nor does he intend, if only sporadically, to fuse phenomenology with an ontology of nature. In any case, there is no implicit or explicit sign of Engels' take on Hegel's transition from the *Phenomenology* to the *Logic*. He regards the relation between the *Logic* and the *Philosophy of Nature* only as a problem worth working out.

As a selective reading that makes use of some components of Hegel's system, Engels' narrow focus is certainly justified. It is equally justified for a materialist to refuse the idealist/spiritualist[4] premise of the manifestation of 'Spirit' in 'Nature'. Logical 'categories appear as pre-existing' in Hegel and 'the dialectics of the real world as their mere reflection [*Abglanz*]. In reality [it is the] reverse: the dialectics of the head [is] only the reflection [*Wiederschein*] of the forms of motion of the real world, of nature as well as history' (Engels 1985, p. 6).[5] However, it is not justified to simply depart from premises other than those of Hegel, *if* Engels ever intended to 'sublate a philosophical theory in its own terms'. In other words, it is a problem that Engels is not worried about the necessity to point out the potential ambiguities that arise from Hegel's *own* premises and conclusions—admittedly, Hegel is relatively consistent within the constraints of his idealist framework. Engels, rather, occupies himself with making Hegel's categorial approach fruitful for materialist ends. This brings us to Engels' usage of Hegel's *logical* concepts.

There are Hegelian concepts which Engels mentions in passing in order to make a point, and there are those which Engels constantly employs. 'Quality/quantity', 'negation', 'infinity' and 'repulsion/attraction' from the *Logic of Being*, and 'identity/difference', 'opposite/contradiction', 'form/matter', 'force/manifestation', 'coincidence/necessity' and causality/reciprocity from the *Logic of Essence*, are repeatedly brought up in Engels' notes. 'Nodal line' from the *Logic of Being*, 'shine[6]/essence', 'positive/negative', 'condition' and 'absolute' from the *Logic of Essence* appear less frequently, and it is hard to attribute to them a systematic function.

In Hegel's *Objective Logic*, either these terms appear in *Logic of Being* as terms that are explicitly thematized later in *Logic of Essence* (for instance, the *Determinations of Reflection*), or they are subject to investigation in *Logic of Being* but deployed also in *Logic of Essence* by attaining a more complex meaning (for instance, quality/quantity, negation). Engels is not concerned with such *Logic*-internal distinctions; he ignores them. This makes it difficult to locate the precise reference points of his categories in the Hegelian context, which brings about a further difficulty in figuring out the adopted and/or transformed meaning of these categories in Engels' usage. A by-product of this semantic vagueness is an underdetermined order and sequence in Engels' derivation of these concepts in contradistinction to Hegel's. It is reasonable to say that Engels superficially adopts Hegelian categories, but when establishing his own views in the realm of theoretical natural sciences, he rarely reflects upon the impact of his conclusions on the Hegelian system.

Despite these obstacles, Engels gives some hints about his logical patterns. In order to trace them out, I propose to start with the infamous term 'dialectics'. This term has indeed strong ties to *Determinations of Reflection*, but Engels by no means follows a straight line from 'identity' to 'contradiction'. From Hegel's vantage point, Engels 'butchers' *Objective Logic*, in that he singles out some of its components, and conflates them with others, such as quantity/quality, reciprocity/causality and so on. The result is surprising: regarding dialectics, the *category* of contradiction does not play a significant role, whereas that of opposition does. In Engels' view, it is a mistake to consider opposites irreconcilable; the whole point of natural dialectics is to reconcile or mediate opposites with one another. Otherwise, one cannot argue for 'universal interconnection' (*Gesamtzusammenhang*), 'unity of nature' or a relational ontology of nature.

Dialectics

Engels distinguishes '*objective*' from 'subjective dialectics'. While the first 'prevails in the entire nature', the latter, that is, 'the dialectical thought' is 'just [a] reflex of the motion in opposites [*Bewegung in Gegensätzen*] which asserts itself everywhere in nature'. These opposites 'condition [*bedingen*] the life of nature by their continual conflict [*fortwährender Widerstreit*] and their final passage [*schließliches Aufgehen*] into one another, or into higher forms' (Engels 1985, p. 48). The term 'reflex' indicates here some sort of (representational) realism: the thought content

of dialectics is that *of* nature; nature itself is not a manifestation of an all-encompassing 'Idea'. However, subjective dialectics is more than a mere 'reflex'. It is a 'rational' (*vernünftig*) mode of thinking that operates with tools other than that of '*understanding*' (*Verstand*). Engels identifies the latter with '*induction*, *deduction* … *abstraction* … *analysis*, *synthesis* … [and] *experiment*'. 'Reason' or 'dialectical thought', by contrast, 'has the investigation of the nature of concepts as its precondition' (Engels 1985, pp. 45–46). This is a weak argument, because dialectics is not a precondition for investigating 'the nature of concepts'—there are also non-dialecticians that address the same issue.

Subjective dialectics 'knows no hard and fast lines, no unconditional universally valid: Either – Or!' It 'mediates [*vermittelt*] opposites' (Engels 1985, p. 48) that are wrongly presumed by 'the most natural researchers' to be 'irreconcilable opposites' (*unversöhnliche Gegensätze*) (Engels 1985, p. 32). It is rather the 'metaphysical' mode of thinking that works with the 'fixed categories' instead of the 'fluid' (*flüssig*) ones. Subjective dialectics argues against 'fixed opposites of ground and consequence[,] cause and effect[,] identity and difference[,] shine and essence'. It suggests instead that 'one pole is already in embryo present [*vorhanden*] in the other, that at a certain point the one pole reverts [*umschlägt*] into the other and that the entire logic develops only from these progressing opposites [*fortschreitenden Gegensätzen*]' (Engels 1985, p. 5; see also pp. 6, 16, 40, 41).

Sooner or later, natural sciences will have to admit that dialectics as such is an 'absolute necessity' (Engels 1985, p. 6) for their conduct, and when 'natural and historical scien[ces] become imbued with dialectics, all the philosophical rubbish – other than the pure doctrine of thought – will be superfluous, disappears in the positive science' (Engels 1985, p. 66). The 'necessity of the dialectical thought' is derived from the necessity of a framework of 'non-fixed categories and relations in nature' (Engels 1985, p. 36). This is crucial to the 'dialectical pre-education of the natural researchers' (Engels 1985, p. 12). The 'bulk of natural scientists' that are 'still held fast in the old metaphysical categories' need to be told that 'modern facts … prove the dialectics in nature [*Dialektik … in der Natur*]'; 'modern facts' are 'rationally explained and brought into relation with one another' by dialectics (Engels 1985, p. 6). The term 'modern facts' refers to 'dialectical transition', 'dialectical relation' or 'dialectical process' in nature (Engels 1985, pp. 10, 28, 41, 45). Their common denominator is (matter in) motion. Motion constitutes indeed the main 'objective of the dialectics of natural scie[nces]' (Engels 1985, p. 9). In order to prove that

dialectics is essential to natural sciences, Engels attempts to show that motion is structured by opposites. He contends that motion takes place between opposites. Opposites are related to one another by means of motion. The entire activity of opposition amounts to natural motion. Conversely, what we call natural motion is nothing but the relation between opposites—that is, opposition. What is it that makes opposition so special, and how does Engels link it up with the other categories of *Determinations of Reflection*?

Engels' 'Determinations of Reflection'

Engels seems to regard opposites as the two ends of *any* relation. All 'opposites are mediated' (Engels 1985, p. 48); they enter into a relation due to which they are called 'opposite sides' of a relation. The relation (= opposition) between opposites is the very component that mediates them. This is to say that all relations are constituted by two *relata* (opposites) and intermediate links between them (opposition). There is motion in nature, because opposites are mediated (= oppose each other). Without the mediation of opposites, one cannot speak of motion, development or interconnection in nature.

When 'opposites pass into another', they do so 'through intermediate links' (*Zwischenglieder*) or 'intermediate steps' (*Mittelstufen*). This suggests that Engels identifies mediation with a quantifiable scale. The 'distance' between two opposites makes up a measurable degree of 'links' or 'steps', or what he terms 'differences' within a relation (Engels 1985, p. 48). The problem, however, is that Engels does not make clear at least how many pairs of opposites need to be involved in order for motion to take place. More specifically, he does not give any hint as to whether one end of the relation of opposition has to be 'polarized' (Engels 1985, p. 13) within itself (first pair) so that the internal 'continual conflict' of the opposite leads it to transition into the other end of the relation (second pair) (Engels 1985, p. 48). For example, he speaks of the 'opposites of ground and consequence' (*Grund und Folge*) or 'cause and effect' (*Ursache und Wirkung*) (Engels 1985, p. 5). But he does not explain whether 'ground' (or 'cause') leads to 'consequence' (or 'effect') by virtue of an internal polarization of 'ground' (or 'cause') or by virtue of merely being a 'ground' (or 'cause').

What is more troubling is a presumed 'conflict' between the opposites, for there is certainly no obvious 'conflict' between mere ground and

consequence, or cause and effect. Although it is outside of Engels' scope, one can apply the logic of conflict to a modality case (as Lange does), and justify Engels' talk of 'conflict': think of a group of possible outcomes that are mutually exclusive (as in the case of a thrown dice). Realization of one of the potential outcomes presupposes that the rest of the potentials are *not* realized; that the rest of the potentials are *not* realized indicates that this single potential is *not not* realized. The mutual exclusion principle satisfies here the criterion of 'conflict of opposites'; and it involves 'negation' and 'negation of negation', as the term 'mutual exclusion' implies (cf. Engels 1985, pp. 14, 16, 48, 55). Translated back into the language of ground and consequence or cause and effect, one can admissibly speak of various factors that enable *and* prevent the (non-)realization of a cause to effect. The coexistence of mutually exclusive consequences or effects of a certain 'ground' or 'cause' is congruent with Engels' point about 'conflict'. It also corresponds to 'one pole' (potential consequence/effect) being 'in embryo present in the other' (ground/cause) that becomes realized via 'progressing opposites' (mutual exclusion) (Engels 1985, p. 5). Nevertheless, Engels does not seem to have considered this approach.

'Difference' attains another meaning when it appears as the opposite of 'identity'. Similar to the case of cause and effect, 'identity and difference' are viewed as reconcilable opposites. However, Engels does not locate identity within the aforementioned mediation of opposites (cause/effect etc.). He rather treats it as a separate case of dialectics with its own categorial configuration. Identity and difference are placed within 'reciprocity' (*Wechselwirkung*), with the 'truth' of 'difference' posited '*in* identity' (Engels 1985, p. 32). 'The fact that the identity contains difference within itself' suggests that 'abstract identity and its opposition to difference … is sublated' (Engels 1985, p. 15). He illustrates this as follows:

> The plant, the animal, every cell is at every moment of its life identical with itself, and yet differing itself from itself, by absorption and excretion of substances, by respiration, by cell formation and death of cells, by the process of circulation taking place, in short, by a sum of incessant molecular changes which make up life and the sum-total of whose results is evident to our eyes in the phases of life. (Engels 1985, pp. 13–14; 1987b, p. 495; translation modified)

The property or component variation of organic bodies results from the dynamic interaction between natural agents and their environment. From this angle, Engels questions the categorial relation between identity and

difference (= *non*identity). If all the properties/components/predicates of an agent constitute its identity, the process of change would alter it and bring about a (slightly) different set of properties; in terms of the properties it possesses, the agent is not anymore what it previously was. Yet, it is still the same agent that does continuously change. What the term 'identity' refers to must therefore contain its opposite—namely, the notion of difference. Hence the 'difference within identity'. Curiously, Engels does not mention here the category of 'contradiction' even once. On one side, it is reasonable to think that 'identity' as a union of identity and nonidentity indicates contradiction. But on the other side, it is questionable whether this is Engels' own inference.

Note here that in a short manuscript on planetary motion, Engels speaks of a real contradiction without further reference to the categories of opposition, identity and difference. Once again, we have to do our own thinking about this. Engels asserts there that the 'rotational motion' of '*annular bodies*' revolving around the Sun 'runs into [a] contradiction with itself appearing as attraction, on one side, and tangential force, on the other' (Engels 1985, p. 45; 1987b, p. 552).[7] This illustration is quite similar to Marx's ellipse case in *Capital*, though they are not fully identical. Marx (1983a, p. 65) speaks of an orbital 'body' (*Körper*) that tends to simultaneously 'fall into' and 'fly away from' the Sun. The interrelation of the opposite predicates (fly away/fall into) that are asserted of the same subject ('body') run into a 'contradiction'. In Engels, by contrast, the subject that runs into a contradiction is elliptical *motion*. Elliptical motion is constituted by the opposite predicates of attraction of the Sun and tangential 'force' of the orbit.[8] Now, it is one thing to say that the *orbit runs into a contradiction* because of its opposite tendencies to move in space. But it is a different thing to say that *motion runs into a contradiction* because it consists of opposite predicates (attraction/tangential force) of two different subjects (Sun/orbit) (cf. Kangal 2017).[9] Both accounts seem plausible in their own respect, but it is up for debate whether elliptical motion involves one, two or more contradictions at once, and if it does, deeper insights into them are called for. In any case, Engels offers no guidance as to whether his and Marx's configurations are compatible and could be combined in a plausible way. This problem is then conjoined to his other terminological difficulties which I have pointed out earlier. For instance, one can justifiably ask whether contradiction is the 'ground' or 'consequence', 'cause' or 'effect', of elliptical motion. I doubt that Engels was completely unaware of these ambiguities, but he probably did not get

far enough in his work to address them (yet). I will come back to this issue in my below discussion of Kant.

Briefly, Engels faces no serious obstacles in finding out singular natural correlates of Hegel's *Determinations of Reflection*. But his account is open to interpretation when it comes to a multiplicity of interacting oppositions and contradictions. I will show in the next section that these issues are complicated further by philological-historical questions, because Engels claims to be in accord with Aristotle and Hegel's dialectics.

The Aristotle-Hegel Alignment

In the first, second and third projects, Engels (1985, p. 5) speaks of an Aristotle-Hegel alignment which he invariably follows. In the first project, he mentions '2 philosophical directions, the metaphysical with fixed categories, the dialectical (Arist[otle] and Hegel especially) with fluid [categories]'. In the second project, he claims that 'the dialectics has been so far fairly closely investigated by only two thinkers, Aristotle and Hegel' (Engels 1985, p. 167). In the third project, we are told that 'the investigation of the forms of thought, [of] the determinations of thought is very profitable and necessary, and after Aristotle this has been undertaken only by Hegel' (Engels 1985, p. 228).

Given the long history of dialectics, Engels is not very generous with compliments—he explicitly admires only two philosophers. The reason that he does not mention a third figure, such as Kant, becomes clear in the second project, when he recommends to natural scientists to study 'the classical German philosophy from Kant to Hegel'. He adds that 'to study dialectics in the works of Kant would be a uselessly laborious and little-remunerative task, as there is now available, in Hegel's works, a comprehensive compendium of dialectics' (Engels 1985, p. 170; 1987b, p. 342). Engels does not delve into details here, but I am curious about the merits of Aristotle that he may be referring to and the grounds on which he speaks of an alignment between Aristotle and Hegel that excludes Kant. In answering these questions, I will confine my discussion mainly to the interrelation between opposition, contradiction and dialectics.

Aristotle distinguishes four types of opposites (*antikeimena*): (1) relatives (*pros ti*), (2) contrary (*enantion*), (3) privation (*sterêsis*) and (4) contradiction (*antiphasis*) (Aristoteles 1998a, pp. 11b15–13b35). Relatives are interdependent *relata* that reciprocally refer to each other. Characteristic examples are double/half, bigger/smaller or knowledge/knowable.

Whereas some of the relatives involve gradual mediation (bigger/smaller), others (knowledge/knowable) do not permit it (Aristoteles 1998a, pp. 6b19–27). The double *of* something is the opposite of half of it. Likewise, knowledge is always that of a certain thing without which there is no knowledge. Conversely, knowability indicates the potential to be known. Similar to *pros ti*, *enantion* allows for opposites with and without mediation. For example, black and white belong to the genus of color and make up the two opposite ends of a color scale that is mediated (*metaxy*) by the shades of gray. There are, however, 'extreme opposites' (*eschata ta enantia*) within the same genus without intermediate links, such as even and odd numbers. As for the third type, privation is the opposite of possession of a certain feature, such as blindness in contradistinction to sight. Aristotle does not specify a degree of vision (better or worse sight) in this regard. The fourth type of opposition is contradiction. Unlike the previous types, contradiction categorically forbids mediation between opposites (Aristoteles 1991, p. [X, 7] 1057a35).

Contradiction applies to opposite statements that deny or cancel each other out. For instance, it is a contradiction if a person is said to be pale, while the opposite statement suggests that (s)he is not pale. One statement claims something be the case, while the opposite denies it, and conversely (Aristoteles 1998b, p. [6], 17a33–a34). For this reason, Aristotle criticizes Heraclitus' *panta rhei* (everything flows), according to which motion is defined in terms of a contradictory unity of being and nonbeing or identity and nonidentity. Something either is or is not; contradictory opposites asserted of the same subject cannot be taken to be simultaneously true. Aside from Heraclitus, Aristotle also attacks Parmenides and Zeno. The latter figures claim that logical descriptions of real opposites inevitably give rise to contradictions. If one thing changes, they say, the result of that change cannot be identical with what has changed. And yet, it is the case that anything in motion is and is not at the same time (Platon 1972, p. 138b7–c4). In response to the discussion in Plato's *Parmenides*, Aristotle contents himself with the remark that we can speak of change, say, from pale to non-pale, without violating the law of exclusion of contradiction (Aristoteles 1988, pp. 239b5–240b8, 240a19–23). On a single occasion, he ambiguously claims the opposite when he writes that change from a non-entity to an entity or from non-pale to pale involves 'contradiction' (*antiphasis*) (Aristoteles 1988, p. 225a). Thus, he locates contradiction within motion that goes through intermediate stages (Aristoteles 1988, p. 224b30).

Aristotle applies the term *dialektikê* (dialectics) to opposite opinions (*endoxa*) that contradict each other, as in the case of the fourth type of opposites. Dialectics is the art of disputation whereby two conversation partners try to disprove each other's claims in that they avoid self-contradictory statements, on one side, and point out the incongruence (= contradiction) between premises and conclusions of their opponent's claims, on the other (cf. Kubota 2005, p. 117).

One difficulty in Engels' reception of Aristotle is that we are offered no clues about what exactly is confirmed or denied in Aristotle. For example, when Engels equates dialectics with mediation of opposites, it remains open whether he prefers an oversimplified version of Aristotle's division of opposites into those with and without mediation or simply reiterates the second type of opposites (contraries) without principally neglecting the first (relatives) and third (privation) types. At least, it is reasonable to suppose that he may have thought of plausible ways to integrate them to the same conceptual framework that allows for a systematic derivation of one type from another. *Contra* Aristotle, he clearly denies that contradictions are limited to human reasoning, for there are also real contradictions in nature. With regard to real contradictions, Engels' stand is congruent only with Aristotle's aforementioned exception that transition from non-pale to pale involves contradiction. The same exception also satisfies Engels' criterion of mediation between opposites. The terminological status of *dialektikê* is rather unproblematic, for the term overlaps with what Engels calls 'subjective dialectics'. Since Engels presumes 'subjective dialectics' to be a 'reflex' of 'objective dialectics', he may be said to conveniently establish the *principle* of correspondence between objective structures in nature and their logical correlates. Nonetheless, we are uninformed about the precise shape of the logical depiction of natural structures. Hegel may provide further clues in this regard.

A preliminary remark seems necessary: if there is indeed a line connecting Aristotle with Hegel, it is certainly not a straight one. For Aristotle is quite hostile toward Zeno and Parmenides and, before them, to Heraclitus. Hegel does not share this hostility: 'Plato's Parmenides' is 'certainly the greatest work of art of the old *dialectics*' (Hegel 1986f, p. 66). '[T]here is no sentence of Heraclitus which I did not take into my Logic.' Hegel interprets Heraclitus' 'flux' as 'becoming' (*Werden*) and its constituents as 'unity of opposites' (*Einheit Entgegengesetzter*) (Hegel 1986h, p. 320). Hegel agrees with Parmenides and Zeno's contention that physical motion is, or involves, contradiction: '[T]he most untrue supposition' that one can think

of is that 'there are no contradictions in nature and consciousness'. '[T]here is *nothing* in which *a contradiction does not exist*' (Hegel 1986a, p. 473).

The ancient Greek conception of interrelation of opposites falls into Hegel's category of 'usual' or 'old' dialectics. The 'usual' kind finds its subtle expression in two opposite predicates asserted of the same subject. The 'more pure dialectical' form, by contrast, is the case when one predicate simultaneously refers to itself and to the opposite predicate of the same subject (Hegel 1986e, p. 56). Opposites in isolation are 'abstract'. If they are differentiated from, and related to, one another, they embody 'the dialectical' in their 'transition'. The 'speculative' as a higher stage of this line of thinking results from the 'unity of determinations within their opposition' (*Einheit der Bestimmungen in ihrer Entgegensetzung*) (Hegel 1986b, p. 176). For example, conceiving of identity and difference as separate entities applies to the 'abstract' account. A transition from identity to difference would express the dialectical moment. That the transition of identity to difference returns to the identity itself is what the Hegelian speculation is about. Reconstructing successive stages of this conceptual development is the business of Hegel's 'method' (Hegel 1986c, pp. 553–554). Note here that Hegel never speaks of a 'dialectical method', presumably because dialectics is a temporary moment, and not the final result, of reconstruction of the contradictory unity of opposites.

In principle, Hegel encounters no difficulty in adopting and applying the Aristotelian catalog of opposites, but he contests the idea that they can be categorized by 'hard and fast lines'. He asserts integration of the Greek conceptions of contraries and contradictories into his *Greater Logic* without taking over the traditional type-based separation of opposites. For contraries and contradictories do not illustrate distinct cases of logic or nature; they rather embody interconnected aspects of perpetual motion in logic or nature (Hegel 1986c, p. 292).

The Aristotelian types of opposites are made use of in the third part (*Logic of Concept*) of the *Greater Logic*. For instance, he mentions the 'gradual differences' between two 'opposite' colors ('indigo blue and light blue'), though he disregards such descriptions as logically superficial (Hegel 1986c, p. 343). Instead, he prefers to work with another structural pair (genus/species) in this respect. His framework is intentional: species such as singular colors are determined as internal differences within the genus of color. These internal differences constitute particular moments of a conceptual totality that encompasses (*übergreifen*) them and within which the very totality is manifested. Hegel's conception of genus-species

resembles Aristotle's *megiste diaphora* (greatest difference) between opposites within the same genus. Aristotle specifies the opposition between two ends of the same genus as 'direct opposite' (*enantiosis*) (Aristoteles 1991, pp. 1054b32, 1055a5–6; see also Holz 2008, pp. 12–13).

Although Hegel does not deny gradual mediation between direct opposites in nature, the logically appropriate concept of 'mediation' (*Vermittlung*) is introduced into a level—or moment—model that structures the procedures of rational thinking. According to this understanding, rational thinking takes place by going through increasingly complex levels of *Logic* in which an immediately given category taken over from the previous levels of rational thinking is 'mediated' by its current level and 'sublated' (*aufgehoben*) onto, and prepared for, the next level. Hegel speaks in this regard of the '*transition* and *mediation* … as well as *sublation* of *transition* and mediation' (Hegel 1986b, p. 132) into 'mediated immediacy' (Hegel 1986j, p. 116; Arndt 2004b, pp. 23–29). This is to say that it is inappropriate to attribute a quantifiable degree of meditation to the procedures of logical progression, even if nature offers a great variety of gradual mediation of opposites. Nature may very well manifest the logical forms within the idealist framework, but this does not mean that nature replicates logic.

It is reasonable to think that when Engels suggests logical patterns that interconnect Aristotle and Hegel's dialectics, he probably has in mind the Hegelian development from 'usual' to 'purer' (speculative) dialectics. This assumption is compatible with Engels' employment of speculative configuration of opposite predicates that reciprocally transition into, and manifest, each other. This transition intermediates opposites and it is gradual or quantifiable. He is perhaps referring to the intermediate links between opposites when he speaks of 'nodal points where quantitative change passes into the qualitative' (Engels 1985, p. 10). That the 'subjective dialectics' is expressive of 'objective dialectics' indicates a nonreplicative isomorphism, that is, structural identity of relational forms in being and thought. This leads me to believe that Engels' elementary structural unit which applies both to being and thought is what Hegel terms 'speculative' rather than 'dialectical'. There might be conventional or context-dependent reasons peculiar to the nineteenth-century natural scientists which Engels adopts when he avoids the talk of 'speculation', preferring the term 'dialectics' instead. But this does not change the speculative *character* of his dialectics.

All in all, Engels' fusion of Aristotelian and Hegelian dialectics may be assumed to *roughly* amount to the contradictory unity, reciprocal

generation, transition and manifestation of opposite predicates asserted of the same subject. If this characterization is congruent with, and expressive of, the behavioral patterns of natural agents, then one can justifiably conclude that 'dialectics applies to nature'. One lurking question concerns the status of the 'subject' of which the opposite predicates are asserted. For it can be objected that the interrelation between opposite predicates does not provide further insights into the relation between subject and predicates, or between distinct subjects. Engels' sporadic comments on Kant give some useful hints in this regard that are closely tied to the former's account of dialectics. Therefore I will try to shed some light on the potential reasons for Engels' negative assessment of Kant.

Engels Against Kant

The most obvious reason for Engels to downplay Kant is the latter's concept of the so-called thing-in-itself. Kant claims 'thing-in-itself' to be unknowable. Hegel ridicules this attribution. Engels appropriates Hegel's criticism of Kant. But this does not suffice to explain why Engels considers the study of Kant's dialectics 'a uselessly laborious and little-remunerative task' and recommends Hegel's dialectics instead (Engels 1985, p. 170). I suspect that there is an additional reason that latently underlies Engels' distaste for Kant: Hegel's criticism of Kant's transcendental dialectics. This debate involves the categories of opposition and contradiction, and they are indirectly connected to the 'thing-in-itself'. I will very briefly go into the definition of, and the dispute over, this curious term, and then take up Hegel's treatment of Kant's dialectics.

In Kant's theory of knowledge, objects of knowledge consist of two main aspects: thing in itself and appearance. The former is cognition-independent, while the latter is cognition-dependent. For example, a rose is 'a thing in itself which, however, can appear differently to each eye with respect to the color' (Kant 2016, p. B 45/A 30). Accordingly, a rose in itself has a genuine existence, independent of how it is (mis)perceived. Conversely, the human mind has access to the rose by means of its (mis) perceptions. We have no way of knowing a rose other than how it appears *to us*. What we know of it always takes a certain perspectival shape, preformed by the frames of our mind. Hence what we know of the rose is what we think it is, how we perceive it and how it appears to us. We possess no knowledge of the thing in itself that is beyond *our* ways of knowing it (Kant 2016, p. B 46/A 31).

Hegel protests that it is 'absurd' to claim that human cognition 'does not know its objective [*Gegenstand*] as it is in itself' (Hegel 1986i, p. 39). Thing in itself is an 'abstraction' from how it appears or what it appears to be. Appearances are '*determinations*' of things; with these determinations gone, it is all too natural to conclude that things cannot be known. For when something is said to be known, it is known due to the determinations *of* a thing without which it makes no sense to pose the question of what a thing is. Therefore thing in itself is an 'empty' abstraction 'void of truth' (Hegel 1986i, pp. 129–130). Hegel elaborates on this view as follows: 'A thing has *properties*; they are … its definite relations to *something other*; property is there only as a way of reciprocal relation.' A thing 'maintains itself in its relation to something other'. The property of a thing is to 'express itself in a characteristic way' in that it 'effects this or that in something other'. 'The thing becomes cause through its properties, and to be a cause is this, to maintain itself as effect.' Without passing over from cause to effect, the thing remains a thing in itself. When a thing is said to exist, it is meant to leave its character of being in itself and enter 'into external relations'; 'existence consists precisely in this externality' (Hegel 1986j, pp. 133–134).

In the first project, Engels celebrates Hegel's criticism of the internal ambiguities of Kant's thing in itself. In the second project, he weaves this argument into dialectics. The 'assertation that we cannot know the thing in itself … passes out of the realm of science into that of fantasy'. 'What would one think of a zoologist who said: "A dog *seems* [*scheint*] to have four legs, but we do not know whether in reality is has four million legs or none at all"?' That natural scientists 'take care not to apply the phrase' provides 'the best proof how little seriously they take it and what little value it has itself' (Engels 1985, p. 12; 1987b, pp. 520–521; translation modified; see also Engels 1985, pp. 13–14, 107). In the second project, by contrast, Engels sounds rather concerned that the term is used by some scientists after all. There, he speaks of the damages that 'a certain neo-Kantianism' has done to natural sciences with the 'least merited preservation' of the 'thing in itself'.

> One can scarcely pick up a theoretical book on natural science without getting the impression that natural scientists themselves feel how much they are dominated by this incoherence and confusion, and that the so-called philosophy now current offers them absolutely no way out. And here there really is no other way out, no possibility of achieving clarity, than by a return, in one form or another, from metaphysical to dialectical thinking. (Engels 1985, p. 169; 1987b, pp. 340–341)

When Engels attaches the perplexities that come along with Kant's thing in itself to what Engels calls 'metaphysics' as the opposite of 'dialectics', he seems to identify dialectics with a relational ontology, in contradistinction to a mode of thought that miserably fails to acknowledge the very relationality in nature without which no knowledge is possible.

From Kant's and Hegel's angle, however, the binary of 'metaphysics vs. dialectics' is confusing, to say the least. Although Kant is a self-proclaimed metaphysician who invests a great deal in establishing rational foundations of a critical metaphysical science, he is by no means a malevolent detractor of dialectics. He ascribes rather a productive function to dialectics and places it in his own setting upon which Hegel built his revision of dialectics. According to Hegel, 'Kant had a higher regard for dialectic – and this is among his greatest merits – for he removed from it the semblance of arbitrariness which it has in ordinary thought and presented it as *a necessary operation of reason*.' Kant 'gave justification and credence' to the idea of 'the *necessity of the contradiction* which belongs to the *nature* of thought determinations' (Hegel 2010b, p. 35).

Engels not only ignores Kant's conceptual context, in which the critical use of dialectics is specified, but he also encourages others to do so. Furthermore, while he points to the Hegelian 'shortcut' of dialectics, his anti-metaphysics clashes with Hegel's ambition to take on board a dialectical metaphysics. More graphically, Engels wishes Hegel to side with him, so that he can borrow the latter's dialectical 'stick' to beat the metaphysical enemies with.

The attempt to grasp the philosophical background from which Engels' binary arises is indeed a 'laborious task', but it is neither 'useless' nor 'little-remunerative'. Without undertaking it, Engels can 'merely assert' a past philosophy 'to be false' at best. But if the point is to 'sublate it in its own terms', then one has to try harder than Engels does himself. Two aspects of Kant's philosophy are binding: types of opposites and transcendental conception of dialectics.

Kant distinguishes three types of opposites: 'logical', 'dialectical' and 'real' (Kant 1912, p. 171; 2016, p. A 504/B 532; Arndt 2008, pp. 103–104; Wolff 1980, p. 341). Logical opposites are contradictory. Conversely, contradictions are neither dialectical nor real. Finally, real opposites are neither contradictory nor dialectical. For instance, it is a contradiction if two mutually exclusive predicates are attached to the same subject, whereby at least one of the predicates must be false. However, it is possible that two predicates are mutually exclusive, but then they cannot

be attached to a subject. For, either predicates and subject do not match or the presumed subject does not exist (is not real). In any event, both predicates are wrong and they pass over from logical opposition into dialectical opposition. Whereas logical contradictions are evitable, dialectical oppositions are not. The subject *content* of which the contradictory opposites are predicated is decisive as to whether the opposites at stake are logical or dialectical.[10] The content of the subject is decisive in that it constitutes the precondition for an opposite to be congruently asserted of a subject. While the contradiction case suggests that only one of the predicates can be true, the dialectics case argues that both predicates are false. Real opposites, by contrast, are neither contradictory nor dialectical, because both predicates and the subject are real.

> Two things are opposed [*entgegengesetzt*] to each other if one thing cancels [*aufhebt*] that which is posited by the other. This opposition is two-fold: it is either *logical* through contradiction, or it is *real*, that is to say, without contradiction [*Widerspruch*] … The motive force of a body in one direction and an equal tendency of the same body in the opposite direction do not contradict each other; as predicates, they are simultaneously possible in one body. The consequence [*Folge*] of such an opposite is [for example, K.K.] rest. (Kant 1912, p. 171; 1992, p. 211)

Now, recall the ellipse case previously discussed. From Kant's perspective, the two opposite tendencies of the orbit are indeed real opposites insofar as they co-determine the direction of the moving orbit. Kant would agree with Marx that the orbit tends to fly away from and fall into the Sun. But he would disagree that this co-determination amounts to contradiction; this is not because the subject/predicates involved are unreal, but because if Kant holds that real contradictions are admissible, he must also hold that the subject/predicates involved in the alleged contradiction are unreal (impossible). This hypothetical conclusion can be derived from the principle that whatever (subject) is said or thought to exist (predicate) contradicts the counter-proposition that it does *not* exist (opposite predicate), and conversely.

Nevertheless, Kant is unarmed against Marx's argument that the opposite *tendencies* of the orbit constitute a contradiction, for both propositions (flying away/fall into) are congruently attached to the same subject (orbit), hence true. Marx does not mean to say that the orbit flies away or falls into the Sun; he means to say that the orbit *tends* to move in these directions. The result or 'consequence' of this 'conflict' is the elliptical motion of the

orbit. This suggests that contradiction is placed in the 'ground', not in the 'consequence', of the elliptical motion. After all, elliptical motion results from the interaction of the two conflicting tendencies of the orbit to move in space. Since these tendencies as well as the orbit do exist, Marx also satisfies the condition of *real* opposites. Thus Kant is forced to 'lower his guard'. But the question concerning dialectical opposites remains unanswered, for Kant can still argue that even if he admitted that there is a real contradiction in the ellipse case, it would not have been dialectical. In order to be able to speak of a dialectical opposition, both propositions must be false, because the predicated subject (orbit) needs to be a nonexistent thing in itself. Even if Kant loses the debate in the elliptical context, he can still defend the dialectics argument in another context, because what he refers to in terms of the 'subject' are the traditional objects of investigation of *metaphysica specialis*: God, world and soul. Before I go into Kant's transcendental dialectics and Hegel's assessment of it, I will comment on Engels' take on elliptical motion and contrast it with that of Marx.

There is no reason for Engels to disagree with Marx on the ellipse case, for Marx not only argues convincingly for the existence of real contradictions in nature, but he, unlike Engels, also justifies the notion of 'polarization' or 'conflict' involved in the interaction between real opposites. Due to the difficulties I will list below, Engels appears to be a more 'vulnerable target' from Kant's point of view. We are told that not the orbit but its 'rotational motion … runs into [a] contradiction with itself'. '[A]ttraction … and tangential force' make up the two opposite sides of the contradiction (Engels 1985, p. 45). Kant could easily object that attraction and tangential force are real opposites. Engels, in turn, may respond (within the Newtonian framework) that rotational motion (subject) and the opposite predicates do exist. Consequently, we can grant him the conclusion that the term 'contradiction' is justified. Here things get difficult for Engels.

Attraction and tangential force may be said to be components *involved* in the elliptical motion, but they are not genuine predicates of the elliptical motion. Active attraction (to attract) is a predicate of the Sun, while passive attraction (to be attracted by) and tangential 'force' are predicates of the orbit.[11] In Kant's account, Engels' presumed contradiction falls into dialectical opposition because the acknowledged truth of opposite propositions turns out to be false. Nevertheless, he receives no damage from Kant's dialectics argument because dialectical opposites apply to the metaphysical 'objects' which Engels intentionally avoids.

Another difficulty from which Engels' account suffers consists in his equation of elliptical motion with contradiction. Engels' equation does not allow for locating the contradiction in the ground or consequence of the elliptical motion. For he does not think of elliptical motion in terms of ground and consequence but rather within the mindset of merely opposite components. This difficulty might stem from his views on motion in general.

In *Anti-Dühring*, he famously claims that 'motion itself is a contradiction' (Engels 1988, p. 318). Now suppose for argument's sake that this view is displayed in the backdrop of the ellipse case in *Dialectics of Nature*. If motion is contradiction, then Engels may have thought that elliptical motion is also a contradiction. Given his view on contradiction, Kant can be allowed to reject both contentions. Even if Kant endorsed real contradictions in nature, he would have contested the correlation order of the subject (motion) and opposite predicates (identity and difference). For it is not the motion but the body that moves of which the opposites are to be predicated. Since both predicates are attached to a false subject, Engels can claim neither logical nor real opposites. The motion-is-contradiction argument falls into Kant's sphere of dialectical opposites at best, though Kant reserves them for metaphysical objects. If Engels hypothetically adopts the formula (motion-involves-contradiction) positioned against the motion-is-contradiction argument, he would have the upper hand against Kant, because that would meet Kant's criterion of logical and real opposites without passing into dialectical opposites. Nevertheless, this scenario would demand from Engels that he reformulate his thesis: motion *is* not contradiction, but it does *involve* contradiction. Given the fact that he does not explicitly argue for the motion-is-contradiction account in *Dialectics of Nature* in a manner comparably similar to *Anti-Dühring*, it is undecided whether he simply did not specify his position toward the issue at stake or simply rejected the 'involvement' option. Note here that he claims that 'development' takes place 'through contradiction' in the third law in the *Plan 1878* (Engels 1985, p. 173). This contention is indeed much closer to the 'involvement' argument than to the argument for 'motion-is-contradiction'. But neither the *Plan 1878* nor the second and third projects discuss the ellipse case in terms of contradiction.

From Engels' perspective, the ultimate result of the Kant debate would be acceptable, if not very desirable. Although he would win the argument on 'real contradiction' under the suggested premises, it is still inadmissible in Kant's setting for real and logical opposites to be also dialectical. Engels may avoid entering Kant's metaphysical sphere, but he must pay the price

of giving up the dialectical opposites. In so doing, he must also reconfigure his binary of 'metaphysics vs. dialectics', because in Kant's account, these terms are not mutually exclusive: dialectics is an integral part of metaphysics. As a response, Engels can merely assert that he is following a philosophical convention other than Kant's by weaving logical, real and dialectical opposites together, but this move would not contribute to his general aim to 'sublate' Kant's account 'in its own terms'. Now I would like to discuss a final crucial aspect of the ellipse case.

The infrastructure of the Kant-Engels debate illustrated above changes when Engels (rightfully) contests the Newtonian idea of 'tangential force' with regard to the attraction and repulsion of heavenly bodies. In the first and third projects, he criticizes the Newtonian postulate of 'tangential force'. This 'force' is merely presupposed to exist in Newtonian physics without which the elliptical motion cannot be explained (Engels 1985, pp. 23, 45, 74, 190–191). In the third project, he proposes to regard gravitational and tangential force as different forms of motion. Unlike in the first project, he is not occupied here by the question concerning real contradiction. Occasionally, 'dialectics' and 'opposites' show up (Engels 1985, pp. 190, 193), but Engels is primarily interested in the evolutionary origins of planetary motion. Suppose, once again, that Kant pulls him back into the contradiction debate at this point. Engels can be expected either to alter the contradiction argument—in that gravitational and tangential motions are predicated of elliptical motion—or, more optimistically, to reinforce the 'involvement' argument, to the end that opposite motive tendencies are predicated of the orbit.

Both options are relatively coherent in their own respect, but neither of them is compatible with two remarks from the second and third projects. In the first remark, Engels acknowledges the heuristic capacity of 'dialectics' to predict that 'attraction and repulsion are inseparable just like the positive and negative' (Engels 1985, p. 142). In the other remark, he similarly claims that '[d]ialectics has proved from the results of our experience of nature so far that all polar opposites in general are determined by the mutual action of the two opposite poles on each other' (Engels 1985, p. 190; 1987b, pp. 364–365). These two remarks do not conform to the 'motion is/involves contradiction' arguments. In the remarks, Engels posits repulsion as the inseparable opposite of attraction. In the ellipse case, the opposite sides of the contradiction are gravitational and tangential motion. While 'attraction' can be equated with gravitational motion, 'repulsion' does not amount to tangential motion. If the ellipse case is

true, then 'attraction' of the Sun does exist *without* the 'repulsion' of the orbit. Consequently, he must either retract his assumption that 'polar opposites' build a union or contradict his statement that repulsion is the opposite of attraction.

Alternatively, he may have had in mind another repulsive opposite of the Sun's attraction. For instance, he writes in the third project that the heat radiation of the Sun has a repulsive effect upon the orbits revolving around it (Engels 1985, p. 196). This is in accord with the union of attraction and repulsion as opposites predicated of the Sun. Although he does not explicitly mention it, this proposition can be taken to indicate that the orbit is predicated of two passive opposites: being attracted to and repulsed by the Sun. However, being repulsed does not amount to the orbit's own tangential tendency. The predication of two opposites of a single subject (Sun or orbit) offers a more optimal setting for Engels than the attachment of the opposites to two different subjects (Sun and orbit). He could have proceeded to reconfigure the interrelation between the Sun and orbit in terms of their own predicates and mapped out the elliptical motion via the interaction of the respective predicates. Accordingly, elliptical motion could be said to involve (1) the contradiction of gravitational attraction and heat-related repulsion, on one side and (2) the contradiction of the orbit's tendencies to fly away from and fall into the Sun, on the other. Whatever the case, it has little impact on Kant's metaphysical dialectics.

Metaphysics and Idealism

Kant employs the term 'dialectics' equivocally in a rhetorical and a transcendental sense. Rhetorically, it refers to the ancient '*logic of illusion*' (*Logik des Scheins*) in the sense of 'a sophistical art for giving to its ignorance … the air of truth, by imitating the method of thoroughness'. This illusion is generated either by logical contradictions or by the misuse of general logic as an organon to make judgments. This misuse is related to the fact that general logic cannot provide any insight into the contents of our cognitions nor can it expand and extend our knowledge. General logic is a formal apparatus and it serves only the purpose of examining the internal accuracy of our knowledge. Pretending it to be otherwise is to interchange truth and illusion. Therefore, dialectics is designated anew '*critique of dialectical illusion*' (Kant 1998, pp. B 86/A 61–62). Kant contrasts logical and transcendental illusions in this regard. 'Logical illusion, which consists in the mere imitation of the form of reason … arises

solely from a failure of attentiveness to the logical rule', while 'transcendental illusion … is a *natural* and unavoidable *illusion* which itself rests on subjective principles and pass them off as objective' (Kant 1998, pp. B 353–354/A 297–298).

Transcendental illusion can be revealed only by a logic that appeals to the *content* of the objects of investigation. These are the aforementioned objects of *metaphysica specialis*. Kant works out several cases which demonstrate how transcendental illusions are generated. One of them relevant to the present discussion concerns Kant's examination of the antinomic nature of two opposites predicated of the world: finitude and infinity. Both propositions are mutually exclusive and constitute a formal contradiction: the world is either finite or in-finite. Furthermore, both propositions presuppose that the world is a thing in itself of which finitude and infinity are predicated. However, Kant doubts that the world is a thing in itself, because unlike any empirical object (e.g. Sun or the orbit), it is not a 'given' to which our ordinary senses and concepts can apply. World is not an object of which the noumenal side can exist independently of our representations of it. Therefore finite and in-finite do not apply to the world; the logical opposition (contradiction) of finitude/infinity of the world passes over into the dialectical opposition (Kant 1998, pp. B 532–533/A 504–505).

At this point, it seems appropriate to point out what Hegel and Kant have in common and where they differ: (1) Hegel agrees with Kant that the method of 'understanding', that is, predication of finite objects (e.g. Sun and orbit), runs into a difficulty when it is applied to the objects of *metaphysica specialis*; (2) Hegel believes that Kant stops short of leaving all the postulates of 'old metaphysics' behind because (a) Kant restricts predication to subjective determinations of thought, while Hegel takes thought determinations to be determinations of objects themselves, and relatedly (b) Kant undercuts a broad application of the types of opposites, in that he divides the spheres of their application into separate fields of cognition; (3) Hegel proposes to reconfigure the interrelation of opposites by revising the conception of the world, in that (a) the Kantian conception of the thing in itself is dropped and (b) the 'dialectical opposites' of finitude and infinity are reconciled—opposite predicates are transformed into constituents of a speculative relation in which the *relata* are granted the quality of reciprocal manifestation. Hegel's new idealism and metaphysics are built upon this grand revision.

It was one of Kant's great merits, Hegel believes, to have taken 'an infinitely important step' by rescuing dialectics from the old view that regarded

it 'as an *art*, as if it rested on a subjective talent and did not belong to the objectivity of the concept'. Dialectics is now once again 'recognized as necessary to reason, although the result that must be drawn from it is the opposite than Kant drew' (Hegel 1986j, pp. 557–558; 2010b, p. 741).

The lesson which Hegel draws from Kant's flaw is that Kant blocked the investigation of the object of metaphysical reason in that he 'stopped short at the merely negative result of the unknowability of the in-itself of things and did not press on to the true and positive significance of the antinomies'. In Hegel's opinion, antinomies crucially revealed the following: 'everything real contains within itself opposite determinations' and 'comprehension of an object means … becoming conscious of it as a unity of opposite determinations'. Unlike the 'old metaphysics', according to which contradictions merely amount to 'accidental aberration[s]' and 'subjective mistake[s]', Kant usefully showed that 'it is inherent in the nature of thinking itself to lapse into contradictions (antinomies) when it attempts to obtain knowledge of the in-finite'. In effect, Kant overcame 'the rigid dogmatism of the metaphysics of understanding' and encouraged 'the dialectical movement of thought'. Moreover, he demonstrated how to make productive use of propositions of mutually exclusive content by granting them 'equal justification and equal necessity'. But the antinomies that are discovered, so Hegel objects, are not confined to *metaphysica specialis*; rather, they can be found 'in *all* objects of *all* genera, in *all* representations, concepts, and ideas. … This characteristic constitutes what determines itself further on as the *dialectical* moment of the logical' (Hegel 1986b, pp. 127–128; 2010a, pp. 94–95; translation modified). Accordingly, opposites such as 'the finite and the in-finite, the singular and the universal' that have previously been rendered rigid actually embody 'a transition in and for themselves' (Hegel 1986j, p. 560; 2010b, pp. 743–744).

Old metaphysics suggests that 'of *two opposite assertations* … one had to be *true* while the other was *false*', 'holding onto one-sided determinations of the understanding to the exclusion of their opposites'. The 'true, the speculative', by contrast, 'does not possess such a one-sided determination'. It 'unites those determinations within itself as a totality'. The 'idealism of the speculative philosophy … has the principle of totality and shows itself to reach beyond the one-sidedness of the abstract determinations of the understanding'. Such determinations are not simply right or wrong, but 'invalid in their isolation'. 'Even in our ordinary consciousness, this idealism already occurs. Thus we say of sensory things that they are changeable, i.e. both being and not-being accrue to them' (Hegel 1986b, pp. 98–99; 2010a, pp. 71–72; translation modified).

Anything that is subject to change goes through the stages of that change of which the logic is expected to reproduce one opposite (identity) by bringing about another opposite (nonidentity), whereby the first is resolved or sublated into the other. The distinction between both opposites is marked by the alteration embodied in the act of change. While they both refer to the *real* aspects of the changing body, hence *true* in their own respect, one opposite denies (identity) what the other inserts (nonidentity). Yet the truth-character of the opposites becomes 'valid' only when their interrelation is acknowledged. In this regard, it is reasonable to speak of a *real* contradiction that consists of two *true* opposites. This line of reasoning collapses Kant's distinction between logical and real opposites because it regards them as different aspects of the same (logical or natural) process.

At this point, Hegel carefully warns us not to confuse the objects of understanding (*Verstand*) with those of reason (*Vernunft*). While the first applies to finite objects (e.g. Sun and orbit), the latter is assigned the task of investigating in-finite objects (e.g. world) that encompass, and contain within itself, the finite. Unlike Kant's antinomies, Hegel's distinction between finite and in-finite is based on the reconciliation of 'dialectical opposites': the world is not either finite or in-finite; it is both. Furthermore, in-finite is not conceptualized strictly as something external to, or beyond, the finite. Rather, finite is understood as an internal moment within which in-finite is manifested. More precisely speaking, the relationship between finite and in-finite is perhaps best characterized as a reciprocal *being-in*. Whatever is contained within the in-finite is related to, and reflective of, finite aspects of an all-encompassing totality. '[*E*]*ach* of the moments is the *whole*' (Hegel 1986b, p. 307), that is, a 'self-developing totality' with its 'distinctive determinations and laws' (Hegel 1986b, p. 67; 2010a, p. 47).

In integrating the objects of understanding into that of reason, Hegel reproduces the Kantian 'dialectical opposites' in a new form. Unlike Kant, Hegel does not denounce them as mistaken attachments of a metaphysical object of predication. For the world, as such is neither a 'thing' nor a 'thing in itself'; yet, it is an 'object' whose 'givenness' is obtained by means of thought determinations. The world is an infinitely textured object; yet we can manage it only by means of finite abstractions (cf. Wartofsky 1979, p. 33). More simply put, the world is neither 'given' like an empirical object, nor is it accessible to direct inspection; it becomes intelligible, hence 'given' to mind only if it is conceptually constructed as a self-generating totality. Kant's 'dialectical illusion' is sublated into Hegel's speculative set-

ting within which both opposites and the subject of predication are acknowledged to be real, therefore true. This assertion is valid under the premise that opposites are characterized as *objective* predicates of the subject that reciprocally refer to, and are manifestations of, each other. This is the basis of Hegel's idealism and metaphysics.

In our 'ordinary consciousness', the objects of cognition are viewed as 'independent and self-grounded'. But philosophical thought reveals that 'they prove to be related to one another and conditioned by one another' in their 'mutual dependence'. Singular finite objects 'do not have the ground of their being in themselves but in an other' (Hegel 2010a, p. 90). The philosophical point of departure of cognition is what is given by the senses, and then to relate it to the universal interconnection of the givens. To this end, Hegel suggests to 'cognize each individualized entity as an internally coherent whole … and to seek out the relations and mediations obtaining between individual things' (Hegel 2007a, p. 149).

Without recourse to an infinitely self-developing totality, 'the finite is not truly an existent'. The finite as such is just an '*idealization*'. 'A philosophy that attributes to finite existence … true, ultimate, absolute being, does not deserve the name of philosophy.' 'The claim that the *finite is an idealization* defines *idealism*.' In this regard, materialist philosophies that assert universals or substances such as 'water', 'matter' or 'atoms' exemplify different forms of idealism. For example, Thales' principle of 'water' argues for such a universal. Although water is 'also empirical water, it is besides that the *in-itself* or *essence* of all other things, and these things do not stand on their own, self-grounded, but are *posited* on the basis of an other, of "water", that is, they are idealized' (Hegel 2010b, p. 124). Finite entities have no veritable beings on their own. They depend on other finite entities within an all-encompassing whole: 'ideal being is the finite as it is in the true in-finite – as a determination, a content, which is distinct but is not an *independent*, *self-subsistent* being, but only a *moment*' (Hegel 2010b, p. 119).[12] The theoretical account that defends this view is what Hegel terms 'idealism'. What distinguishes Hegel's idealism from Kant's is that the latter confines universals to *subjective* thought determinations, while the former holds that such universals are *objectively real*. Therefore, Hegel speaks of 'objective idealism' and 'realism', interchangeably (Hegel 1986d, pp. 11, 54; cf. 2010b, p. 124; 2010a, pp. 150–151).

In arguing for a specialist sort of idealism, Hegel also argues for a special sort of metaphysics. The very arrangement of finitude within the infinity of the world is a metaphysical one. Within the constraints of the above

discussion, Hegel's metaphysics can be said to differ from Kant's, as Hegel reintegrates those spheres that are external to *metaphysica specialis* as internal components of the traditional objects of reason. Both philosophers argue for the mind-dependency of the world, but it is Hegel who asserts that the metaphysical claims about the world are more than merely subjective thought determinations of it (cf. Stern 2009, pp. 73–74; Wartofsky 1968, pp. 11, 168; Lowe 2001, p. v; Moore 2011, pp. 3–4). The task of philosophy is to make the world intelligible by means of establishing a categorial framework within which the concept of the world is constructed. It is this conceptual form in which the world becomes a mind-dependent given.

'Metaphysics authenticates its definitions … by appealing to the testimony of representations, i.e. the content that derives initially from experience.' Conversely, any empirical judgment that is yet far away from making claims on metaphysical objects already embodies metaphysics in its propositions. It is therefore a 'fundamental delusion' when, for instance, 'scientific empiricism' makes use of 'metaphysical categories of matter, force (not to mention those of one, the many, universality, and infinity, etc.), and proceeds to make inferences guided by such categories', while it ignores that 'in so doing it itself contains and pursues metaphysics' (Hegel 2010a, p. 79). That metaphysics is present in each and every act of cognition is testified by language. The category of 'being' is perhaps the most obvious example: 'the Sun *is* in the sky', or 'this grape *is* ripe'. A more advanced example is: 'the relationship of cause and effect, of force, and its expression', and so forth (Hegel 2009, p. 194).

> All knowing and representing is interwoven with, and governed by, this metaphysics; it is the network within which we grasp all the concrete subject matter that occupies our consciousness in its actions and endeavors. In our everyday consciousness this web of connections is embedded in the many-layered stuff comprising our known concerns and objects, the things of which we are aware. (Hegel 2009, p. 194; see also Hegel 2007b, p. 63; 2009, p. 155)

From Hegel's vantage point, Engels, a self-proclaimed opponent of idealism and metaphysics, is in a difficult position. Hegel would expect from Engels that if something is fundamentally wrong with idealism and metaphysics, Engels must prove that the following two views are erroneous:

a) Idealism: singular finite entities have no veritable being without collective dependence and mutual interaction among each other; mutual interdependence of finite parts is an infinitely self-developing totality within which the singular parts play the role of individual moments of the whole;
b) Metaphysics: Rational foundations of sciences demand a rigorous inquiry into the fundamental structures of reality and our understanding of them; in order to conduct such an inquiry, we need to construct a categorial framework that explicitly formulates and self-critically revises the conceptual tools in use in order to improve our command of the ways we experience and think of the world.

Engels would disagree, terminologically; but he would agree, argumentatively. (1) Although Engels' views are in accord with Kant's and Hegel's objections to the 'old metaphysics', and with Hegel's criticism of Kant's shortcomings in overcoming the 'old metaphysics', Engels one-sidedly generalizes the flaws of 'old metaphysics' to the entire tradition of metaphysics, against which he plays off a modified version of Hegel's 'dialectics'; (2) While Engels depicts his materialism as an alternative, competing against Hegel's idealism and metaphysics, he reinforces some arguments that are compatible with the very accounts he intends to destroy. As a result, he confirms and denounces idealism and metaphysics at once. (3) In addition, Engels displays a double standard against idealism and metaphysics. He attacks particular flaws of particular figures within both traditions and takes his criticism up to a level of a wholesale rejection. Interestingly, he does not apply the same logic to dialectics and materialism. He is highly critical of the previous accounts of dialectics and materialism, but he proposes his own versions as competing alternatives, without denouncing the dialectical and materialist traditions as a whole.

The terminological indistinction between 'old metaphysics' and 'metaphysics' is present from the first to the last manuscripts. 'Dialectics' may be said to be the opposite of the 'old metaphysics', but it certainly does not contradict the newer 'metaphysics' in Hegel's sense of these terms. Note here that Engels is well aware of Hegel's own distinctions, as he explicitly refers to them on various occasions.

From Hegel's point of view, Engels mismatches metaphysics and dialectics as mutually exclusive accounts when Engels speaks of '2 philosophical directions, the metaphysical with fixed categories, the dialectical (Arist[otle] and Hegel especially) with fluid [categories]' (Engels 1985,

p. 5). Engels claims that the 'natural scientists [were] pretty much done with old metaphysics until the end of previous century, well until 1830 [around Hegel's death, K.K.]' (Engels 1985, p. 6). On the same page, he ambiguously asserts that 'the bulk of natural scientists' are 'still held fast in the old metaphysical categories' (Engels 1985, p. 6). While 'the old metaphysical method of thought' fails to acknowledge the 'differences in intermediate steps' and the transition between 'opposites' through 'intermediate links', 'the dialectical [method]' denies such 'hard and fast lines', 'unconditional universally validity' or 'fixed metaphysical differences' (Engels 1985, p. 48; see also Engels 1985, pp. 102, 134–135, 139–140, 146–147, 153, 163, 168, 170, 173, 190).

Another terminological difficulty is the object of (old) metaphysics and dialectics: things or motions. It is undecided whether and which metaphysics is accused of investigating things rather than motions, and whether things and motions refer to things without motions and motions without things. While in the first project, he claims that '[m]etaphysics' is 'science of *things* – not that of motions' (Engels 1985, p. 11), in the second project, dialectics is assigned to the task of grasping '*things* within their interconnection instead of in their isolation' (Engels 1985, p. 126; my emphasis). The latter case can be taken to refer to things within motion, but this is traditionally subject to metaphysics, which Engels denies to be the case.

Engels mostly employs the term 'interconnection' in order to distinguish dialectics from metaphysics. '[C]ontrary to metaphysics … dialectics [is] to be developed as the science of interconnections' (Engels 1985, p. 175). '[C]ontra metaphysicians and metaphysical natural scientists, Hegel dialectically turned the rigid differences and opposites upside down' (Engels 1985, p. 267; see also Engels 1985, pp. 205, 235, 281, 287). Terminologically, Hegel would disagree with Engels' characterization, for Hegel positions himself against the 'old metaphysics', not against metaphysics as a whole. Argumentatively, by contrast, Engels' dialectics and Hegel's (speculative-dialectical) metaphysics do converge.

The task of 'dialectics' is to 'prove' empirical facts 'in nature', to 'rationally explain', and 'bring' them 'into inter-connection among each other' (Engels 1985, p. 6). 'The first thing that strikes us in considering matter in motion is the inter-connection of the individual motions of separate bodies, their *being determined* by one another' (Engels 1985, pp. 21–22; 1987b, p. 510). One must presuppose the principle of 'universal reciprocal action' in order to 'arrive at the real causal relation'. 'In order to understand the separate phenomena, we have to tear them out of the

general inter-connection and consider them in isolation, and *then* the changing motions appear, one as cause and the other as effect' (Engels 1985, p. 24; 1987b, p. 512).

> The whole of nature accessible to us forms a system, a universal interconnection of bodies, and by bodies we understand here all material existences extending from stars to atoms, indeed right to ether particles, in so far as one grants the existence of the last named. That these bodies are interconnected already presupposes that they affect one another, and it is precisely this mutual effect that constitutes motion. … matter is unthinkable without motion … matter confronts us as something given, equally uncreatable as indestructible, it follows that motion also is as uncreatable as indestructible. It became impossible to reject this conclusion as soon as the universe was acknowledge as a system, an interconnection of bodies. (Engels 1985, p. 188; 1987b, p. 363; translation modified)

Philosophy provides the sciences with root-models of explanation of natural phenomena by pointing out the necessity to 'prove … the general interconnection of development in nature', and show '[h]ow one form of motion develops from another'. Since Hegel denies evolution in nature, Engels can plausibly reject Hegel's 'artificial … dialectical transitions', and suggest that '[t]he transitions have to make themselves, [they] must be natural' (Engels 1985, p. 28).

Engels combines his account of totality with the conception of infinity when he tries to justify the knowability of infinity against Carl Nägeli who contests the latter term:

> If we consider two such extremely different things—e. g., a meteorite and a man—in separation, we get very little out of it, at most that heaviness and other general properties of bodies are common to both. But an infinite series of other natural objects and natural processes can be put between the two things, permitting us to complete the series from meteorite to man and to allocate to each its place in the inter-connection of nature and thus to *know* them. (Engels 1985, p. 133; 1987b, p. 513)

Resembling Hegel's characterization of metaphysics, Engels writes the following:

> our various senses might give us impressions differing absolutely as regards quality. In that case, properties which we experience by means of sight, hearing, smell, taste, and touch would be absolutely different. But even here the

> differences disappear with the progress of investigation. Smell and taste have long ago been recognized as allied senses belonging together, which perceive conjoint if not identical properties … it is always the same *I* that receives and elaborates all these different sense impressions, that therefore comprehends them into a unity, and likewise these various impressions are provided by the same thing, appearing as its common properties, and therefore helping us to know it. To explain these different properties accessible only to different senses, to bring out their internal interconnection, is precisely the task of science … (Engels 1987b, p. 513; Engels 1985, p. 134). In addition to the eye, we have not only the other senses but also our capacity to think. … [T]he imperfection of our sight … [is] a necessary imperfection, for an eye that could see *all* rays would for that very reason see *nothing at all* … [T]he construction of our eye … restricts sight to definite limits and even so does not give quite correct reproduction … What can be discovered by our thought is more evident from what it has already discovered and is every day still discovering … [T]he investigation of the *forms* of thought, the thought determinations, is very profitable and necessary, and since Aristotle this has been systematically undertaken only by Hegel. (Engels 1985, p. 228; 1987b, p. 519; translation modified)

Engels iterates the same point in respect to the systematicity of science. 'The systematization of natural sci[ences]' is now 'becoming more and more necessary' and it can be established only 'in the interconnections of phenomena themselves' (Engels 1985, p. 144). Systematization requires a certain 'theoretical thinking' that governs natural scientific inquiry. In Hegel's view, 'metaphysics' is the very philosophical theory that informs the practice of natural sciences. In Engels' language, 'metaphysics' is equal to some sort of distorted theory that misinforms and misdirects natural sciences. In this regard, Engels attacks the hostility of natural scientists toward 'metaphysics' (in Hegel's sense of the term) or 'dialectical philosophy' (in Engels' sense of the term):

> Natural scientists believe that they free themselves from philosophy by ignoring it or abusing it. They cannot, however, make any headway without thought, and for thought they need thought determinations. But they take these categories unreflectingly from the common consciousness of so-called educated persons, which is dominated by the relics of long obsolete philosophies … Hence they are no less in bondage to philosophy, but unfortunately in most cases to the worst philosophy, and those who abuse philosophy most are slaves to precisely the worst vulgarized relics of the worst philosophies … Natural scientists may adopt whatever attitude they please, they are still

> under the domination of philosophy. It is only a question whether they want to be dominated by a bad, fashionable philosophy or by a form of theoretical thought which rests on acquaintance with the history of thought and its achievements … Only when natural and historical science has become imbued with dialectics will all the philosophical rubbish—other than the pure theory of thought—be superfluous, disappearing in positive science. (Engels 1985, pp. 32, 65; 1987b, pp. 490–491; see also Engels 1985, pp. 163, 167–171, 176, 188, 281, 284, 286–287)

Along these lines, Engels also briefly comments on Newton's famous dictum *hypotheses non fingo*: '"Physics, beware of metaphysics!" is quite right, but in a different sense' (Engels 1985, p. 65; 1987b, p. 491). Engels does not clarify in which sense Newton's warning is right. Hegel, on the other hand, believes that Newton did not follow his own warning for a good reason. For 'only the animals are pure, unadulterated physicists, since they do not think, whereas a human being is a born metaphysician. The only thing that matters, therefore, is whether the metaphysics one applies is of the right kind' (Hegel 2010a, p. 155).

It makes a difference whether Engels holds Newton's warning 'right' in Hegel's sense or in the sense of 'old metaphysics' as equal to 'metaphysics'. If Engels sides with Newton against the Hegelian metaphysics, then he advances a self-defeating account, for Engels is a proponent of philosophically informed sciences. If he rather intends to mean some sort of purification of physics from the final vestiges of the 'old metaphysics', then he is on the same page with Hegel, although this would be incongruent with Engels' terminologically explicit anti-metaphysics. The same ambiguity reveals itself most clearly in his definition of dialectics in the *Plan 1878*: 'Dialectics as Science of Universal Inter-Connection' (Engels 1985, p. 173). This 'universal interconnection' is a Hegelian characterization of one of the traditional objects of reason (*Vernunft*) or *metaphysica specialis*, namely the world. Engels is aware of the Hegelian distinction between '*understanding and reason*'. He thinks that '[t]his Hegelian distinction, within which only the dialectical thought [is] rational, has a certain sense' (Engels 1985, p. 45). The problem, however, is that for Hegel, this distinction has a 'certain sense' within the metaphysical framework only.

As for the controversy over idealism, Engels has argumentatively, if not terminologically, a much stronger case. For he argues against Hegel that the transition from finite into in-finite must be made by nature alone before it is conceptually reproduced by philosophical logic. The idea that underlies Engels' views on infinity is not the 'in-finite' number of particles

existing in the universe at a given time but the historically in-finite process of the (re)production of such entities. The interaction of individuals in the physical universe gives rise to new features, relations, motions and bodies born out of the old ones. If emergence is essential to nature, then we can speak of an *in*-finite process of development that does not come to an absolute end. Development *in nature* compounds the material precondition of a self-generating totality. Hegel strictly rejects this view:

> It is a completely empty thought to represent species as developing successively, one after the other in time (Hegel 2004, p. 20). The land animal did not develop *naturally* out of the aquatic animal, nor did it fly into the air on leaving the water, nor did perhaps the bird again fall back to earth (Hegel 2004, p. 21). The Mosaic story of creation is still the best in its quite naive statement that on this day plants came into being, on another day the animals, and on another day man. Man has not developed himself out of the animal, nor the animal out of the plant; each is at a single stroke what it is (Hegel 2004, p. 284). [T]he organic nature has no history (Hegel 1986f, p. 225). We do not see in nature that the universal emerges [*entstehen*], that is, the universal [side] of nature has no history. The sciences, political constitutions, etc., on the other hand, have a history, for they are the universal in the sphere of mind. (Hegel 1986c, pp. 344–345; 2004, p. 280; translation modified)

Both Engels' materialism and Hegel's idealism endorse the conception of in-finite totality. What marks their difference is that materialism explains the system of nature without recourse to factors external to nature. In idealism, by contrast, such a recourse is a categorical imperative. For Engels, nature is a self-grounded totality with its own history; for Hegel, it is not. In Engels' account, one can justifiably speak of natural totality on grounds of evolutionary development in nature. This is incompatible with Hegel's conception of totality, because Hegel ascribes primacy to the historically developing 'Spirit' over an ahistorical 'Nature'. Engels not only reverses Hegel's order of primacy but also dismisses an all-encompassing 'Spirit' and the denial of natural history.

It is in principle possible to relativize Hegel's ahistorical creationism as some scholars do. For instance, one can point out that Hegel's claims above were asserted some years before Darwin's *Origin of Species* came out (cf. Harris 1998). Accordingly, Hegel's view of nature was uninformed by later theories of nature. But this can be rebutted, because Hegel rejects the *principle* according to which the totality of nature is explained without recourse

to a spiritual 'Idea' that precedes 'Nature'. Were 'Nature' a self-grounded whole, it would have not 'manifested' the 'Spirit'. In Hegel's view, 'Nature' is the mirror within which the 'Spirit' is reflected. With the 'Spirit' removed, 'Nature' would have had an empty content. For Engels, there is indeed such a mirror setting, but it is Hegel's *Logic* that mirrors 'Nature', not the other way around.

If the 'reversal' of Hegel's setting and annihilation of the idea of 'Spirit' sufficed for the transmutation of the *Logic* into a model which the materialist can work with, then *Logic* perhaps owes its internal accuracy much more than to a 'lucky coincidence'. Engels is not genuinely interested in explaining to us how Hegel was able to advance the configurations of *Logic* up to a level such that it can service the logical correlate of a materialist onto*logy* if it really suffers from the flaws of idealism.

In his private correspondence, Engels speaks of the need to substantially revise the Hegelian *Logic* in order to adjust it to its ontic correlate. But he shows no sign of such a revision in *Dialectics of Nature*. Quite the opposite, he almost always reinforces the argument that the contemporary scientific depictions of natural phenomena conveniently correspond to the logical configurations, as suggested by Hegel.

This 'miracle' might stem from the fact that *Logic* is ascribed to an intermediary position between the *Phenomenology* and the *Encyclopedia* in Hegel's threefold system. Engels ignores the fact that the 'abstract' categories of *Logic* are 'abstracted' from the cognitive contents of phenomenological inquiry. Phenomenological inquiry reproduces the relationship between material beings and their systematic reflection in scientific mind. The *Logic* obtains categorial abstractions in that it retains the achievements of the *Phenomenology*. If the derivation of logic from phenomeno*logy* is overlooked, then it is all too natural to conclude, as Engels does, that the categories of the *Logic* are intentionally projected into 'Nature'. Engels' criticism of what he calls 'idealism' is based on the premise that Hegel one-sidedly applies the *Logic* to 'Nature', without phenomenology preceding it. Therefore he proposes to overcome Hegelian 'mysticism' by reversing the order of derivation of 'Nature' from *Logic*. Were the systematic place of the *Phenomenology* to be taken into consideration, the presumed revision would have followed a different route. Relatedly, the 'reversal' of *Logic* and 'Nature' could have appeared unnecessary, because the defining question for the materialist would have concerned the internal accuracy of a phenomenology of nature rather than the consistency of the correspondence between the *Logic* and 'Nature'.

Another problem is that when the presumed 'reversal' is undertaken, we are offered no new logical framework. What, then, is the point of the 'reversal'? My best hunch is that Engels tries to make a principled rather than a practical point. The 'reversal' marks out the primacy of (ontic) being over (logical) thought within the framework of the ontological foundations of our conception of nature. In principle, the presumed 'reversal' indicates a substantial revision of the *Logic*. But in practice, Engels does not set himself the task of working it out.

We encounter then the following conundrum: the argument concerning the externalization of the *Logic* into 'Nature' is a consequence rather than the ground of Hegel's 'idealism'. One cannot disprove the idealist 'infinity' argument simply by virtue of dismissing the 'externalization' argument. Accordingly, this raises the question of whether one can adopt Hegel's idealist realism of infinity without approving the externalization thesis. Such an option seems plausible insofar as infinity remains a traditional object of 'reason' and becomes intelligible only by means of a categorial system; infinity is conceptually, not empirically, accessible or 'given'.

As far as Engels' own views are concerned, such an alternative was perhaps inadmissible, for he favors an 'all or nothing' approach: one adopts either the whole of idealism or none of it. Nevertheless, recall Hegel's previously mentioned comments on Thales' 'water', and now read the following passage by Engels:

> matter as such and motion as such have not yet been seen or otherwise experienced by anyone, but only the various, actually existing material things and forms of motion. Matter is nothing but the totality of material things from which this concept is abstracted, and motion as such nothing but the totality of all sensuously perceptible forms of motion; words like matter and motion are nothing but *abbreviations* in which we comprehend many different sensuously perceptible things according to their common properties. Hence matter and motion *can* be known in no other way than by investigation of the separate material things and forms of motion, and by knowing these, we also *pro tanto* know matter and motion *as such*. … This is just like the difficulty mentioned by Hegel; we can eat cherries and plums, but not fruit, because no one has so far eaten *fruit* as such. (Engels 1985, pp. 135–136; 1987b, pp. 515–516)

These lines are in full accord with Hegel's idealism and metaphysics, but with two exceptions: there is no such thing as 'Spirit' as explicated by the *Logic* and externalized into 'Nature'; consequently, it is wrong to deny that nature is a self-grounded historical totality.

I do not doubt that Engels' choice of words brought about a variety of perplexities, but I suspect that he preferred a terminology that was politically as indubitable as possible and he deemed 'metaphysics' and 'idealism' congruent to that end. Religious dogmas were at the top of his 'hit list' and when targeting various accounts of creationism, he was perhaps not so much worried by the scholarly criteria involved in following the 'correct' philosophical conventions. 'Dialectics' and 'materialism', on the other hand, appear to be less problematic, perhaps because they were used positively in socialist literature. It would have had an undercutting effect to boldly condemn 'dialectics' and 'materialism' as a whole, even if they took on undesired forms in the hands of their 'idealist' or 'metaphysical' proponents.

Regarding the Engelsian interrelation of materialism and dialectics, I assert that they do complement each other in the following respect. If materialism explains why things happen in the way that they do without recourse to extra-natural causes, dialectics articulates the structural forms that show how one thing emerges from another. The direct opposite of material emergence is divine creation. The emergentist articulation of dialectical structures in nature serves to explicate the view that if one thing brings about another thing, the prior contains the potential of what it can give rise to. Conversely, what comes out into view is a manifestation of what precedes it. In a more sophisticated fashion, when bringing about the posterior, the prior is affected by what it gives rise to. The self-determination of the prior via the determination of the posterior is what Engels' dialectics is about. More simply put, dialectics may be said to be about how one thing becomes subject to change by causing another thing to change; the prior is the co-product of its own activity. I believe that Engels was ambitious enough to apply this structural unit to all natural phenomena without exception. I can then proceed to claim that Engels' 'materialism' and 'dialectics' are in full conformity with Hegel's 'idealism' and 'metaphysics' under the premises suggested above. In this regard, Engels' talk of 'reversing' rather than eliminating idealism, and thus revealing Hegel's 'hidden' materialism, can be taken to refer to this potential alliance.

Plan 1878, *Plan 1880* and Four Folders

Engels' dialectics culminates in the *Plan 1878* (Ms. 164) and in the manuscript *Dialectics* (Ms. 165) written after that. The editorial commentaries usually suggest that the *Plan 1880* (Ms. 166) is part of the *Plan 1878,* presumably because it is narrower in scope and shorter in size and content.

That there cannot be more than one plan or a single project is, I am afraid, merely presupposed. However, there is no textual evidence that Engels viewed the latter as part of the former plan.

While the *Plan 1878* provides an overview of Engels' comprehensive take on dialectics, with particular elaborations on different scientific fields and responses to certain natural scientific controversies, such concerns are largely absent from the *Plan 1880*. The *Plan 1878* is clearly about dialectics. The *Plan 1880*, by contrast, concentrates on physical and chemical forms of motion. It is possible that the *Plan 1880* was thought to be a subdivision of a chapter from the *Plan 1878*. But this then leads to the question: which chapter? The *Plan 1878* lays bare a conception within which dialectics is taken as a measure against which the character of the intended work is defined. It opens with a historical introduction to dialectics and natural sciences. This is then followed by the so-called dialectical laws and their utilization in diverse scientific fields. The final sections of the plan draw attention to the controversies on materialism, Darwinism, vitalism and so on (Engels 1985, p. 173).

The *Plan 1880* does not seem to address such issues. It opens with 'Motion in General', with subsequent sections on particular forms of motion in physics, astronomy and chemistry, and a 'Summary' in the end (Engels 1985, p. 183). 'Motion' is mentioned twice in fifth section ('Aperçus on the special sciences and their dialectical content') of the *Plan 1878*: in the second subsection ('Mechanics of Heavens') with regard to its 'indestructability', and in the third subsection ('Physics') with regard to the '[t]ransitions of molecular motions into one another' (Engels 1985, p. 173). Motion as such is clearly linked to the 'laws of dialectics'. In the *Plan 1880*, by contrast, 'dialectics' is not mentioned. The idea predominant here is a specification of forms of motion as they are derived from 'Motion in General' (Engels 1985, p. 183).

Whether the *Plan 1880* was thought to be a substitute for the fifth section of the *Plan 1878* is unknown. If this were the case, then we encounter this difficulty: the fifth section was planned to provide 'Aperçus' (remarks) rather than a systematic elaboration and application of dialectics. The *Plan 1880*, on the other hand, gives the impression of a compact, penetrating and a short account of motion. Given the diversity of the fields Engels had been coping with, and the theoretical problems he had run into, the *Plan 1880* can alternatively be read as a strategic choice to break down the *Plan 1878* into smaller chunks and to write a shorter piece on a narrower field, that is, forms of motion. This scenario, in turn, leaves open the theoretical

status of dialectics as defined in the *Plan 1878*. In comparison to his pre-1880 work, Engels is much less occupied with the Hegelian system in the 1880s, as he largely focuses on physical theories of motion. Occasionally he returns to Hegel's *Logic*. And unlike in the pre-1880 periods, the third part of the *Greater Logic* is taken into consideration here. Engels focuses on the logical accuracy of propositional structures as demonstrated by Hegel's syllogisms. But he does not continue to systematically apply syllogism to the language of natural sciences.

My conviction that the *Plan 1880* was probably not intended to be a part of the *Plan 1878* finds further support in Engels' 1882 letter to Marx, in which Engels promises to finalize 'Naturdialektik' soon, on one side, and in the 1886 folder division, on the other. What prompts Engels' remark in the letter is a new mathematical formulation of electrical energy that confirms 'a general natural law of motion', which 'I have formulated for the first time'. When one type of motion is transmitted into another, say, mechanical motion into heat, electricity and so on, transmission takes place with a 'change of form' (Engels 1967b, p. 119). In Engels' view, this proves some kind of uniformity in nature, as the same behavior can be observed in mechanical motion. Here, he brings the ontic correlate of dialectical logic to the fore, with the former overshadowing the relevance of the latter.

In the same letter, Engels leaves open the point of reference of 'Naturdialektik'. Hypothetically, it can be related to what I have called so far the 'first project', or it can refer to his post-1880 inquiries into the forms of motion. The latter option seems more likely. Recall that two out of four folders bear lists of contents: these are the second and the third folders. The content of the third folder, titled 'Dialectics of Nature' (*Dialektik der Natur*), is divided into six sections, with the 'basic forms of motion' at the head, followed by 'Measures of Motion', 'Electricity and Magnetism', 'Natural Research and Spiritual World', 'Old Introduction' and 'Tidal Friction'. The second folder ('Natural Research and Dialectics') is divided into five sections: mathematical and mechanical conception of the in-finite, 'Old Preface to Dühring. On Dialectics', 'Transition from Ape to Man' and 'Omitted from "[Ludwig]Feuerbach"'. Except for 'Transition from Ape to Man' in the second folder and 'Old Introduction' in the third folder, all the manuscripts from both folders stem from the second and third projects. Note that the manuscripts, titled *Naturdialektik* in the first project, are not taken into the second and third folders. This indicates that Engels' remark on *Naturdialektik* in his 1882 letter probably

refers to his works on motion in the post-1880 period. Consequently, his aim to finalize *Naturdialektik* in 1882 can be taken to be related to the issues largely articulated in the *Plan 1880*, contained in the second and third folders, rather than in the *Plan 1878*, contained in the first and fourth folders. It is open to interpretation whether Engels' shift of focus from philosophical dialectics to kinetic theory of matter expresses a substantial change in his views or just a choice of a smaller number of issues with greater significance than others. Whatever the case, he left the ambiguities present in the *Plan 1878* unresolved.

I will now take up Engels' dialectics in the second project from the angle of the *Plan 1878* and the *Dialectics* manuscript, and then contrast it with the third project from the vantage point of the *Plan 1880*.

In the second project, Engels lists his 'dialectical laws' on two occasions: in the *Plan 1878*, we have four, whereas in the *Dialectics* manuscript we have three. After defining 'Dialectics' as the 'Science of Universal Inter-Connection' in the *Plan 1878*, Engels introduces the 'Main Laws': (1) 'transformation of quantity and quality', (2) 'reciprocal interpenetration of polar opposites and transformation into each other when carried to extremes', (3) 'development through contradiction or negation of the negation' and (4) 'spiral form of development' (Engels 1985, p. 173; 1987b, p. 313; translation modified).

The *Dialectics* manuscript, by contrast, suggests that the 'laws of dialectics' that are 'abstracted' from 'the history of nature and human society … can be reduced in the main to three': (1) 'The law of the transformation of quantity into quality and vice versa', (2) 'The laws of the interpenetration of opposites' and (3) 'The law of the negation of the negation' (Engels 1985, p. 175; 1987b, p. 356). The first three laws from the *Plan 1878* are abbreviated in the *Dialectics* manuscript. That the fourth law from the *Plan 1878* does not appear in the *Dialectics* manuscript stems perhaps from the reason that development is already mentioned in the third law of 'development through contradiction', which is then specified by the metaphor of 'spiral' in the fourth law. The *Dialectics* manuscript emphasizes that both natural and human history have these laws in common, whereas the *Plan 1878* does not make this point explicit.

A further distinction between these two manuscripts can be found in the characterization of dialectics. In the *Plan 1878*, the term 'dialectics' is defined as a singular 'science' of a singular 'universal inter-connection', specified by four laws (plural). In the *Dialectics* manuscript, this formulation is rendered as 'the general nature of dialectics as [a] science of inter-

connections to be developed in contradistinction to metaphysics' (Engels 1985, p. 173). The adjective 'universal' is dropped here and the singular science of dialectics is linked up with 'interconnections' in the plural. It is unclear whether plural interconnections *are* the main laws of dialectics or whether Engels is rather suggesting that the laws derive from existing interconnections. What both manuscripts have in common is that the talk of dialectics as a singular science contradicts the contention in *Anti-Dühring* that '[a]s soon as each special science is bound to make clear its position in the great totality of things and of our knowledge of things, a special science dealing with this totality is superfluous' (Engels 1987a, p. 26). The *Plan 1880*, unlike the *Plan 1878* and the *Dialectics* manuscript, follows *Anti-Dühring* in this regard.

The German metaphor *Zusammenhang* (interconnection) literally translates as 'holding together'. If laws in general, and dialectical laws in particular, do refer to natural entities that 'hold together' and if the explanation for these laws addresses the issue of why they hold together in the way that they do, then it is safe to say that interconnections *are* laws. The difficulty with this conclusion, in turn, is that Engels does not seem to mean a law when he speaks of a 'universal inter-connection' in the *Plan 1878*. What he might have had in mind is a philosophical principle that stands for the objective unity of nature or the world. This, he tries to keep apart from what he terms 'metaphysics' in the *Dialectics* manuscript.

One feature peculiar to the *Dialectics* manuscripts reveals itself in the correspondence that Engels inserts between his dialectical laws and Hegel's internal division of the *Logic*. Engels parallelizes the first two laws ('quality/quantity' and 'interpenetration of opposites') to the first two parts of Hegel's *Logic* (*Logic of Being* and *Essence*). As for the correlate of the third law ('negation of negation'), he mysteriously drops the third part of the *Logic* (*Logic of Concept*) and inserts Hegel's 'entire system' instead.[13] It is either a coincidence that the number of laws and the number of sections in Hegel's *Logic* do match, or alternatively, this highlights Engels' emphasis on Hegel's play with triadic structures in the *Greater Logic*.

The entire *Logic* is structured in a way such that each main section is divided into three chapters which are, in turn, divided into three subsections, respectively. The triadic forms are then reiterated in particular logical figures. For example, the *Doctrine of Being* consists of three sections (Quality, Quantity, Measure), with a threefold division of each section. The first chapter of the first section is divided into Being, Nothing and Becoming, the second chapter into Existence, Finitude and Infinity, and

finally the third chapter into Being-For-Itself, One and Many, and Repulsion and Attraction. The rest of the *Logic* follows the same triadic (sub-)division. We then have the logical figures of Position, Negation, Negation of Negation; or Immediacy, Mediation and Mediated Immediacy; or Identity, Difference and Identity of Identity and Difference; or Universal, Particular and Individual and so on. Engels may be trying to make a point about the importance or usefulness of the Hegelian triadic structures, but this does not explain why he singles out Quality/Quantity in the *Doctrine of Being* and the Opposites in the *Doctrine of Essence*, but then leaves the rest of both sections aside. Furthermore the *Doctrine of Concept* is structured by triads as well, but that is not considered a correlate of the third law. Of course, Engels may preserve the significant sections and rule out those parts that are irrelevant to his own inquiry. But this does not require a parallelization of the three laws to Hegel's *Logic*.

As I have mentioned before, the *Logic* is alternatively divided into two sections: *Objective* and *Subjective Logic*. Whereas Engels' first and second laws correspond to parts of the *Objective Logic*, *Subjective Logic* is dropped. This raises the question of how Engels relates his former distinction between 'subjective' and 'objective dialectics' to Hegel's system. We are provided with no insight as to whether the 'objective dialectics' correlates with Hegel's *Objective Logic*, on one side, and 'subjective dialectics' with the *Subjective Logic*, on the other; or whether both subjective and objective dialectics are conflated into a single correlate of the *Objective Logic*, whereby the *Subjective Logic* is regarded as a lengthy footnote to this parallelization.

The interrelations between the dialectical laws are not explicated either. On one side, it seems plausible to view the three or four laws as different aspects of the same super-regularity. But on the other side, this would make the distinction between the laws unnecessary. I am not aware of a single case to which, say, only the first law applies, although Engels was certainly most concerned with the first law, since he returns to the issue of quality/quantity more frequently than to the other laws. Quantity and quality (first law) are opposites that transition into one another (second law), in that an entity goes through certain stages of transformation characterized by those distinct features (third law).

Relatedly, one can question whether the laws are endomorphic or isomorphic. The laws can be interpreted to apply uniformly to everything that compounds reality (endomorphic) or they can be taken to apply to the constituents of reality in a modified manner (isomorphic). Endomorphism

suggests that the laws apply to reality by virtue of a singular or one-type super-regularity embodied uniformly within different parts of an all-encompassing whole. Isomorphism suggests that the laws can be said to apply under the condition that the differences between diverse regions of reality are acknowledged. In the isomorphic account, one must presume that the laws exert influence in diverse spheres of reality in a variety of forms. Different social or natural agents can embody strikingly similar behavioral patterns, despite the diversity of the fields to which they belong. On a certain level of abstraction, such patterns can be identical in terms of the forms of the structural relations that compound them. Both endomorphism and isomorphism can be derived from Engels' writings, but he does not proceed to guide us as to whether they are reconcilable or rather mutually exclusive.

The tension between endomorphism and isomorphism can be illustrated as follows. In an earlier manuscript (Ms. 160) from the second project, Engels claims that 'our subjective thought and the objective world are subordinated to the same laws' (endomorphism) (Engels 1985, p. 146). He neither divides these laws into different types, nor does he call them dialectical laws. In the next passage, he provides a definition of dialectics similar to that of the *Plan 1878* and concretizes the point of reference of the laws: 'dialectics as the science of the most general laws of *all* motion'. Similar to the *Plan 1878* and *Dialectics* manuscript, he regards dialectics as a single science. Unlike in the *Plan 1878*, dialectics as science stands here for laws in the plural, specified as laws of motion. In the same passage, he asserts that the laws of motion are valid, because they apply to 'the motion in nature and human history as well as the motion of thought'. Curiously, in the next sentence, he speaks of a single unspecified law that is said to apply to all three spheres. 'One such law' or 'one and the same law' can be 'recognized in all three [spheres]' (Engels 1985, p. 147). Assuming the single law here refers to motion in general, he indicates a super-regularity that is uniformly present in the three 'spheres' of reality. He does not mention what other laws of motion there are, nor does he clarify whether these other laws are considered particular laws subordinated to a super-law of motion in general. Motion itself is not defined either. But from the angle of the *Plan 1878*, 'the law' can be equated with what he calls 'universal inter-connection', with the four laws of dialectics defining different aspects of this super-regularity. That different spheres of reality are subordinated to the same super-regularity and its laws brings about the difficulty of distinguishing the different spheres. If they are

subordinated to the same laws, why should they be distinguished at all?[14] This problem exemplifies the dilemma of endomorphism.

Interestingly, Engels slightly modifies his 'three spheres' argument later. In the *Dialectics* manuscript, he speaks of two spheres, 'history of nature and human society', from which 'the laws of dialectics are abstracted' (Engels 1985, p. 175). He neither denies that motion takes place in human thought nor questions that human thought is subordinated to dialectical laws. But here he makes the function of human thought much clearer than anywhere else in that he ascribes to it the task of articulating the most general laws of dialectics and pointing out structural identities in different spheres of reality. This, he contrasts with the place of human thought in 'idealist philosophy': 'the world … [does not] ha[ve] to conform to a system of thought which itself is only the product of a definite stage of development of human thought' (Engels 1985, p. 175; 1987b, p. 356; translation modified).

The advantage of this formulation is that it does not claim from the outset that human thought is subordinated to the general laws of motion but rather explains why this is so: the object of investigation from which the laws of dialectics are derived is a 'moving target'; the open-ended nature of the objective world determines the open-ended character of the labor of subjective mind. However, the dynamic between subject and object of knowledge is not generated by nature's own history alone. Engels counts another factor: 'the influence of the activity of human being on its thinking'. '[I]t is precisely the *alteration of nature by men*, not solely nature as such, which is the most essential and immediate basis of human thought, and it is in the measure that human being has learned to change nature that his intelligence has increased' (Engels 1985, p. 22; 1987b, p. 511; translation modified).

'Intelligence' gathers information, orders knowledge and discovers uniformity in nature. Isomorphic structures in different spheres of nature are nothing but uniformities in nature and they find their subtle expression in analogies. If objective dialectics is tasked with discovering isomorphism in nature, analogies will define the affinity of subjective dialectics with it. Isomorphism informs analogies; analogies define subjective dialectics.

> [I]t is precisely dialectics that constitutes the most important form of thinking for present-day natural science, for it alone offers the *analogue* for, and thereby the method of explaining, the evolutionary processes occurring in nature, inter-connections in general, and transitions from one field of inves-

> tigation to another. (Engels 1985, p. 167; 1987b, p. 339; italics are mine)
> [Concerning] the unity of thought and being – it is undeniable that [dialectical] philosophy proved the *analogy* of the processes of thought to those of nature and history and vice versa, and the validity of similar laws for all these processes, in numerous cases and in the most diverse fields. (Engels 1985, p. 146; 1987b, p. 545; italics are mine).

The analogies between isomorphic structures in different spheres of nature constitute the heuristic function of dialectics, promising a fruitful potential for the methods of natural scientific research. Analogies are already widely used in natural sciences, but Engels' dialectical laws seem to refer to certain forms of analogies that have a much greater degree of generality than those in natural sciences, which is why they allow for isomorphism of relational structures in different fields of investigation. In this respect, what Engels draws attention to in the following passage can be asserted of the heuristic function of the dialectical laws as well:

> From the *analogy* of the substances with which we are acquainted in each of these series, we can draw conclusions as to the physical properties of the still unknown members of the series and, at least for the members immediately following the known ones, predict their properties, boiling point, etc., with fair certainty. (Engels 1985, p. 181; 1987b, p. 360; italics are mine)

The *Plan 1880* curiously drops the dialectical laws, which in turn leaves the tension between endomorphism and isomorphism unresolved, and thus casts doubt on the relevance of the analogies for which the dialectical laws will stand. The third project to which the *Plan 1880* belongs concentrates on '[t]he general law of exchange of form' of motion (Engels 1985, p. 226). Engels intends to derive particular transition forms of motion in nature from the general behavior of motion. To this end, he reintroduces his working conception of the 'transformation of one form of motion into another, mechanical into heat, electricity, chemical motion … either as transition of attraction into repulsion [or vice versa]' (Engels 1985, p. 184). The analogies still play a crucial role in finding isomorphic patterns in different spheres, but their application is constrained to physical motion. Note here that Engels speaks of the transition of one form of motion into another as 'the law' in the third project (Engels 1985, p. 230). He assigns no specific science to it, but given the list of contents of the *Plan 1880*, he probably has thermodynamics in mind. At some point, he mentions three important discoveries in the contemporary natural sciences:

'The first was … the discovery of mechanical equivalent of heat … [and] transformation of energy… the second [one] … is the discovery of organic cells', that is, the 'cell as the unit' with 'its multiplication and differentiation', and the third [was] 'the great discovery, theory of development, which was comprehensively worked out and substantiated for the first time by Darwin' (Engels 1985, p. 285). The latter two discoveries are not in the schedule of the *Plan 1880*. This raises the question of why 'the law' of physical motion, rather than the dialectical laws or biological discoveries, becomes the central category of the third project.

Engels seems to have decided to reduce the material to a manageable size by narrowing his focus to contemporary physical debates on matter, motion, energy and force. The Hegelian categories, such as force and manifestation or quantity and quality and so forth, are still referred to, if only sporadically. But following the theoretical parameters of dialectics may not have necessitated making this explicit to readers. After all, coping with philosophy-internal debates could have complicated this depiction to an undesired extent. This reason of economy would also explain why biological discoveries are left out. They are not unimportant; rather, they demand a much broader elaboration than a relatively short account of motion can cover. That Engels preferred separate rather than combined takes on different fields is also evident from the 1886 folder division. The list of contents of the third folder ('Dialectics of Nature') is unmistakably similar to that of the *Plan 1880*. The second folder ('Natural Research and Dialectics') is devoted to the mathematical and physical conceptions of infinity. The first ('Dialectics and Natural Science') and fourth folders ('Mathematics and Natural Science Diversa') contain materials on the old quarrels around metaphysics, dialectics, materialism, idealism etc. Given the content overlap of the *Plan 1880* and the third folder, and the similarity between the folder heading (*Dialektik der Natur*) and the *Naturdialektik* reference in the 1882 letter, it is worth asking why Engels ascribes primacy to motion and how he relates it to dialectics.

Philosophically, Engels' concept of motion can be read as a particular answer to what he was going to term in the *Ludwig Feuerbach* article 'the great fundamental question of all, especially the newer philosophy', that is, the question concerning 'the relation between thinking and being' (Engels 1962, p. 274). Those who initialize thinking rather than being, and assert the primacy of the former over the latter, were called 'idealists'. Engels' materialist 'reversal' of idealism operates with the Feuerbachian distinction. '[B]eing precedes thinking; in thinking, I reflect upon what I already

am without thinking: not a groundless [essence], but an essence grounded on an other' (Feuerbach 1960, pp. 215–216). Engels' concept of motion advances this view in that it specifies the particular content of 'being' in contradistinction to thinking. Already in the first project, he raises the issue of 'primacy' and tries to concretize its categorial correlate. 'The first thing that strikes us in considering matter in motion is the inter-connection of the individual motions of separate bodies, their *being determined* by one another' (Engels 1985, pp. 21–22; 1987b, p. 510).

> *Reciprocal action* is the first thing that we encounter when we consider matter in motion as a whole from the standpoint of modern natural science. … natural science confirms … Hegel … that reciprocal action is the true *causa finalis* of things. We cannot go back further than to knowledge of this reciprocal action, for the very reason that there is nothing behind to know … Only from this universal reciprocal action do we arrive at the real causal relation. In order to understand the separate phenomena, we have to tear them out of the general inter-connection and consider them in isolation, and *then* the changing motions appear, one as cause and the other as effect. (Engels 1985, pp. 23–24; 1987b, pp. 511–512)

Reciprocal action boils down to (matter in) motion, as the latter compounds the former. The *Plan 1880* as well as the third folder depart from the elementary structure of reciprocal action, that is, motion. In the manuscript *Main Forms of Motion* (Ms. 170) from the third project, Engels argues again for motion as the core structural unit of reciprocity with respect to the interaction between attraction and repulsion. 'How does motion present itself in the interaction of attraction and repulsion? We can best investigate this in the separate forms of motion itself' (Engels 1985, p. 190; 1987b, p. 365). In the earlier as well as later stages of his work, he proposes to realize this goal by deriving 'particular forms' (*Nebenformen*) from 'higher' (*höhere*) (Engels 1985, pp. 24–25) or 'main forms' of motion. To this end, he works with isomorphic structures of different forms of motion. The first project offers such a structural unit: 'motion emerges in opposites' 'their final passage into one another, or into higher forms' (Engels 1985, p. 48).

In the later stages, Engels significantly shifts his focus from interconversion of different forms of motion to 'the law of the equivalence of motion', that is, 'the basic law of quantitative equivalence of motion in its all transformations' (Engels 1985, pp. 275, 244–245). 'Quantitative equivalence' of qualitatively different forms of motion is the Hegelian 'nodal point'

that intermediates the process of generation of one type of motion by another. When one form of motion emerges from another one that precedes it, what the posterior 'manifests' is quantitatively equal to, but qualitatively different from, the prior. If this proposition is true, and if it can be generalized to all forms of motion, then one can conclude that 'dialectics applies to nature' in Engels' sense of these terms. In the 1880s, Engels was largely concerned to meet the material premises of the above proposition. It was perhaps the conclusion to the same proposition which the term *Naturdialektik* in the 1882 letter, and the title of the third folder (*Dialektik der Natur*), were meant to refer.

Notes

1. Alternatively, Kedrov believes that Engels' point of departure is to be found in 1840s, with his first encounter with natural sciences and philosophy of nature. Liedman, by contrast, argues that *the* project starts in July 1858, when Engels asks Marx to send him a copy of Hegel's *Philosophy of Nature*, emphasizing its promising potential for chemistry, biology and physiology. Gemkow, to name another interpretation, points to the earliest manuscript (1873) as the beginning. Cf. Kedrov (1979, p. 443), Liedman (1986, p. 99), Gemkow (1988, p. 447) and Engels (1983, p. 326).
2. Abbreviations in columns from left to right: 'Phase': phase of writing; 'Ms. no.': manuscript number; 'Date': date of when the manuscript was written; 'folder content': which manuscripts are contained in which four folders; 'ND no.': which manuscripts bear the headings *Naturdialektik* 1-11 and *Naturdialektik references*. Note here that all data rely on MEGA² editorial commentary. Contrary to the editors' preference to divide the writing phases into two large periods (1873–1878 and 1878–1882) with four subperiods respectively, I find it more plausible to divide the writing process into eleven phases measured against Engels' writing breaks. The editors fail to make clear why 1882, rather than 1886, is taken to be the final year of *Dialectics of Nature*. I suggest, by contrast, to consider the piece on Ludwig Feuerbach and the folder arrangement to be part of Engels' undertaking. It goes without saying that, when moving archives or using singular texts for printing purposes (Bernstein et al.), a manuscript/folder mix-up is always possible. This concerns the question of whether Engels' hand was in fact the last hand that arranged the folders' content.
3. Italics are mine.
4. Here, I ignore the distinction between spiritualism and idealism as well as the distinction between profane and theological spiritualism. Arguably Hegel is a proponent of both spiritualism and idealism. But this issue is

subject to another study on what grounds and under which premises they were linked up with one another in Hegel's system and how this arrangement was interpreted by Engels and Marx.

5. Grammatical irregularities here and elsewhere stem from Engels' manuscripts in German.
6. *Schein* in German is alternatively translated as illusion. Hegel distinguishes it from *Erscheinung* (appearance).
7. This is the only manuscript in *Naturdialektik* in which Engels explicitly articulates a real contradiction. Engels usually speaks of contradictions in the sense of theoretical inconsistency or error. Cf. Kangal (2019, p. 226). 'Attraction and repulsion' are called 'opposites' elsewhere in *Naturdialektik*. Cf. Engels (1985, p. 48).
8. Here, Engels relies on Newton's convention, when he speaks of 'tangential force'. There is no such 'force' but only a relative tendency of the orbit to fly away from the central body.
9. Recall here that later in *Anti-Dühring*, Engels proposes another contention: 'motion itself is a contradiction'. Engels (1988, p. 318).
10. It is therefore paradoxical to characterize the principle of contradiction, as the pre-critical Kant does, as 'valid … without regard to any object'. Without the concrete content of the subject of which the opposites are predicated, the logical and dialectical oppositions remain indistinguishable. Cf. Kant (1923, p. 195; Arndt 2004a, pp. 113–114).
11. At a certain point, Engels also makes a distinction between active and passive sides of motion, though he does not apply it to elliptical motion. Cf. Engels (1985, p. 183).
12. Here, I use Robert Stern's translation. Cf. Stern (2009, p. 63).
13. I doubt that by the 'entire system' Engels meant Hegel's triad of *Phenomenology*, *Logic* and *Encyclopedia*, as he confines himself here to the *Logic*.
14. This is not to say that Engels denies a difference between natural and social systems. He employs human will and consciousness as solid criteria in order to distinguish the social from the natural. Cf. Engels (1967a, p. 464) and Engels (1962, p. 296).

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CHAPTER 6

Conclusion: What Is Dialectics of Nature?

In my closing argument, I will address the question of what the posthumous title of Engels' project might actually mean. To be sure, there is no straightforward answer to it, because any attempt to answer it demands an articulation of the perspective from which the very question is posed. It goes without saying that those whom Engels claims to be the precursor of his dialectics may have an approach to offer that does not necessarily coincide with Engels' own account. Depending on the conceptual framework and the categorial tools which that framework employs, one can derive unexpected meanings from a phrase like 'dialectics of nature'. The question concerns not only the term 'dialectics' and its 'application' to nature, which might be conceived in a variety of ways, but also metaphysics, idealism or materialism, within which 'dialectics of nature' could attain a multiplicity of functions. However inconvenient, we have to reckon with the further difficulty of Engels' changing semantics throughout the entire undertaking, from the first *Naturdialektik* (first project) to the second *Naturdialektik* (the 1882 letter) and on to *Dialektik der Natur* (the third folder).

Looking back at past protocols, it can be discerned that the Engels debate directly contributed to the posthumous evolution of the relevant bundle of manuscripts from a torso into a 'book'. When taking sides, friends and foes of Engels not only wrote the history of reading 'the book' but also shaped a political battlefield. 'Dialectics of Nature' was treated as the center against which current political positions were measured.

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Accordingly, ideological functions were ascribed to 'the book' anew, by means of which the coordinates of the philosophical arena were mapped out, opposite camps were located, and political fronts were distinguished.

Regrettably, a war of this sort did not allow for an ideal way of appealing to the philosophical problems that could have been addressed otherwise under different circumstances. One disadvantage of the ways in which the Engels debate was carried out is this: those involved in the debate appear to be unprepared to acknowledge unpleasant surprises. Both pro- and anti-Engels camps are invariably intolerant of the possibility that the ways in which they perceive Engels' dialectics from their present vantage point may not be in accord with what the text itself has to offer and what the author has to say in it. More often than not, we encounter a type of reader who is impatient with the laborious task of inquiring into Engels' own dialogue with past and present philosophers, or into his response to an audience, postulated or otherwise.

I suspect an unreadiness behind this impatience: since the text is always less than what the author thought or implied, and later readers are at liberty to work their own ways to the problem field as drafted by the author, the text is open to interpretation to such an extent that it allows in principle for a very wide range of conceptions from shared views to the fiercest of controversies. On one side, it is hard to imagine anyone denying that philosophical terminology and argumentation are text- and context dependent. On the other side, there is an invariant ignorance of the textually and contextually changing semantics of dialectics as in the Engels debate. To my astonishment, no disputant seems bothered about the potentially disturbing questions as to what Engels might have meant by 'Dialectics of Nature', whether he distinguished it from *Naturdialektik*, if any of these terms coincide with the editorial titles given to Engels' work, how these terms were coined by the proponents and opponents of natural dialectics in contradistinction to Engels' usage, and finally, whether his precursors may have anything to say that is new or other than what Engels and his readers have already said. Past readers of Engels do not seem to be ready to admit that there is not necessarily a single overriding intention, a single goal, and a single argument in his entire undertaking; Engels' readers do not appear to be prepared to accept the fact that some of his intentions, articulated or otherwise, might be incomplete, or incongruent with his other intentions, goals and arguments.

Therefore my methodological suggestion has been to focus largely on Engels' macro- and micro-intentions, implicit or explicit, to concentrate

on what he argues for and against, and to consider what procedures he follows when he does so. This approach stems from my conviction that the whole point of any debate is to develop a problem-consciousness, to clarify the issues at stake, and to bridge the divide between formulating and solving contradictions in theory. It is contradictions that give rise to debates. Any hesitation to admit them undercuts all the good reasons for a debate. If there were no contradictions, then there would have been no point to any debate. I see no reason why a theory of contradictions should be exempted from examining contradictions of the same theory. Theoretical progression takes place by means of contradictions. If some scholars tend to view contradictions as a sign of weakness, they are oblivious to the fact that contradictions have an enabling, rather than disabling, effect on scientific progress. At least we know that this is how Engels thought scientific progress works. Engels' own theory is no exception in this regard.

Considering how Engels relates himself to his readers is a very demanding task. We are expected to read whatever he has read more critically than he has ever done. Put it in negative terms, Engels can be said to believe that reading him less critically than he read himself is not a virtue but a defect. Those who fail to fulfill this task are 'bad students' at best.

To the best of my ability, I have enforced the argument that Engels' account of dialectics has the merit of posing, rather than solving, the problems which I tried to expose. By trying to solve some of the older problems of philosophy, Engels provides us with a better set of new questions. If Marx ever disagreed with his aim, for which contention there is no evidence, then I would boldly claim that Marx would have been wrong. However, there is not only no textual basis for Marx's alleged disagreement with Engels on any of the previously discussed issues, all the textual evidence points to full agreement between both men. What is unknown is the precise degree of their agreement. If there were indeed any 'difference' of opinion, that would have been an internal contradiction of a common theory rather than a conflict between the private views of two individuals, 'exploiting' each other to the ends of perverse self-satisfaction.

Because both Engels and Marx have a common worldview upon which they developed common estimations on questions concerning materialism, idealism, metaphysics and dialectics, all the skepticism which I have displayed against Engels' intentions applies fully to Marx's texts as well. From the angle of Marxist theory, we have no reason to believe that whatever Engels and Marx said about previous philosophies counts as final. After all, incompleteness is a built-in feature, and self-correction is a

built-in demand, of Marxist theory. Admitting this requires an admission of present contradictions and ambiguities of theory, which, in turn, constitute the very precondition of resolving them by the same theory.

Having said this, the admission of theoretical contradictions relies upon whether or not there is indeed any particular contradiction to admit. This is to say that one has to justify that there is this or that contradiction remaining yet to be resolved. In order to meet this demand, I decided to use Engels' intentions and goals, against which I measured his actual procedures. It is this approach that allows me to point out what I take to be Engels' ambiguities.

My guiding thread stems from my conviction that dialectics and materialism are not irreconcilable opposites but rather positive complements of specific forms of idealism and metaphysics. I developed a plea for this view under the premises suggested above, and I was able to do so on the basis that I am distinguishing between intended and unintended meanings in Engels' propositions. In this regard, I would say that I do follow some sort of hermeneutical rule suggested by Marx: in an 1879 letter, Marx (1966, p. 506) emphasizes how important it is to 'distinguish what a particular author actually says from what he believes he say'. I would add that one has to distinguish between what an author might have thought she is saying, to what extent an author believes her inner speech to be realized in the text, what we as readers believe we understand of what is said in a text, and how the text could be conceived of in alternative editorial settings. This is the hermeneutical distinction that I have adopted and applied to Engels' text.

Returning to my initial question, I will recapitulate my views in a perspectival fashion. With the material provided in the above chapters, I will (1) construct potential responses of Aristotle, Kant and Hegel to the question of 'What is Dialectics of Nature?' in terms of the application of dialectics to nature, (2) resituate these responses within the settings of Engels' project, (3) revisit the Engels debate and (4) summarize the 'incompleteness theorem'.

Aristotle, Kant and Hegel

Aristotle: Two possible scenarios apply to Aristotle's account: a dialectical conception of nature (a) with, and (b) without, real contradictions. What both scenarios have in common is a setting of disputation: a proponent and an opponent defend views incompatible with each other. The ontic

correlate of both propositions presumably refers to *physis* as a natural totality, to emergence of one natural entity from another, or to the essence (*ousia*) of natural things. Propositions here are strictly confined to probable opinions void of philosophical or absolute truth. Insofar as a proponent tends to disprove an opponent's claim with respect to *physis*, opposite propositions partially satisfy the condition of logical contradiction. However, since the rhetorical function of dialectics is to win an argument with an air of truth, dialectical opposition fails to correspond fully to a logical contradiction. A logical contradiction requires more than a probable argument. For instance, when something is said to be pale and non-pale, the contradiction between both propositions must attain a definite degree of certainty. Thus, logical contradiction does not allow for a convenient setting for displaying dialectical opposites.

Under the premise of a partial correlation between dialectical opposition and logical contradiction, one can ensure the dialectical character of Aristotle's first three opposites ('relatives', 'contrary' and 'privation'). Accordingly, when the opposite sides of, say, 'relatives', are asserted of the same subject in the same respect, a logical contradiction is generated. Knowledge and the knowable are relatives. Knowable is an object of knowledge. Knowledge is the outcome of a cognitive activity. When knowledge and the knowable are taken to refer to, say, the objective side of the relation only, one is confronting a contradiction. In order for dialectics and logical contradiction to apply to this case, there must be a discordance relating to an alleged mismatch between opposites, or between opposites and subject.

The second scenario requires a logical contradiction, a probabilistic dispute and a real contradiction. Real contradiction serves as a cognitive instance from which a logical contradiction is derived and based upon which a dialectical dispute takes place. Aristotle's exceptional case of real contradiction suggests a process of change from non-pale to pale that involves contradiction. That a contradiction is involved in the process of change does not suffice for this case also to be dialectical. In order for dialectics to apply to it, two parties must disagree on the status of the process of change.

The difficulty of this scenario reveals itself in the interrelation between logical and real contradiction. For instance, if one party claims that an entity does not change from non-pale to pale, while an opponent believes otherwise, the former not only denies the process of change: that very denial amounts to a denial of the structural components that stand and fall with the real contradiction. Therefore, logical and real contradictions do

not hold together in the same case. However, they do hold separately. Logical and real contradictions are mutually exclusive. That logical contradiction holds, leaves no room for real contradiction, and conversely. When logical contradiction is dismissed, the dispute-setting of probabilistic dialectics is endangered. This is to say that if real contradiction is involved in the act of change, logical contradiction and dialectics do not hold. However, dialectics and logical contradiction hold together if real contradiction is dismissed.

The Parmenides-Zeno account, which Aristotle strictly contests, argues for a strong correlation between logical and real contradictions. In their understanding, predication of a process of change inevitably involves opposites asserted of the same subject in the same respect. One opposite (pale) is opposed to another (non-pale) in that the former denies the truth content of the latter. Yet, they both hold, for they refer to real aspects of an existing entity. This characterization satisfies the condition of a logical contradiction. Since opposite predicates express opposite features of the same entity, logical contradiction finds a real correlate in nature. The Parmenides-Zeno account does not involve dialectics for good reasons. If it did, they would have asserted that their claim is merely probable rather than scientifically true. The preferable option for Parmenides and Zeno would be that dialectics does *not* apply to nature. In Aristotle's view, by contrast, the Parmenides-Zeno mixture of logical and real contradictions is void of truth, a rhetorical tactic to win an argument. To this end, he would charge them with applying dialectics to nature. Moreover, Aristotle keeps the first three types of opposites apart from dialectics and contradiction. If these opposites apply to nature, they do so without dialectics and contradiction. It is therefore an undesirable option for Aristotle to apply dialectics to nature.

Kant: 'Dialectics of Nature' enters a different terrain in Kant. For different reasons, Kant can claim that (a) dialectics applies to nature and (b) dialectics does not apply to nature. If nature is taken to be a synonym of the world, a traditional object of *metaphysica specialis*, and if opposite predicates such as finite and infinite are asserted of nature under the mistaken premise that nature is a thing in itself, then the logically contradictory predicates pass over from logical to dialectical opposition. However, if nature is not taken to be a synonym of the world or to be any other traditional object of *metaphysica specialis*, then dialectics does not apply to nature.

It is in principle possible to assert false predicates of nature. That both opposite predicates mismatch the subject would satisfy the formal criterion of dialectical opposites. But this does not suffice to apply them to metaphysical objects of investigation. Suppose that nature is predicated of two opposite and false predicates. Put formally, this generates a dialectical case. But the fact that both predicates are false does not satisfy the condition of logical contradiction, because logical contradiction requires that one of the predicates be true while the other predicate be false. Since dialectics requires both predicates to be false, it also demands that both predicates be non-real. In short, logical opposites are neither dialectical nor real. Dialectical opposites are neither contradictory nor real. Real opposites are neither contradictory nor dialectical.

Kant warns us in this regard not to confuse logical contradiction with real opposites. For instance, the act of change from non-pale to pale involves two real opposites. Real opposites do hold insofar as they are logically noncontradictory, because if they were contradictory, they would have been non-real, or at least one of them would have had to be false or nonexistent.

Dialectics is expressive of a mistaken predication of a metaphysical object. Kant speaks of dialectics under this condition: something that does not exist as a thing in itself must be mistaken for a thing in itself because predicates mismatch the subject. If nature is a synonym for the world, and if nature is mistaken for a thing in itself by means of the predication of two opposites such as finite and infinite, then dialectics applies to nature.

One passage from Kant's *Critique of Pure Reason* points out a distinction between world and nature. This distinction is decisive as to whether dialectics applies to nature.

> We have two expressions, world and nature, which are sometimes run together. The first signifies the mathematical whole of all appearances and the totality of their synthesis in the great as well as in the small, i.e. in their progress through composition as well as through division. But the very same world is called nature insofar as it is considered as a dynamic whole and one does not look at the aggregation in space or time so as to bring about a quantity, but looks instead at the unity in the existence of appearances. (Kant 1998, pp. B 446–447 / A 418–419)

Nature is understood here as a specification of the world by means of the total sum of *appearances*. Since the appearance-character of nature forbids us to consider nature a thing in itself, a certain way of violating this

warning would satisfy the application of dialectics to nature: attachment of finite and infinite to nature as a thing in itself. However, the same specification can be viewed as a characteristic feature of nature, distinguishing it from the world as a metaphysical object. This would make nature a non-metaphysical object. Consequently, the possibility of applying dialectics to nature would be ruled out from the outset.

Logical and real opposites are not decisive as to whether dialectics applies to nature. Real opposition applies to nature under the condition that dialectics does not apply to nature. The same case also requires that real opposites are noncontradictory. If they were contradictory, they would have been (potentially) also dialectical, but certainly not real.

Hegel: Hegel's account permits (a) phenomenological, (b) logical and (c) nature-philosophical responses to the application problem of dialectics. The logical response is open to variegated versions from the angle of (b1) *Logic of Being*, (b2) *Logic of Essence* and (b3) *Logic of Concept*. The summary below roughly illustrates them.

Phenomenologically, opposite predicates that are asserted of, say, the process of change from pale to non-pale are distinct or 'out of each other' (*außereinander*). As far as they remain distinct opposites, pale and non-pale build 'abstract' opposites. However, when they are shown to reciprocally constitute each other, in the sense that the posterior opposite emerges out of the prior one, opposites receive the seal of dialectics. The phenomenal side of their distinctiveness is complemented by the logical aspect. The latter stands for the interconnection underlying the relation of emergence between two opposites. When the prior can be said to contain what would potentially follow it, and when the posterior manifests the particular given which precedes it, the opposites attain a new meaning. Abstract opposites are 'understanding-related' (*das Verständige*). The 'dialectical or negatively rational [*vernünftig*]' points to the moment of 'their transition and resolution'. The final aspect of opposites consists in 'the speculative or positively rational', that is, the 'unity' of opposites 'in their opposition [*Entgegensetzung*] or the positive within resolution and transition' (Hegel 1986b, p. 12). From the phenomenological perspective, dialectics applies to nature when one opposite brings about another one. Speculation applies to nature when the opposites enact a reciprocal manifestation.

The *Logic of Being* is devoted to working out the particular forms of transition of one opposite from another, in that it abstracts logical forms from the phenomenal content of natural (or social) entities. The *Logic of Essence* is reserved for elaborating the forms of manifestation or reflection

of opposites. The *Logic of Concept* is assigned the task of articulating the methodological guidelines that serve to figure out the logic-internal interconnections. These interconnections bring about the totality of thought determinations. The title given to the conceptual totality is the 'Idea'.

The *Greater Logic* in its entirety does not apply to nature because it is not supposed to apply to anything other than to itself, namely to logic. The *Logic* investigates the logical thought determinations which it brings about within the very process of logical thinking. The objective of the *Logic* is abstract, in the sense that its categories are abstracted from their phenomenological content-determinations. This makes the *Logic* a formal science, or a science that investigates the forms of the procedures of a categorial evolution, from the *Logic of Being* via the *Logic of Essence* to the *Logic of Concept*. Dialectics and speculation compound two crucial micro-moments of this logical evolution. It is therefore self-evident that dialectics and speculation apply to logic, as they arise from the very procedures of logical thinking.

Logic or the *Logic* can be said to apply to nature only in the (loose) sense that the logical categories inform the categories of Hegel's philosophy of nature in the *Encyclopedia*. The way that Hegel configures the relation between logic and nature is primarily a negative one: nature as the *non*-logical correlate makes up the negative opposite of logic. As the two sides of the relation of 'being out of each other' (*Außereinandersein*), logic and nature embody 'abstract opposites'. Hegel ascribes some sort of 'life-giving' function to logic in its relation to nature, for nature without logic amounts to a total sum of 'dead' entities, void of its own ground. Hegel employs the term 'externalization' (*Entäußerung*) in order to highlight the way that logically predetermined categories shape the ontic forms within which natural entities exist. In other words, logic represents the cognitive instance in which form-determinations of ontic structures are constituted.

Dialectics might be said to apply to nature only at the moment when the process of externalization is still in progress. However, when this procedure is completed and nature can finally be viewed as a mirror, fully reflecting logic within itself, speculation can be applied to nature. Before the externalization process has started off, nature 'does not correspond to its concept; it is rather the *unresolved contradiction*' (Hegel 1986a, p. 28). Establishing the speculative relation between logic and nature resolves this contradiction.

The contradiction between logic and nature is not to be confused with logic- or nature-internal contradictions. Contradictions embody a union of opposites. The development of the interrelation between opposites (in logic and in nature) brings about their union, that is, contradiction. If the very act of transition of one opposite into another is termed 'dialectical', the result of this process is expressed by contradiction. The speculative moment arises from the resolution of contradictions. Relatedly, dialectics can be applied to nature in the sense that it marks the intermediary aspect between abstract and speculative moments within the process of transition of one opposite into another. The ontic forms within which this natural process takes place are (pre)determined by logic. Accordingly, if it is accurate to term the nature-internal moment of dialectics 'dialectics *in* nature', then the natural totality as the complementary opposite of the *Logic* can be called 'dialectics *of* nature'.

Having said this, from the angle of *Encyclopedia,* it is a tautology to assert that dialectics applies to nature because—whatever logical element under the heading of 'dialectics' is believed to apply to nature—has been originally derived from nature. To apply (logical) dialectics or speculation to nature is to iterate what has already been obtained but in the reverse order.

Engels in Dialogue with His Precursors

I argue, rather paradoxically, that Engels' application of dialectics to nature is compatible with the opposite contention in Aristotle, Kant and Hegel that dialectics does *not* apply to nature. Aristotle would be concerned not to apply 'dialectics' (in the Ancient Greek sense) to nature if his teaching of opposites claims scientific truth rather than a rhetorical point. Engels could not agree more. In Kant's account, (transcendental) 'dialectics' does not apply to nature if nature is a nonmetaphysical totality. This conforms to Engels' intention to diminish all metaphysics. Hegel views speculation, not dialectics, as final. If the point is to prove unity of opposites, and therefore resolution of contradictions in nature, it does not suffice to show that one opposite transitions into another. What is decisive is whether or not the prior and posterior make up the two ends of reciprocal manifestation. Engels follows that line of reasoning.

Since the latter aspect in particular matches Engels' dialectics, Hegel would expect to receive Engels' support in applying speculation, not (just) dialectics, to nature. Engels, in turn, is arguably generous enough to encourage Hegel to do so. Nevertheless, Engels dismisses the term

'speculation', probably because he associates it with idle theories that fail to work with empirical evidence. In so doing, he can accommodate both Hegel's thought determinations and his own insights into the material determinations of kinetic forms of natural motion. Engels' choice of words may not capture the scale of Hegel's ambitions, but he can at least secure himself from falling into the snares of idealism.

On the terrain of what Hegel and Engels call subjective dialectics, Aristotle links dialectics to opposites and contradiction. That Aristotle asserts that there are real opposites and contradictions in nature does not indicate that they are also dialectical. If he had spoken of a dialectics of nature, this would have been limited to the interpretation of, and dispute over, nature, without any further claim of an objective dialectics in nature. In a similar vein, Kant claims that there are real opposites that are neither contradictory nor dialectical. In comparison to Aristotle, Kant is less ambiguous, in that he rules out real contradictions, because they apply to logical oppositions only. But this does not make them necessarily dialectical. In other words, logical oppositions are subject to contradictions, but not all logical oppositions are dialectical. Kant could have spoken of a dialectics of nature, though not in the sense that there are real opposites in nature. Engels favors Hegel's account most of all because the latter claims that there are real and logical oppositions and contradictions. Opposites are structural elements of contradictions. Opposites that are not unified remain opposites; those that are unified constitute a contradiction. For Hegel, the aspect of negativity or exclusion refers to dialectics, that of positive and negative or unity of opposites to speculation.

The previous philosophical treatments of opposites and contradictions certainly constitute demands on Engels' dialectics, as his undertaking indicates a substantial reconfiguration of these 'dialectical' categories. But he believes that he meets these demands by outlawing metaphysical and idealist commitments to dialectics. The problem with this maneuver is that the bits of what he takes to be problems, posed by the pioneers of metaphysics and idealism, are generalized to the extent that he rejects both traditions wholesale. Why, then, do not materialism and dialectics share the same destiny? This objection is justified insofar as we are offered no explanation as to why we *must*, or whether we *can,* undercut the *need* for any metaphysics and idealism at all. The same objection is justified also from Engels' perspective, because he summons up the criterion of 'sublating' past philosophies 'on their own terms'. Yet, he does not judge the proponents of the schools, who are under attack by their own standards,

in order to make them give up the traditions to which they belong. In effect, Engels remains unarmed against a potential overthrow of his materialist enterprise. He renders up sufficient material for this scandal.

Hegel, for instance, would not have to struggle very much to categorize Engels' materialist dialectics as a form of metaphysics and idealism. Except for Engels' atheist challenge to Hegel's creationism and to his 'externalization' argument, there is no obvious divergence between materialism and idealism. I do not refer here simply to Engels' overall positive, if limited, usage of Hegel's *Logic* and *Encyclopedia*, or to his perception of Hegel's idealism as a 'hidden' materialism. I have in mind the more crucial aspect of Hegel's definition of idealism and its congruence with Engels' materialism.

If idealism is defined in terms of the ideality of the finite as encompassed by the infinite, and if Engels assigns materialism to the particular scientific investigation of the finite aspects of an infinitely self-developing totality, then Hegel would conclude that the objective of materialism squares with an internal aspect, that is, the finite specification of the infinite. Hegel and Engels diverge in the following respect: materialism regards nature as a self-grounded totality with its own history, while this is denied by idealism. Idealism presumes a 'Spirit' that precedes nature into which it 'externalizes' itself. Engels has no reason to commit himself to Hegel's religious mysticism, but this, in turn, is no sufficient reason to discard 'idealism' in Hegel's sense of the term. Discarding 'idealism' amounts to dismissing a philosophical conception of the infinite. This goes against the grain of Engels' intentions, for he holds that motion and development in nature are actual proofs for the infinite in nature. By advancing *another* concept of infinity that is different from Hegel's, Engels returns to a problem field which he tried to escape in the first place. In other words, idealism makes a comeback, and this is bad news for Engels.

Had Engels decided in favor of a materialist-idealist alliance, he could have argued as follows. The infinite stands and falls within the area of idealist investigation insofar as it is not subject to finite empirical observations of particular natural sciences. The infinite is the total sum of infinite thought determinations of material reality within which its finite aspects make manifest the unifying whole. The materialist conception of the whole-part relation takes nature into account as a self-developing totality. Infinity, totality or 'universal inter-connection' are intelligible only by means of constructing a non- or trans-empirical[1] system of concepts, with the category of 'Idea' at the head. The *ontic* correlate of the *logical* 'Idea'

is nature as a whole. This correlation promises a fertile ground for establishing an ontology under the premise that the logical framework adopts a series of interconnected structures that are isomorphic with that of the internal differentiation, specification and development in nature. While materialism affords ontological answers to the questions that concern finite spheres of nature, idealism is assigned to the task of working out the interconnections between diverse finite fields as internal specifications of an all-encompassing whole. This is to say that, in principle, a 'local materialism' can cooperate with a 'global idealism'. Nevertheless, Engels did not go this far.

As for metaphysics, Engels' semantics is equally problematic, as it points in very different directions, allowing for a multiplicity of interpretations. Typically, Engels employs 'old metaphysics' and 'metaphysics' interchangeably, although they correspond to different philosophical streams. While the former refers mainly to the Leibniz-Wolff school, the latter encompasses the subsequent German Idealist tradition. Kant and Hegel famously attack the flaws of 'old metaphysics', but Engels takes the anti-dialectics of the old metaphysics to represent the defects of metaphysics as a whole. This view contradicts his alliance with Hegel, and it casts a shadow over his criticism of Kant's dialectical metaphysics. Conspicuously, Engels' defense of philosophy against positivism is a defense of 'metaphysics'. Since he does not differentiate particular positions within the metaphysical tradition, he fails to clarify his dialectical criticism of metaphysics. This indistinction, once again, damages his collaboration with Hegel. Contrary to Engels, Hegel provides us with a clear definition of metaphysics:

> What distinguishes the Philosophy of Nature from physics is … the kind of metaphysics used by them both; for metaphysics is nothing else but the entire range of the universal determinations of thought, as it were, the diamond net into which everything is brought and thereby first made intelligible. Every cultured consciousness has its metaphysics, an instinctive way of thinking, the absolute power within us of which we become master only when we make it in turn the object of our knowledge. Philosophy in general has, as philosophy, other categories than those of the ordinary consciousness: all cultural formation [*Bildung*] reduces to the distinction of categories. All the revolutions, in the science no less than in world history, originate solely from the fact that Spirit, in order to understand and comprehend itself with a view to possessing itself, has changed its categories, comprehending itself more truly, more deeply, more intimately, and more in unity with itself. (Hegel 2004, p. 11; translation modified)

Engels has every reason to take full advantage of metaphysics as such, except that he does not acknowledge 'Spirit'. 'Spirit' is the agent that transforms the subject matter of metaphysics. It is the categorial schemes of metaphysics within which relational structures of the real world become subject to rigorous and systematic representation.

> Empirical natural science has accumulated such a tremendous mass of positive material for knowledge that the necessity of classifying it in each separate field of investigation systematically and in accordance with its inner inter-connection has become absolutely imperative. It is becoming equally imperative to bring the individual spheres of knowledge into the correct connection with one another. In doing so, however, natural science enters the field of theory and here the methods of empiricism will not work, here only theoretical thinking can be of assistance. But theoretical thinking is an innate quality only as regards natural capacity. This natural capacity must be developed, improved, and for its improvement there is as yet no other means than the study of previous philosophy. In every epoch, and therefore also in ours, theoretical thought is a historical product, which at different times assumes very different forms and, therewith, very different contents. The science of thought is therefore, like every other, a historical science, the science of the historical development of human thought. (Engels 1985, p. 167; 1987, pp. 338–339)

From Hegel's point of view, Engels' attempt to diminish metaphysics is diametrically opposed to the above passage. What is more unfortunate is that Engels undertakes this task under the heading of 'dialectics', claiming to be in full conformity with Hegel's. Engels' ambiguity comes into view most clearly in the first and second projects, and particularly in the *Plan 1878*. Given his negative assessments of metaphysics and idealism even in the third project, he does not seem interested in resolving the aforementioned contradictions, probably because he did not view them as serious problems worth dealing with. More curiously, he drops the Hegelian issues in the third project by narrowing his scope to forms of motion. If, in the late stages of his work, he believed he was leaving metaphysics and idealism behind, Hegel would object that Engels was fooling himself: there is no escape from metaphysics and idealism. Engels might have been what Lenin termed a 'materialist friend' of idealism, but from Hegel's angle he is not a very reliable one.

From the angle of Engels' first project (*Naturdialektik*), 'Dialectics of Nature' can be defined as a historically self-developing totality that is

structured by contradictory unity, reciprocal generation, transition and manifestation of opposites in nature. This line of reasoning conforms to the Aristotle-Hegelian tradition insofar as it follows the Hegelian mereology of whole-parts: whole and parts are not disparate qualities; rather, parts are specifications of the whole within which a mutual generation and manifestation between parts and whole take place. As opposites, parts and whole are best characterized in the Aristotelian term of *megiste diaphora* (greatest difference) between opposites within the same genus. Natural phenomena are subject to natural laws only, without recourse to extra-natural causes. Whatever happens in nature is an internal differentiation of the whole that encompasses it. That natural agents are co-determined by the actions they realize and the circumstances they transform proves that parts and whole constitute an opposition between two ends of the same genus—they are 'direct opposites' (*enantiosis*) linked up by intermediating elements (*metaxy*).

The second project defines this 'whole' as 'universal interconnection'. 'Dialectics' as a singular science is assigned to the task of figuring out the essential features of the 'whole'. Particular sciences are subordinated to 'dialectics', with a focus on the modes in which dialectical laws are particularized in each natural sphere. Engels does not arrive at a definite number of dialectical laws. He reduces them from four to three in the *Plan 1878* and *Dialectics* manuscript, but he certainly works with more than three or four opposite pairs. It is unclear whether dialectics is a super-science above all sciences, following the 'universal interconnection' (in singular) at the head of all particular interconnections (in the plural), or whether it is rather a singular abbreviation of the multiple interrelations between interconnections (in the plural). If it is a singular abbreviation, this would change the theoretical status of dialectics from endomorphism to isomorphism, as his remarks on analogies indicate.

That the third project drops the dialectical laws, as well as the singular-plural dialectics of the second project, implies paradoxically that Engels either changed his mind about the subordination of particular sciences to philosophical dialectics, or that he proceeded to take forms of the transmission of motion and development as further specifications of the same mereological framework. Engels' manuscripts offer no final answer on this ambiguity.

The third folder (*Dialectics of Nature*) is quite in line with the third project, carrying out the same unresolved issues peculiar to the third project. The second folder, as we have seen, returns to the infinity problem,

but the questions concerning Hegel's idealist realism presumably fell outside Engels' scope. Philosophical semantics, as well as the old problems of metaphysics, were reserved for the first and fourth folders, though Engels does not signal that he was prepared to follow a different route to resolve the issues that I have previously addressed.

Engels in Dialogue with His Readers

In Chap. 3, I evaluated a variety of views on Engels' (and Marx's) dialectics. I have pointed out that the controversy over natural dialectics is much older than the posthumous publication of *Dialectics of Nature* or even the publication of *Anti-Dühring* in 1878–1879. Now I will revisit the old debate and consider Engels' (potential) responses to some diverse positions that support or challenge his views. This will help to clarify the issues involved in the problematic relation between what we think that the philosopher might have been saying and what he might think now of the ways that we relate ourselves to him, positively or negatively.

The Hegel Problem: The extent of Engels' familiarity with post-Hegelian debates is unknown, but he occasionally mentions the names Trendelenburg, Hartmann and Barth. Engels is well informed about Hartmann in particular (rather than Trendelenburg), as he was extensively consulted by Bernstein and Kautsky. However, Engels has a particular distaste for Barth. Barth, as Engels' younger contemporary, is known for bringing forth new challenges to common perceptions of the Hegel-Marx connection. In several letters, Engels protests against Barth's attempts to expose text-exegetic ambiguities in Hegel's and Marx's dialectical terminology. Nevertheless, Engels is neither willing to offer a reply, nor is he prepared to disarm, Barth's challenges in the same fashion. Engels finds it annoying that Barth points out Hegel's confusions of contrary and contradictory opposites instead of making Hegel fruitful for other ends.

Admittedly, Engels' talk of Barth was prompted by the latter's book of 1890. This is about four years after Engels had last touched the manuscripts of *Dialectics of Nature*. However, much of what Barth puts up for debate originates from Trendelenburg and Hartmann. The point on contraries and contradictions originates from Trendelenburg. The ambiguities of Hegel's dialectical method are largely voiced by Hartmann. It is quite evident that if similar objections to dialectics kept popping up in various philosophical or political circles, an account such as Engels', which sets itself the task of offering new ways to appropriate the Hegelian legacy,

must bring down the competing alternatives. Although these issues fall into the frames of his first and second projects, Engels remains silent about the potential ways out.

Early Socialist Debates: However unwillingly, Engels decided to settle accounts with Dühring. Interestingly, *Anti-Dühring* develops a more systematic case for dialectics of nature than the *Dialectics of Nature* itself. In the post-*Anti-Dühring* period, Engels shifted his focus from philosophical dialectics to natural scientific theories of motion. This leaves the impression that he had transferred his dialectical fire from the first and second projects to *Anti-Dühring*, with the latter work absorbing much of what he could have said about dialectics. This is not to say that *Anti-Dühring* represents a break from *Dialectics of Nature*. For Engels not only wrote 60 manuscripts of *Dialectics of Nature* in the period 1876–1878, but also put the *Old Preface on Dühring* into the folder *Natural Research and Dialectics*. If *Anti-Dühring* was really a 'break', one ought to use the term in a very loose sense (cf. Kangal 2019, pp. 225–227).

In *Anti-Dühring*, Engels tried to justify real contradictions in nature. To this end, he distinguishes three types of contradictions, which might be called (1) contradictions in nature, (2) contradiction as theoretical inconsistency and (3) contradictions inherent to any scientific theory. The basic tenet of the first type is a list of elaborated examples of real opposites in nature, such as necessity and coincidence, interaction of opposite physical forces, or cause and effect. He famously claims that 'motion itself is contradiction' (Engels 1988, p. 318). The second type is called 'absurd contradiction' (Engels 1988, p. 257). This is close to Dühring's usage of the term, but Engels directs it against Dühring's flaws. The third type is located between mankind's attempt 'to gain an exhaustive knowledge of the world system in all its interrelations' and its inevitable failure to fulfill this task completely (Engels 1988, p. 245). We have to concern ourselves here with a contradiction between humanity's potentially unlimited capacity for knowledge and its biological, physical or cognitive limitations in single individuals (Engels 1988, p. 288). This contradiction finds its solution 'in the endless progressive development of humanity' and in 'an endless succession of generations, in infinite progress' of knowledge 'from known to unknown' (Engels 1988, pp. 245, 319, 330).

Following this threefold division of contradiction, Engels offers three compatible definitions of dialectics: dialectics as: (1) contradictory structures in nature, (2) a certain method of thinking and (3) a holistic theory of totality. As for the first definition, he writes that 'the kernel of dialectical

conception of nature' is the recognition of 'opposites and differences' (*Gegensätze und Unterschiede*) in nature (Engels 1988, p. 497). Any process is, by its nature, 'antagonistic' (*antagonistisch*), that is, it contains a 'contradiction' (*Widerspruch*) or 'transformation of one extreme into its opposite' (*Umschlagen eines Extrems in sein Gegenteil*) (Engels 1988, p. 335). This is the real foundation of what he calls a 'method of thinking' (*Denkmethode*) that operates 'within polar opposites' (*in polaren Gegensätzen*) (Engels 1988, pp. 233, 292). However, it 'does not build dialectical laws into nature but discovers them in it' (Engels 1988, p. 495). This leads to the third definition: 'dialectics is . . . the science of general laws of motion and development of nature, human society and thought' (Engels 1988, p. 336). In other words, the unity of contradictory opposites is an elementary and universal structure present in nature, society and thought. In each of these spheres of reality, it takes a different form, and it is treated differently from different aspects of dialectics.

Until the publication of *Dialectics of Nature*, *Anti-Dühring* served as the primary source of Engels' natural dialectics. The theses defended in *Anti-Dühring* are expressive of, and compatible with, the first two projects of *Dialectics of Nature*. But it is evident from the ongoing debates since the 1870s that some of the problems which Engels avoided delving into did in fact persist.

The following questions were still pending: Does the existence of contradictions in nature cancel out antagonisms in nature? (Dühring, Zhitlovskii). On what basis can we claim that real contradictions are necessarily dialectical? (Lange). To what extent is it helpful to turn to Hegel's, rather than to Kant's, authority in order to justify the role and function of 'dialectics' for the Marxist theory? Do we have to choose between Kant and Hegel, or are there ways of relating Marxist philosophy to its intellectual sources other than by using the 'either-or' approach? (Bernstein, Kautsky). Are all (real, logical) contradictions 'dialectical' contradictions, and if they are, under which circumstances do they tend toward resolution? And what follows after the resolution of contradictions? (Struve). *Is* philosophical materialism the Marxist worldview, or is it the metaphysical framework that *informs* the Marxist worldview? (Max Adler). To what extent can the dialectical structures or laws in nature be generalized to that of society? What are the endomorphic and isomorphic measures to distinguish and interrelate between social and natural dialectics? (Plekhanov).

Lukács: In a way, the early Lukács (1971, p. 24) put all the unresolved issues into one sentence, imposing his estimation in a compressed form:

'Engels – following Hegel's mistaken lead – extended the method also to the knowledge of nature'. Engels may have replied that if Hegel's mistaken lead, whatever that might be, had helped him extend the method to nature, then he had done a good job by 'following' it. That Hegel is 'mistaken' in this 'lead' does not indicate that Engels' usage of it is erroneous as well. The issue that is closest to a 'mistaken lead' in Engels opinion is Hegel's externalization of 'Spirit' into nature. His 'reversal' operation requires a certain 'following' in order to reconfigure the relation between logic and nature within a materialist setting.

Alternatively, one can conceive of Engels' 'following' Hegel's 'mistaken lead' in this way: Hegel does not 'extend the method to the knowledge of nature'. The phenomenological origin of the logical method testifies that the 'method' has its roots in the knowledge of nature from which the categories of *Logic* are abstracted. When closing the circle of his system in the second part of *Encyclopedia*, Hegel returns to nature under the heading of *Philosophy of Nature*. Nowhere does he speak of any 'extension' in the sense of an application of method to logic-external objectives. The 'method' results from the introspection of *Logic*. Epistemologically, what the *Logic* can do at best is to inform the philosophies of nature, which is what Hegel ultimately intends to do. The problem is that Hegel *also* makes an ontological claim when he asserts his 'externalization' thesis, thus assuming that a pre-existing 'Spirit' will 'fill' the otherwise void bodies in nature. Engels takes this to be the core element of idealism. Hegel would protest that Engels is 'following' a 'lead' in a 'mistaken' manner, for the crux of idealism is about the ideality of the finite and the realism of the infinite. Externalization is a theological consequence of idealism. From the materialist point of view, Engels is correct in 'following' Hegel's 'lead' insofar as he attacks this consequence. But from Hegel's perspective, there is no 'mistaken lead' whatsoever, because Hegel is at pains to harmonize his philosophical system with a theological worldview. All in all, Engels would argue that the only 'mistaken lead' in idealism is Hegel's creationism. Engels does not revive creationism; he buries it. Lukács fails to 'follow' this pattern.

Tables can be turned on Lukács, as he himself 'follows' a 'mistaken lead' from Hegel. Hegel pioneers the idea that society, not nature, has a history, because society is created by human beings. Society is a sphere in which 'Spirit' exerts active influence on individual minds. Such a full embodiment of Spirit does not take place in nature. In Lukács' terms, 'dialectics does not apply to nature'. *Contra* Hegel and Lukács, Engels is

on the right track because he advances the view that nature has a history, and that it is a self-grounded totality. *Ergo*: dialectics applies to nature. Once again, Hegel's 'mistaken lead' is buried. It is unknown whether the late Lukács would have agreed with this conclusion, as he did not concretize what exactly he was referring to when he confessed to his early misconceptions concerning Engels' natural dialectics.

Deborinites versus Mechanists: This controversy can be read as a clash between Engels' second and third projects. In the hands of both camps, Engels' arguments took particular forms that were played off against each other in the name of dialectics of/in nature. Stepanov extrapolated Engels' theses to the extent that they attained an eliminative-reductionist tone. Unlike his view in the early stages of 'Dialectics of Nature', Engels allegedly proposed to eliminate any natural form other than thermodynamic action and reaction. In the hierarchical order of nature, everything is subordinated to physics and chemistry. Properties of lower spheres of nature can be deduced from the properties of higher ones. Any contention that goes against the grain of this claim squares with what Stepanov called 'vitalism'. Accordingly, he believed that Engels suffered from vitalism in the 1870s in contradistinction to 1880s.

This eclecticism was unacceptable to a dialectician of Deborin's caliber. Deborin countered Stepanov's radical eliminativism with a radical Hegelianism. Identifying Hegel's dialectics with Engels', he charged Stepanov with distorting crucial features of reality. Stepanov explained away the 'dialectical' interconnections predominant in nature as a whole, and more significantly, he betrayed the philosophical legacy of Marxist philosophy. Deborin suspected Enchmen/Minin-like anti-philosophical motivations in the background to Stepanov's undertaking, and he was prepared to turn the Engels debate into a war between philosophy and natural sciences. Until Deborin took his final revenge on the Mechanists at the end of 1920s, he was severely attacked for disregarding the supremacy of natural sciences over philosophy. Soon enough, Deborin became the subject of another controversy. He was accused of advancing a dubious version of natural dialectics that allowed for problematic conclusions in social dialectics. According to his late self-criticism, he had given way to the idea that natural dialectics suggests a reconciliation of opposites, a contention that was politically incompatible with the assertion of irreconcilable opposites in society.

Ironically, all the charges above can be directed against, and rebutted by, Engels, because the textual material allows for contradictory

extrapolations. For Engels himself had developed a plea for reconciliation of opposites in nature, claimed an endomorphic subordination of nature and society to dialectical laws, and drawn attention to distinctions between nature and society. The failure to distinguish Engels' incomplete intentions and ambiguous procedures was one of the cardinal defects that catalyzed and suspended the debates at once. On the other hand, it is a mistake to apply victimology to Deborin's case and to blame Deborin's successors for the polemical mess, since Deborin himself was one of the initial inventors of the conciliarism which was then used against him. There was no singular 'Soviet Marxism' afterwards either, as the quarrel concerning the law of 'negation of negation' testifies. Trotsky was on the same page with Stalin, in that both men disregarded it, a belief that was hardly ever supported by later Soviet philosophers. A singular 'Soviet Marxism' amounts to an empty epithet in this regard, a strawman invented by those 'Western Marxists' who desperately tried to keep themselves distant from their Soviet counterpart.

Marx/Engels Problem: The Engels controversy was fueled by further confusions when Lukács' initial divergence between Marx and Engels was revived. Several attempts have been made to separate Marx from Engels, in that both men were identified either as materialist or idealist, positively or negatively. This was essentially a political rather than a philosophical debate. The purpose was to make the classical canons of Marxism vulnerable on the grounds of philosophical dialectics, and Engels' own ambiguities were utilized to further the ends of ideological confrontations. It is therefore not surprising to discern that whenever 'Soviet Marxism' was attacked, Engels was attacked, too.

The tension between the philosophy and the politics of 'Dialectics of Nature' triggered and suspended the discussions at the same time. For the controversy was never only about Engels' science; the intellectual prestige and political authority of Marxism-Leninism were at stake. Challenging or defending Engels was ideologically motivated. More often than not, contradictory motivations led scientific arguments to accusation and insult. Dismissive attacks, rather than reasoned arguments, shaped much of the polemical character of this literature. This is why 'Dialectics of Nature' turned into a battlefield, and yet it remained an unexplored terrain. It is this contradiction that the title 'Dialectics of Nature' exemplifies in the afterlife of Engels' work.

The Torso

Dialectics of Nature was a product of Engels and Marx's 'blend' of theory and praxis. More concretely, it arose from the need for more thorough insights into the functioning mechanisms of their theoretical guide in use. In this regard, Engels' project can be seen as an attempt to elaborate on the philosophical aspects that informed the political theory.

Political practice is blind without theory, and theory is empty without political practice. The task of philosophy is to work out the categorial tools to use in order to determine goals and to improve the theoretical command of politically conscious action. Philosophy can fulfill this task by laying bare the categorial schemes it works with, and the logical premises, based upon which the systematically rigorous framework for the unity of theory and practice can be established. It is philosophy that ensures that theory and practice are meaningfully and consistently interconnected.

Dialectics of Nature represents part and parcel of philosophical theory as such. The particular intentions, goals and procedures peculiar to that project are necessarily narrow in scope, and co-determined by the philosophical and scientific problems which Engels coped with, and by the tasks that Engels set for himself.

Admittedly, *Dialectics of Nature* was not thought to be a philosophy textbook or an overall introduction to the philosophical foundations of natural sciences. From the early stages until the very end, Engels was rather preparing himself for crossing swords over questions concerning the historicity of nature, the necessity of philosophy in applied natural sciences, and the indispensability of continuous revision and renewal of the tools for perception and cognition in philosophy and natural sciences. He viewed this polemical intervention as another contribution to the expansion of the application and influence of his and Marx's common philosophical-political account. Marx, in turn, was well informed about Engels' enterprise and actively supported it.

In arguing for the 'incompleteness' of Engels' undertaking, I concentrated on what I considered to be the internal problems of his project. I asserted that Engels' contradictions arose from his attempt to settle accounts with what he viewed as the opposite of materialism and dialectics. To be sure, this perspective was co-formed by Marx. The premises and central theses of this philosophical perspective were voiced not only in *Dialectics of Nature* but also in other (smaller and larger) works as well as in private correspondence between both men. It is therefore beyond

doubt that Marx had a certain share in Engels' contestation of metaphysics and idealism. However, Engels was the 'person in charge' who entered the 'minefield' of philosophy of nature and natural sciences, and intended to specify the conditions for the elaboration and application of Marxist dialectics and materialism in these spheres.

A closer scrutiny as to how Engels proceeded to demolish metaphysics and idealism and to argue instead for dialectics and materialism reveals this: *Dialectics of Nature* is not conclusive as to whether, and to what extent, the binaries of metaphysics versus dialectics, and of idealism versus materialism, really do exist. This view is insofar justified as it follows Engels' own suggestion for arguing out and disproving opposite accounts on their own terms. For formal reasons, I confined my investigation to *Dialectics of Nature*. But I am confident that in Engels' (and Marx's) other works, the result is the same: the dialectical and materialist rejection of metaphysics and idealism has not been finalized.

I would not be surprised if it had been a similar conclusion that prompted Lenin's emphasis on the 'friendship' between materialism and idealism. In my reading, this 'friendship problem' applies to metaphysics versus dialectics equally well. I may be taking this problem more seriously than Lenin or anyone else has done in following him, but I am convinced that the question concerning the precise nature of the alleged rivalries is still pending. Therefore I am astonished to see that this issue is absent from the Engels debate. In other words, I fail to make any sense as to why these terms in circulation are taken for granted, without further questioning as to whether, and on what grounds, we, including Engels and Marx, are justified in employing the terms in the ways that we do, and in treating past philosophical traditions in the ways that our precursors did. The greatest merit of Engels' work is that it occasions us to reflect upon these very problems. The misery of the Engels debate consists in ignoring them.

In this respect, I doubt that we are dealing with merely terminological or text-exegetic issues. When arguing for a view, we do so by positioning ourselves against what the common intellectual heritage has to offer. When reinforcing some accounts and disregarding others, we reformulate premises, advance conclusions and challenge competing alternatives. In so doing, we make use of a common language, and we employ and transform a common terminology. It is therefore decisive for us which term is employed in what sense and context, when a philosophical proposition is proffered. Accordingly, the choice of philosophical language, and the decision to adopt a certain (potentially changing) vocabulary, are binding

on us for the ways in which we relate ourselves, positively or negatively, to past and present accounts of philosophical history.

It goes without saying that Marxist philosophy achieved a limited success in this regard. Given the dogmatic tendencies in the past debates, including the Engels controversy, it is perhaps now time to explore the old battlefields in ways other than the ones through which our forefathers did. I believe that Engels' *Dialectics of Nature* is a good point of departure, as it promises fruitful results for future takes on these issues. Arguably, *Dialectics of Nature* is a 'monument' in the history of Marxist philosophy. But it is also a torso, a work that is open-ended. At least, this is what Engels' dialectics ensures that it is.

Note

1. I borrow the term from Hans Heinz Holz. See Holz (2005, p. 108).

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