

Introduction to Thinking the Problematic: Decentring as Method and Ethos

Oliver Leistert & Isabell Schrickel

Our occupation with problems (and of problems with us), the entanglement of problems and ideas, and their relations with thought, concepts and solutions, the universality, generosity and violence of problems, and the continued problems we cultivate in order *not* to develop a sense of problems, a sense that would affirm their transformative offerings and expose us to a risk – these are the topics that the contributions to this volume revolve around in rather different spins. The book is a contribution to the problem of how, when, where and why problems matter, and for whom, and therefore to the inescapable and unmistakable catastrophic resonances that are occurring when modern societies continue to cultivate their *amor fati* with false problems, ‘that are only possible through various confusions between terms that had been previously separated and constructed, but whose modes of construction are no longer put into question’, as Didier Debaise recalls (2018: 20). *Thinking the problematic* might therefore as well mean an endeavour for decentring our thinking in order to think again, and to put the modes of construction of problems into question. This sounds quaint, as common sense has it that thinking is obviously part of everyday life. But when we look beyond the cognitive activity as such and understand thinking as a process in and after which a difference has been made – and this difference does not entail, for the moment, any limitations – it turns out that neither common sense nor everyday life help us to engage in the process of thinking. Quite to the contrary: their role is to stabilise, to make certain and to establish continuity – a sound milieu for false problems to flourish in.

The force of thinking to transform what it has captured is thus the topic here, and as such it is one way to explore what a problematic might turn out to be – a *positive* conception of a problem. Most of us know this force from

events that shook us and had an impact on how we situate ourselves in the world. In retrospect, however, the actual problematic tends to hide within historical narratives of progress that value the solutions of problems, but not their original stating. Many branches of science and discourses of science and technology, especially in their instrumental, solutionist and result-oriented reasonings, are still subject to this constraint.

The term problematic is not fixed, and has never been.¹ There are, in fact, significant variations in its use and description that prove the vitality of the term or, bluntly stated, its existence as a force on the plane of immanence, as Gilles Deleuze might have it. Whereas some philosophers, scientists, activists and thinkers refer to problems, and tend to address a problematic, others refer to a problematisation and focus on an activity – the construction of a problem. In addition, an important strand of problematisation refers to ontology and ethos, to the living and how to live. Indeed, turning to the problematic implicates us in the problematisation of ontologies of thought/thinking,² a paradoxical phrase at first glance, as Western cultures tend to separate thinking and being, leading to a dramatic devaluation of ontology as a field of thought in general. The division of the two has enshrined ontology as being primarily studied in academic ivory towers by experts, without further consequences than a thesis without a readership.

In light of this domestication of problems we attempt to contribute to a more recent intellectual engagement with several original and critical contributions to a positive understanding of problems and the problematic, cultivated primarily in the 20th century French philosophical and epistemological traditions. In contrast to the various negative concepts of problems that are prevalent in particular disciplines or other philosophical traditions – problems as cognitive obstacles, as a relation between the known and the

1 For an etymological definition of the word *problem*, see Schrickel, this volume, p.50.

2 The historicisation of ontology gained profound traction in a truly pluralistic perspective not long ago when anthropologists started to study ontologies in comparative ways without recasting alien concepts onto abstract modern terms. Although the beginning of these efforts can be dated back to the 1980s, considering for example Marilyn Strathern's *The Gender of the Gift* (1988), it is only recently that it was expressed programmatically with Charbonnier et al.'s *Comparative Metaphysics: Ontology After Anthropology* (2016). See also Viveiros de Castro's *Cannibal Metaphysics* (2014) for a sense of the intricacies of a truly pluralist universe and the role of concepts therein. For a history of the concept of problems in the history of philosophy from antiquity onwards, see Bianco (2018).

unknown, or as a conflict between different ideas for instance (Maniglier 2019) – the authors of this volume engage with philosophers, activists and historical contexts of the problematic that questioned the prevailing passive, ahistorical, deficient and solution-oriented character of the notion of the problem in many ways, called for a break-up of the problem-solution coupling and argued for problematisation as a process of transformative engagement. Taking a particular intellectual ethos in the French philosophical and epistemological tradition, where problems have been understood as a truly creative and intrinsically productive force, as a starting point, this volume attempts to trace the problematic throughout a variety of authors and cases, through philosophy, epistemology and a series of practical endeavours. We seek to trace both the genealogy of thinking the problematic and the seeds of these intellectual projects in discourses around inter- and transdisciplinarity, the scientific orientation towards ‘real-world problems’ and the ‘problems of modern societies’, and the role of the concept in the histories of systems thinking, public planning and sustainability science. Especially at times when science policy is so heavily geared towards big problems and grand challenges – public health, global sustainability or the adoption of artificial intelligence – it seems apt to problematise, historicise and complicate the problematic anew.

With this project we built on the previous achievements of a number of workshops, discussions and publications that picked up the threads of the problematic in recent years. The research project *Transdisciplinarity and the humanities: Problems, methods, histories, concepts* (2011-2013) at Kingston University London noticed – quite similar to our experience at CCP – also the lack of theoretical work on the concept of the problem and dedicated their first workshop, *From Science and Technology Studies to the Humanities* (2012), to the concept. Peter Osborne observed that although transdisciplinarity as a research methodology is broadly oriented towards the collaborative solution of societal problems, such as environmental sustainability and health and problems in the ‘life-world’ (Hirsch Hadorn et al. 2008), it seems entirely unclear what a problem is. Is it ‘something that requires the positing of practical solutions, or is a problem, primarily, something that defines a shared field of inquiry (a problematic), the investigation of which may take radically unexpected turns, leading to a reproblematisation – critical or otherwise – of the original issue?’ (Osborne 2015: 13). Since the programmatic of a practical rationality of states or state-like entities as organisers and sponsors of

this kind of research will certainly want to maintain control over the form of the process of disbursement, and ensure accountability and applicability, there is a systemic preference for solutions to the detriment of the process of problematising what is actually at stake. Thus, he concludes, inter- and transdisciplinarity have lost the more radical socio-political content associated with the rise of these movements in the years around 1970. Osborne and his colleagues then propose to involve European ‘theory’ (French theory, German critical theory, literary criticism) in transdisciplinary research, as they provide approaches to reflexively iterative processes of problem definition, investigation and reformulation.³ The problematic was also recently the subject of a special issue of *Angelaki*, edited by Sean Bowden and Mark G.E. Kelly, summoning some of the finest minds to produce new connections or differences among the canonical and the less canonical French epistemologists and philosophers that have enriched the discourses in the humanities and other disciplines in the 20th century in unprecedented ways.⁴ Martin Savransky also edited an exciting collection of papers for a special issue of *Theory, Culture & Society* on the problematic, with which many of our interests resonate, and some of which we will return to later in this introduction.

This volume attempts to open up the problematic, too. The contributions of Esther Meyer and Isabell Schrickel, in particular, trace the critical productivity of the concept in different historical, scientific and practical contexts and add to the problematics of inter- and transdisciplinarity. Jean-Baptiste Vuillerod and Thomas Ebke return to the genealogies and structural functions of this term in French theory. Celia Lury composes a methodology for the individuation of a problematic of the contemporary. Christoph Brunner and Martin Savransky suggest operative building blocks for the cultivation of situations that harness the transformative powers of problems. To engage with different problematics here then addresses the limits of our thinking, too, by offering different accounts from a variety of fields that, surprisingly enough, to date have never been assembled in one book. We have found ourselves in dialogue more than once during the finalisation of this work-

3 In the same winter of 2012, another workshop at Goldsmiths College in London critically mobilised in a similar manner the works of Gilles Deleuze and Félix Guattari in particular to discuss the problem of transdisciplinarity and the problematic dynamics to re-discipline and re-establish itself on a transcendent element (see Collett 2019).

4 For a brief overview of all contributions see Bowden/Kelly 2018.

shop's outcomes regarding the impossibility of determining the limits of the problematic, and take this as an encouraging detail of its relevance in a genealogical perspective. It turned out, after we provisionally ended our conversations, that it remains an open project to thoroughly look beyond the more recent receptions and interest that the problem of the problematic has received.

Lineages of problems and problematisation

The history and philosophy of science is rich with famous problems being solved and has provided a great variety of strategies of problem-solving: abstraction, analogy, divide and conquer, hypothesis testing, lateral thinking, proofs, trial and error, or workarounds – numerous tools and approaches to overcome problems have been developed throughout history. Problems solved assure us in often anecdotal ways of the constant progress in modern science, and problems unsolved are seen as epistemic puzzles that are being confronted with confidence and faith in future problem-solving capacities. In a positivist concept of science as a properly demarcated and ahistorical endeavour problems function as some kind of placeholder for the time span needed to find the solution. Problems are obstacles to be removed, means to test specific solutions, they are negative states of uncertainty, ignorance and methodological imperfection bound to dissipate with the solutions that scientific and technological progress yield. Consequently, traditions like logical positivism rejected the 'great questions': philosophical, metaphysical, vital and singular problems are in fact *Scheinprobleme* (Carnap 2005 [1928]) – pseudoproblems – which are incapable of solution not because of their profundity but because they pose nothing to be solved.

On the one hand we could simply acknowledge the fact that these traditions drew the limits of scientific jurisdiction and the boundaries of scientific and non-scientific disciplines – in their case between physics and philosophical metaphysics, Freudian psychoanalysis or Marxist social criticism – so neatly and sorted out their scope and area of responsibility in quite transparent – yet polemical – ways. But also, the solutions derived from such neatly demarcated scientific fields will always reach beyond. Solutions come into existence as theoretical perspectives, as socio-technical arrangements and pathways, as products and services. Solutions become effective by bringing

together concepts, objects, tools, techniques, scientists, institutions and publics in new ways. Sometimes, solutions consolidate the problem by deepening the goals and values already visible as the basis on which the problem emerged, and sometimes solutions open up paths for transformations and alternative futures. There is always some excess in solutions, as they could have been otherwise. Thus, solutions are always more than scientific – as they are always already problematic, too. For a long time, the history and philosophy of science did not pay much attention to either the notion of the problem or the solution. One will search in vain for comprehensive entries on these lemmata in encyclopaedias of philosophy or science, and their reach beyond colloquial meanings and explorations of these operational terms even today (Mittelstraß et al. 2005-2016; Serres/Farouki 1997; Lecourt 2006). This is astonishing, not least as we have come to acknowledge for a long time now that we are indeed surrounded and impregnated by scientific applications and products, embedded in infrastructures and policy cultures that are based on scientific expertise and technological solutions that our societies co-evolve with.

It has been widely recognised that the French epistemological tradition, which established itself over several generations in close examination and discussion with contemporary science, has provided essential perspectives and new avenues to engage with modern science and its problems and the role of knowledge in society more broadly. The struggles over epistemology in France during the 1960s, for example, are evaluated today as instances of important mutual exchanges between the sciences, philosophy and society, providing novel techniques and tools for argumentation, thought and action, and a specific mode to reflect on the role of science in society (Erdur 2018). These epistemological, philosophical and theoretical engagements became important undercurrents and intellectual resources in debates over inter- and transdisciplinarity that emerged during the late 1960s and that led to the establishment of new institutions, academic fields and approaches to solving real-world problems (Klein 2014). The subsequent rise of the various fields of historical, philosophical and social analysis of science during the 1960s and 1970s – science studies and the history and sociology of science and science and technology studies a little later – also had a close connection to, and drew major impulses for analysing and questioning processes of knowledge production and their role in public affairs from these engagements, which has been acknowledged until recently (Biagioli 1999; Biagioli 2001). And fi-

nally, the vast potential of these writings for a constructive critique of science policy and the prevalent organisation of problem-oriented transdisciplinary science has recently been rediscovered, as we have seen (Osborne 2015; Collett 2019; Maniglier 2019).

These strands are picked up by Meyer and Schrickel in their contributions to this volume. ESTHER MEYER provides a critical assessment of discourses and constructions of problems of sustainable development in recent transdisciplinary (td) sustainability sciences, and asks ‘How can we think of methodologies for td sustainability research that are coherent with epistemologies of the problematic?’ She suggests mobilising the philosophy of Gilbert Simondon, as he offers a ‘radically transdisciplinary’ alternative to the mechanical concept of *development* covered in the hegemonic versions of sustainable development, in particular through his theory of individuation, where a problematic arises as a resonance between an exteriority and an interiority. Meyer refers to several approaches in recent td sustainability research that take such an initial situation as a methodological starting point, including her colleagues and Meyer’s own method of ‘thinking practice of problematic designing’.

ISABELL SCHRICKEL offers in her contribution a historical account of an epistemic shift characterising the years around 1970, and discusses the symptomatic conjuncture of the notion of the problem in it. The rise of ‘problem-talk’ – from ‘wicked problems’ to the ‘world problematique’ – signifies a shift in epistemic sensibilities at the time, Schrickel argues, where new institutions and forms of knowledge were constructed around problems that would allow societies to change, to adapt, or to intervene in their futures. She does not suggest that there is a particularly strong connection between the writings of the authors subsumed under the label of French theory, with their nuanced approaches to the problematic, and, for instance, the simultaneous considerations of planning experts, systems analysts and bureaucrats from agencies such as the OECD, the Club of Rome and other institutions who put the ‘problems of modern societies’ on their agenda. Schrickel observes, however, that they share the idea of a positive conception of problems as intrinsically productive and transformative instances, and a sensibility for the lurking danger of instrumentalising problems, for example in order to maintain a status quo or to make particular policy options more likely than others. She embeds her observations in a broader historical analysis of the political situation and the academic landscape of those years, and dis-

cusses emerging fields of research, new institutional set-ups and systems approaches as indices of a post-positivist understanding of problems and the problem as an *epistemic design* for situations that call for change and transformation. Since the historical filiations between systems thinking, the inter- and transdisciplinarity movements and the French intellectual tradition are often emphasised (Klein 2014; Osborne 2015; Maniglier 2019) but rarely fleshed out, Schrickel's paper offers some additional contextualisation for an unexpected proximity.

It remains undisputed that the most explicit and focused conceptual elaborations of the problem of the problematic were made long before these international debates and transfers, in early 20th century France, and we have to acknowledge Elie During's intervention from 2004 to reinstate Henry Bergson as an important figure in the history of problematics. In addition, During reiterates a list of historical philosophers and thinkers all sharing 'a concern for what has been called a history of problems' (During 2004: 18): Gaston Bachelard, Alexandre Koyré, Georges Canguilhem, Michel Foucault, Louis Althusser and Gilles Deleuze. In the meantime, the list was expanded by authors such as Gilbert Simondon, John Dewey, Isabelle Stengers, Étienne Souriau and others, some of whom the contributions of this volume discuss. The term 'problématique' itself appears to have been invented by Bachelard in his *Le Rationalisme Appliqué* (1966 [1949], translated partially in 2012) and has since become a common term in the French scholarly education up until today, as Patrice Maniglier reminds us (2012: 21).

Nonetheless, as JEAN-BAPTISTE VUILLEROD shows in his contribution to this volume, we have to make place for a second origin of the notion of the problematic in 20th century French philosophy. Vuillerod opens up a different lineage through Jacques Martin, who never published any of his works due to his early death in 1964, but apparently introduced a particular conceptualisation of the term in France in his masters thesis. Martin was close to Michel Foucault and Louis Althusser, who acknowledged in *For Marx*: 'Without a theory of the history of theoretical formations it would be impossible to grasp and indicate the specific difference that distinguishes two different theoretical formations. I thought it possible to borrow for this purpose the concept of a "problematic" from Jacques Martin to designate the particular unity of a theoretical formation and hence the location to be assigned to this specific difference, and the concept of an "epistemological break" from Gaston Bachelard to designate the mutation in the theoretical problematic

contemporary with the foundation of a scientific discipline' (Althusser 1969: 32). While it seems plausible that Martin has taken the term from Bachelard during his lectures, as Kelly speculates (2018: 156), Vuillerod studied and recently published Martin's masters thesis and proposes in this volume 'a new genealogical perspective on the problematic' (Martin 2020). According to Vuillerod, the epistemological debates on the historicity of mathematical concepts, thought and development between Lautman and Cavaillès in the Société Française de Philosophie, under the direction of Jean Wahl in February 1939, mark the first discursive appearance of the term problematic in France, to which Heidegger and Hegel, both translated in parts at that time, contributed.⁵ Martin wrote his thesis 'The individuum in Hegel' in 1947, while translating Hegel's *The Spirit of Christianity and its Fate* into French. As Vuillerod reports, in his thesis, Martin reads Hegel through the lens of Marx, in order to achieve a concept of the individual that is rooted in its social and historical conditions and mediated by them. More generally, 'the institution of the problematic means the elaboration of a particular perspective of reading, in light of a problem raised by the history of philosophy', as Vuillerod describes Martin's use of the problematic. This reading turns out to be highly original and productive as it creates a passage to open the Marxist field of thought to the history of philosophy.

Althusser took the inspiration offered by Martin much further and dramatised it: while for Martin the problematic raised a diachronic point of view in order to integrate Hegel with Marx, for Althusser the problematic designates a general critical rupture and order in theory, for the first time manifested in Marx's *The German Ideology*. By way of this dramatisation, Althusser's programme to philosophically ground Marxism and reconstitute Marx as a critical philosopher from the vulgarisation of the Stalinist doctrine, and from the Marxist humanism founded on a naïve concept of the subject, embraced Martin's problematic as a general epistemic operator of theoretical formations.⁶ Vuillerod's contribution therefore demonstrates that the travel of concepts enriches an intellectual climate that seeks – notwithstanding

5 See the works of Cavaillès (Cavaillès/Canguilhem 1994) and Lautman (Lautman/Duffy 2010); for contextualising Lautman, see Duffy 2018; for Cavaillès, see Cassou-Noguès 2018.

6 See Kelly 2018 for a meticulous reconstruction of Althusser's *problematic* and, interestingly, Foucault and his *episteme* in this matter.

differences in thought – some broad conceptual commonalities⁷ to signify a decisive break with the pre-war generation. In this case, it might have been Wahl's overarching authority on Hegel in France that spurred Martin's conceptual productivity.

Only a few elaborations can be found on the general commonalities of problem concepts throughout the decades. But whether they are called problems, problematic or problematisations, one apparent commonality reflects on a constitutive positionality, such as being situated and in between, mediating or connecting, and therefore sharing a processural, at times even functional, propensity that finds singular expressions more often than regular ones. A problematic might be understood as a transparent proxy of and between subjects, objects and environments, mastering the illusion that there is a direct, non-discursive, universal line between them, ultimately some sort of epistemological, or even ontological, melting pot. Bachelard sketched an image of the problem that indicates the positional flexibility of the problem. In his neat phrase from 1949, the position taken by the object is the subject of the problem, and the position of the cogito that of the consciousness of the problem (Bachelard 1966 [1949]: 74). It thus turns out that problems are distributed and co-relational through diverse domains, because their positionality seems not to be restricted axiomatically. The history of problems then is the history of stating and exploring these entanglements and correlations, whether in the field of the history of sciences, the domain that Bachelard exclusively refers to, or in other domains until today.

For Bachelard, problematisation was the very signature of a scientific rationality, as opposed to opinion and dogma, which merely derives its claims from empirical facts. Against such 'obstacles épistémologiques' any scientific, rational and objective knowledge must construct its problematising path (Bachelard 1966 [1949]). Similarly to Thomas Kuhn in his influential *The Structure of Scientific Revolutions* (1996 [1962]), Bachelard believed in some scientific culture and that the prevailing rationality was in fact a 'correlative' jointly applied by the 'union of the workers of the proof'. For him, the practice and progress of science was warranted by the rational, dialectical exchange between critical minds as the source of objective control, verifi-

7 Occurrences of such travelling concepts amongst philosophers and thinkers in the post-war decades in France concern terms such as *dispositif*, discourse, simulacrum, simulation and genealogy, to name just a few.

cation, confirmation, instruction and normativity, and the rational coordination and codification of truths in a system of knowledge. At first glance, Kuhn's concept of the 'paradigm' is very close to this idea. A paradigm comprises the key theories, instruments, values and trainings constitutive for a period of 'normal science' and it provides model problems and solutions to a community of scholars permitting the accumulation of puzzle solutions and thus the stabilisation of a paradigm. Kuhn, however, clearly distinguished between 'really pressing problems, e.g. a cure for cancer or the design of a lasting peace' and puzzles mainly serving to test 'skill in solution', lacking any criterion of 'goodness', 'intrinsic value' or interesting and important outcomes (Kuhn 1996 [1962]: 36-37). The latter characterise normal science, which is positioned then as a rather controlled and cautious endeavour. And whereas in Kuhn's *Structure* paradigm shifts are primarily understood as historical-institutional events, when a choice has to be made 'between incompatible modes of community life' (Kuhn 1996 [1962]: 94), Bachelard's polemical definition of rationality located the progress of science in the critical consciousness of the scientists themselves and their problematising paths, ultimately constituting the scientific community, which 'will be united in the proof once we have the guarantee of having clearly posed the same problem' (Bachelard 1966 [1949]: 31).

His academic successor and historian of the sciences of the living, Georges Canguilhem, developed a different positionality of problems within his historical epistemology. THOMAS EBKE reconstructs in his contribution to this volume Canguilhem's architectural positionality of problems in relation to concepts and scientific theories. Ebke hereby diverges from recent readings connecting Canguilhem with Bergson, as he foregrounds an Aristotelian lineage that resides within what is known as *analyse réflexive* in France, a strand of thought Canguilhem exposes in his early, formative works. It refers, amongst other things, to the dialectical operation of judgement outlined in Aristoteles' *Topics*. What Ebke emphasises is that it models a process that initiates a problem to be judged by its premise, and that it is within this disjunctive operation that the contents of a concept are explicated as it disjuncts from the problem, thereby also exposing the historicity of scientific judgements in relation to that problem. Philosophy then, as it addresses problems that instigate scientific concepts, reactualises these disjunct problems and reinserts them into the scientific process, as Ebke explains. Canguilhem, even from the impoverished perspective of a logical syllogism, introduces

historical epistemology as a watchguard of normativity in the scientific process, a political project, as Ebke concludes.

Towards an ethos

It is the very late Foucault who, in an interview with Paul Rabinow, takes up the concept of a problematic and, rather surprisingly, relates his works in the history of thought to the rediscovery of ‘a general form of problematisations’ (Foucault 1984: 389).⁸ For him – and this is where Foucault provides a glimpse into the reconstruction of an ethos as opposed to a morality based on transcendental laws – problematisations are discernible within discursive responses to difficulties that are transformative in the sense that they react to and effect practical solutions. Problematisations are instigated by some uncertainty in a specific field and provoke simultaneously different, at times even contradicting, solutions. This explains why stating a problem is much more difficult than stating its solution, as Bergson put it in the context of speculative problems: a problematisation articulates difficulties in manifold ways and thereby develops the conditions under which possible responses can be given. This is a situated practice of thought, rich in context and seldom possible to reconstruct backwards, since the specific work of thought in the form of problematisations cannot be grasped after the fact, as a succession of representations, because ‘while carrying out the work of thought under the experimental form of a historico-practical test imposed by our present’, it is ‘inseparable from the modes of problematisation our present makes us capable of’ as Stengers (2019: 11) explains the immanent distribution of forces that at the same time impose and capacitate, or even capacitate by imposition. For Foucault, the ability to problematise turns out to be a condition of freedom, through which he probes a thoroughly positive problematic conception and a freedom freed from transcendental burden and authority.⁹ Paul Macherey further suggests that Foucault’s notion of thought is intrinsically connected to a manifestation of a limit, or an un-

8 Although it should be stated that he remains rather cautious by setting the phrase conditionally, as if he wanted to signal the impossibility of this endeavour.

9 How problematisations concern ethics and freedom in Deleuze’s and Foucault’s works has been analysed by Erinn Gilson (2014).

certainty, as ‘the subject opens up for itself a domain of intervention, inside not outside the system, by taking the position from which a certain claim to freedom becomes meaningful’ (Macherey 1998: 101). Here again, the positionality returns as a condition to thought, and the singular turns out to be of the universal (‘in the system’) as a condition for a transformation, whereas if it was of the general, freedom would, once again, become abstracted and thus float outside the system.

The Belgium philosopher, historian of science, activist and former chemist Isabelle Stengers has contributed to an actualisation of the problem-ethos nexus in two distinct manners: firstly, for a while now, together with Didier Debaise, Martin Savransky and others, she demonstrates how to apply pragmatistic concepts from the philosophy of William James as tools that can operate as instigators for problematic practices (see below, and Savransky and Brunner in this volume). And secondly, she recently took up Foucault’s notion of problematisation as a form of ‘transformative engagement’. As modification of ‘the relation we entertain to our own reasons’ (Stengers 2019: 3), she seeks an experimentation with consequences. Here, the method of application must emerge in the encounter with the problem, and the value of knowledge refers to one’s own limits (see also Lury in this volume). This problematic shares the Deleuzian dramatisation of an idea to be actualised as a problem once it takes possession of its bearer, who is violently forced to think and becomes herself part of a thought as much as this becoming transforms the parts involved. The outcome, in the form of a new structure, is a hypothetical problem with its field of possible solutions, ‘issued from the problematising power of the idea which selects and mobilizes what the problem needs in order to determine itself and to receive the solution it deserves’ (2019: 7). Stengers proposes that the Deleuzian notion of an idea that has powers to insist and demand actualisation, but never fully exhausts actualisation, is what demarcates the problematising subject that is referenced by Foucault and whose truth is a demand by a transformation originating in practices. ‘If modes of problematisation are formed on the basis of practices, they also relay the concerns whose insistence these practices manifested’ (2019: 10), she writes, and the concept of relaying is one of those prolific enrichments by Stengers to the modes of the problematic. By nature practices are situated and by nature they are a diagnosis of their milieu, of what is possible, a test of concerns without judgement. Here, problems serve as tools for an ethopoiesis – the fabrication of a situationally limited ethics.

In addition, Stengers introduces Étienne Souriau (2015 [1943]) to the lineage of historians of problems, because his concept of ‘questioning situations’ that prey upon those who admit to them establishes an ontological risk in the form of a problematic, as the answer to the problem may remain insufficient, and simultaneously imposes a responsibility, as the problematisation must resist already existing, ready-made solutions (on Souriau, see also Savransky in this volume). Transformations instigated by such a risky situation may fail, which very much resembles James’ concept of a genuine option (see Stengers 2009), while at the same time Souriau shares Deleuze’s concept of the Idea as the bearer of the thinker, although in a ‘less violent’ tune, as Stengers explains (2019: 8).

From situated knowledges to the cultivation of situations

This ontological or epistemological positionality characteristic of the problematic is echoed many times in recent observations and proposals. Maybe (now) most prominently, and not that long after Foucault’s death in 1984, Donna Haraway invested her thought (and anger) into the outline of a situated knowledge (1988) that in many ways, knowingly or not, resembles elements that are familiar from the works attributed by During and others to the historians of problems: embodied objectivity, limited location, partial perspectives and situated knowledge are proposals that ultimately concern an ethical practice in the form of an accountability based on webs of connections and the simultaneous interrelatedness of the epistemological, ontological, ethical and political planes. Reading Haraway’s proposal today remains instructive because (amongst other reasons) one of its most prominent polemical antagonists is the spectre of relativism. Relativism figured as a discursive tool to devalue all self-limiting epistemologies as it sets up the false, but exclusive, binary between relativism and objectivism. Haraway rightly points out that ‘the “equality” of positioning is a denial of responsibility and critical inquiry. Relativism is the perfect mirror twin of totalisation in the ideologies of objectivity. [...] But it is precisely in the politics and epistemology of partial perspectives that the possibility of sustained, rational, objective enquiry rests’ (Haraway 1988: 584).

Sadly, these polemics that position an unfettered objectivism on the one side and an unconstrained relativism on the other, continue to resonate up

until today within discourses on the normative frameworks and scopes of the sciences. Setting up relativism as the other of objectivity is a perfect example of a false problem that only a scientist's reason could come up with in order to retain *his* exclusive and exhaustive access to truth. Today, these polemical attacks on what back then was called postmodernism are instances of powerful strategies to delegitimise any kind of problematisation that questions and limits scientific practices and knowledge productions. Positionality, in this polemic, equals relativism, an absurd rhetoric motivated by an authoritarian judgement struggling for legitimation. As it is evident that the disputes Haraway refers to are truly false problems, their many returns signify the political stakes inherent to them. At the core, it pertains to weakening the view that science is practice and facts are made, a product, and not an expression of nature herself, as the term 'laws of nature' still proposes. The purification and rhetorics of science as nature's language still has outspoken purchase in the battle for funding and self-legitimation. This continued immunisation strategy of scientific reason has been nurtured by, and entered into a new process of naturalisation with, the advent of today's data science, so called big data, algorithmic processing and what still, or again, is referred to as artificial intelligence. Here, the phantasma of a general, unsituated objectivity has re-emerged as digital data now get treated as splatters of the real.¹⁰

10 This recent and ongoing regression in scientific practices instigated by the abundance of data and cheap processing power increasingly reduces many branches of science to mere engineering tasks. While this development is not new per se, and, of course, Haraway was among the first feminists to address the capital-driven technologist attitude of science (2004 [1985]), what can now be observed all along formerly methodologically diverse fields is a reduction of diversity in science through the application of the same, often patented and thus black-boxed, bundles of algorithms, and partially even the same training datasets. Louise Amoore reports that 'scientific data begin to incorporate the emotional, affective, and speculative domains, while, on the other hand, knowledges considered to be "non-scientific" are authorized as science. [...] the degrees of doubt always already present within mathematical probability multiply and take flight as imaginable, if not strictly calculable, possibilities' (2013: 10). Such a 'speculative' calculus attempts to objectify – or reify – the virtual by replacing it with the possible a computer can process. This operation of capture extends the reach of formalised methods beyond probabilities, the episteme of modern societies, into the realm of possibilities whose only limit is computability itself, therefore constructing an unlimited upgradeable plane. The prospects for a feminist data science (D'Ignacio/Klein 2020), for instance, however reasonable in itself and well intended, carry the burden of possibly turning out to function more as a vindication than a cure.

Haraway, intervening into this polemical debate against postmodernism, unambiguously drew the line for any claims to objectivity in the necessity of partiality, because in return this retains and cultivates plurality and diversity. This obliging relation continues to form, up until today, the conditions of the possibilities of knowledges that a subject can relate to herself, even when the grounds appear to have shifted today: 'Positioning is, therefore, the practice in grounding knowledge [...] Positioning implies responsibility for our enabling practices' (1988: 587). Haraway later (2008: 71) rephrased this ethical backstop as 'response-ability', which bears a more positive conception that at the same time is scaled down to a subject's dimension of apprehension: a pragmatic care of the problematic.

Situating objectivity with partial perspective, and with what is of importance, resonates well with Didier Debaise's problematisation of 'the bifurcation of Nature'. He is showing, with recourse to Alfred North Whitehead, that scientific reasoning has taken the position of nature's original expressions, masking thereby in a second operation the rich pluralism inherent in nature, as nature is reduced to the limitations of a scientific axiomatic and localisable matter within an absurd reductionist concept of time. This leads to severe confusions 'where everything is reversed: operations replace ontology, and abstraction replaces the concreteness of things, and the possibility of the knowledge of existence in itself' (Debaise 2017: 26). To 'take the tool for the universe' lets thought oscillate freely in false problems, between 'primary' and 'secondary' qualities, of which 'all of the divisions between beings, all the oppositions between their attributes and their aspects, are derived: existence and value; real nature and apparent nature; fact and interpretation' (Debaise 2017: 2). What is more, the reification of this bifurcation effectuates a delegitimation of other metaphysics. Only scientific reason has access to the real, causing 'a desertification of all modes of existence: the reduction of mental beings to simple representations, of fictions to imaginary realities, of values to subjective projections onto nature' (Debaise 2018: 22). Maybe the late Foucault sensed this power of desertification when he felt the obligation to the archaeological and genealogical restitution of practices of care from antiquity in his history of sexuality after the first volume.

On the real problem of data justice – in contrast to the false problem of data ethics – see, in an explorative manner, Dencik et al. 2019.

In any case, against these ‘active anesthesia of thought’ (Debaise 2018: 23) that domesticated the problematic as a problem-solution calculus of scientific reason, a fresh take on the restitution of the relevance of experience in a minor tune continues to spread. By way of setting up obligations in the form of pragmatism’s ‘genuine options’ (William James), any claims by abstractions to an exclusive access to truth are undercut and rendered impossible. This way, the concept of truth undergoes a massive reform, as truth now signifies the ability to convey from within a situation all the constraints necessary. This way, truth and present converge – whereas scientific reason would separate from without (or from God’s perspective, as Haraway called it) all that is inside and therefore unfit for claims on truth. Truth becomes inclusive as it excludes any reach beyond its situational present. Programmatically, it ‘enrages any majority thinking’ (Stengers/Debaise 2017: 19), as it subverts and annihilates the authoritarian grip on the distribution of truth. This pragmatist reformulation of truth has been embedded within many exercises and narratives for the cultivation of problems.¹¹

In this vein, MARTIN SAVRANSKY, in his contribution, returns to James’ concept of a ‘fringe’ that constitutes a vector of indetermination in thought, acting as a generative force of the problematic. Speculating on the title of our book, *Thinking the Problematic*, Savransky points to the paradoxes contained therein, as he suggests that in it thought folds back on itself. With reference to Deleuze’s deconstruction of the representational image of thought, Savransky narrates how problems have withered into an epistemic obstacle to be overcome under the reign of instrumental reason – a matter of puzzle-solving, amounting to an impossible attempt to exhaust the problematic with one universally valid reason. For Savransky, thinking the problematic means to learn how to sustain and entertain the insistent possibility contained within a problematic. For this, he returns to Souriau’s ontology of intensities, because it problematises heterogenesis. Souriau exemplifies heterogenesis with sculpting, as the statue is a generative problem that turns the sculptor into its means. Intensification thus involves metamorphosis of a work done, Savransky argues, and this leads him to speculate how to conjure the problematic, and to look for arts and practices of other modalities of truth speaking, such as the oracle’s practice of veridiction that demands

11 Such exercises can be found, for instance, in *Breaking the Spell* (Pignarre/Stengers 2011) or related works (Savransky 2016; Stengers 2015).

a transformative response by the consultee. Thinking the problematic, he concludes, may, rather simply, amount to trusting the possible for its generativity.

For Savransky, Stengers, and likewise for many other authors mentioned in this introduction – in many ways also for Michel Foucault – a productive source of reasoning about problems remains one specific exercise that sets out to perform the transformative arts of the problematic without restraint. The anti-representational thought brought about by Gilles Deleuze's *Difference and Repetition* (1994 [1968]) stands out in rigour and generosity (as does *The Logic of Sense* (1990 [1969])). The continuity of Deleuze's formative works within the more recent literature on the problematic prevails, because Deleuze most explicitly formulates a genuinely positive concept of problems, which situates them 'on the side of events, affections, or accidents rather than on that of theorematized essences' (187). Further, Deleuze, in a truly original style, has deconstructed and unmade the bifurcation of nature as he shows the conceptual poverty it produced. A careful reception of these works of Deleuze taps into a richness in problematic thought that remains unmatched, especially when considering chapters 3 and 4 of *Difference and Repetition*, where Deleuze presents the problem as a qualifier of ontological relevance. 'The problem of thought is tied not to essences but to the evaluation of what is important and what is not' (189). This echoes the Whiteheadian metaphysical ethos of 'asserting importance as a primary category of the experience of nature' (Debaise 2018: 25). If the problematic maintains importance, meaning both being important and opening the senses to what is important, then it retains a generativity or inventiveness that takes hold of bodies and minds alike. This possibly violent force is full of surprises and difficult, if not impossible, to govern without losing its grip – that is, its importance. Problems are in correspondence with, to and from, norms and normativity, as they instigate new practices that test and individuate the milieu they are positioned in. Their primary operation to decentre and change not only targets perspectives and positions but axiomatics, too – these order-codings of constructed necessity delimiting all that is possible. While this may sound pathetic, it should be stressed that the activity of problematisation is discursive *and* subjective, molar *and* micro: we can find axiomatisations all around, whose function it is to continuously discriminate between ground and figure, to enable scales that themselves enable units of measure, and this way provide the necessary means for the implementation of norms and normativity. Put

differently, by way of problematisations we actively un-categorise the categorised and tap into the 'chaosmosis', as Félix Guattari (1995) has named this generic mess in his unprecedented conceptual generosity. When some of our senses are positioned to dispose of false certainties generated by exclusive access to truth by scientific reasoning, our aptitude towards a pluralist reasoning and non-judgemental but inclusive concept of truth gains traction.

On such a plane *Christoph Brunner*, in this book, investigates the conditions for a politics constituted by the 'collective', a collective relaying acts. He takes inspiration from the rejection of classical modes of critique by Stefano Harney and Fred Moton, who call for a new mode of critique that escapes the illusion of an autonomous oppositional subject and that refuses the common sense orderings of truth this subject is aligned with. Instead, it is in the movement of flight, in a durational concern, that the act lingers. In a confluence of a range of concepts from Bergson, Deleuze and James, Brunner distils a shared critique of common sense, before he turns to Bergson's method of intuition and Deleuze's take on it in order to turn it into a speculative-pragmatic process of problematisation aiming – through affirmation – at an invention of the present to overcome the present, a process of becoming relationally. An example he gives for a reconceptualisation of time is the Afrofuturist multiplication of temporalities. Problems as transversal operators effectuate in Brunner's praise for movement the possibility of an in-act, a slipping into the event without beginning but 'with a joy of entering the interplay of durations'. Ultimately, this resistance against the present turns to 'the inventive powers of shape-shifting that present intuitively'.

Problems are figured to belong to instigators of change and transformation, to pertain to the necessity to develop, at length and with precision also, in the works of Gilbert Simondon. The works he cites in his thesis that he defended in 1958 range from cybernetics to the pre-Socratic apeiron. Brian Massumi, himself a philosopher of problems, assumes that Simondon's ecological philosophy was intellectually inaccessible in most times, not only because it is only now being translated, but because it lacked a climate of openness towards ontological concerns in the 80s and 90s, when the long paradigmatic idea of constructivism 'was in fact unequal to the question of ontogenesis that it was called upon to take up by virtue of the juncture at which it found itself' (Massumi 2009: 37). The constructivists' own legitimation rested in an ontological disdain that can be considered as a discursive necessity of that time in order to theoretically posit social or cultural per-

spectives on things and their subject positions. ‘Ontology, several generations of theorists were taught, was the enemy. Epistemology, which always carries ontological presuppositions of one kind or another, was at best a false friend. Finding a path to ontogenesis by unabashedly bringing the two together again, albeit in a new way, was simply inconceivable’ (ibid). But there is more to Simondon’s untimeliness. As his theory expresses complex becomings with only very few genetic concepts and without a general principle, he developed an ‘integral inventivism’ (Massumi) that equally concerns matter as it concerns thought and ideas – an impossible architecture of theory for constructivism and most of the humanities until recently.

This theory of qualitative change cuts radically through the world’s distribution into disciplines – not only because a world divided into disciplines causes unsolvable epistemological obstacles for such a genetic endeavour, but, even more relevant, their founding principle to discriminate and order the real in their logic, this very abstraction, is causing the construction of disciplines that implicitly import normative assumptions. Simondon’s sensibility here echoes his close knowledge of the works of his teacher Georges Canguilhem, who analysed the recurrent installation of the junction between the normal and the pathological in the sciences of the living. This spurred Simondon to reject psychology: ‘The constitution of two spaces [the normal and the pathological] only expresses the essential bi-polarity of normativity for a psychological classification, and obfuscates the implicit sociology and social technics’ (Simondon 2005: 270). Consequently, he refers to psychosociology in his theory to underline the necessary and inseparable relation of the interior and of the exterior for an individuation of beings.

A problem for Simondon is what ‘resolves an anterior incompatibility through the apparition of a new systematic; what was tension and incompatibility becomes functional structure’ (Simondon, quoted in Voss 2018: 100). This new functional structure, otherwise said, is the outcome of a formative process, initiated by a problem: ‘To solve a problem is to be able to step over it, to be capable of recasting the forms that are given within the problem and in which it consists’ (Simondon 2016: 156). But as Daniela Voss, in her consideration of the role of problems in Simondon’s works, states, ‘there is not really a generality to problems, much more they differentiate the individuation of non-living and living beings, and attribute a degree of indeterminacy in particular to psychosocial beings’ (Voss 2018: 109). Problems gain traction through transductive operations, ‘by which a structure appears in the do-

main of a problematic, that is, as that which provides the resolution of the posed problems' (Simondon 2009: 11). This solution is never predetermined, but has required an act of invention to be established, for the creation of a new passage between alien structures and potential energies to be actualised. Furthermore, this processural immanence implies the possibility of ethics, too, which for Simondon is expressed through the valuation of acts in their capacity for transductions. From this perspective, '[e]thics is nothing other than the affirmation of the inventions of life in all its forms, the setting into resonance of their differences, the reactivation of the openness of the pre-individual and the creation of new solutions to tensions, which generate new forms of living', writes Elisabeth Grosz in her concise chapter on Simondon (2017: 206-7).

It follows that individuation can not be known in the common sense, as CELIA LURY commences her contribution to this volume, because the knowing subject itself individuates with the problematic. The individuation of the problematic is the methodological concern Lury develops. And as a transductive operation that is inseparable from ontogenesis itself, any methodology of individuation then is nothing to select abstractly and to apply as if it was an unconstrained choice, but becomes operational itself: a constraint constrains itself as it is constituted in the very act. Lury refers accordingly to a 'compositional methodology' to signify this procedural character and to address the individuation of a problematic of the contemporary. Contemporary here is a term described by Paul Rabinow: 'The contemporary is a moving ratio of modernity, moving through the recent past and near future in a (non-linear) space that gauges modernity as an ethos already becoming historical' (2009: 2). A problematic of the contemporary is situated in that ratio which lets modernity emerge as it produces its history, and this ratio is the sole site of its actuality. Lury calls the environment of this individuation 'epistemic infrastructures', supporting becomings with materials of any kind, without being self-contained themselves, in an epistemic process that develops relations of knowledge to truth in the first place. As an example, Lury explores the implications of infrastructuring in urban spaces as real-time instrumentation in the form of sensed digital data that adds to such potentialities of individuation. Compositional methodology is thus concerned with uneven, nonlinear temporalities spurred by a plethora of epistemic infrastructurations and invests in the transitivity of methods, their transductivity for the grounding of new structurations. The aim is to test interdisciplinary meth-

ods for their compositional capacities towards problems, as a composite and compositional at once. Lury provides compositional examples from research concerning this auto-spatialisation instigated with methods that at the same time enter into the relation as they form it. For Lury, the contemporary concept of rendition, with its broad meanings, contributes to affective, moral and political outcomes as it negotiates the tension between an auto-as-autonomy and an auto-as-automatism in the auto-spatialisation instigated. Various styles of reasoning (induction, transduction, deduction) commit to various aspects of rendition, as do the multiplications of contexts. Her contribution in many ways complicates the polemics against ‘the moderns’, which have become rather fashionable in recent years, as it provides a problematisation of the relation between knowledge and truth that establishes an indetermination and thus retains potentials.

References

- Althusser, Louis (1969): *For Marx*, London: Verso.
- Amoore, Louise (2013): *The Politics of Possibility: Risk and Security beyond Probability*, Durham, NC: Duke University Press. <https://doi.org/10.1215/9780822377269>
- Bachelard, Gaston (1949 [1966]): *Le Rationalisme Appliqué*, Paris: PUF.
- Bachelard, Gaston (2012): ‘Corrationalism and the Problematic.’ In: *Radical Philosophy* 173, pp. 27-32.
- Biagioli, Mario (1999): *The Science Studies Reader*, New York: Routledge.
- Biagioli, Mario (2001): ‘From Difference to Blackboxing: French Theory versus Science Studies’ *Metaphysics of Presence*. In: Sylvère Lotringer/Sande Cohen (eds.), *French Theory in America*, New York: Routledge, pp. 271-87.
- Bianco, Giuseppe (2018): ‘The Misadventures of the “Problem” in “Philosophy”: From Kant to Deleuze.’ In: *Angelaki* 23/2, pp. 8-30. <https://doi.org/10.1080/0969725X.2018.1451459>
- Bowden, Sean (2018): ‘An Anti-Positivist Conception of Problems: Deleuze, Bergson and the French Epistemological Tradition.’ In: *Angelaki* 23/2, pp. 45-63. <https://doi.org/10.1080/0969725X.2018.1451461>

- Carnap, Rudolf (2005 [1928]): *Scheinprobleme in der Philosophie und andere metaphysikkritische Schriften*, Hamburg: Meiner Felix. <https://doi.org/10.28937/978-3-7873-2385-2>
- Cassou-Noguès, Pierre (2018): 'Cavaillès, Mathematical Problems and Questions.' In: *Angelaki* 23/2, pp. 64-78. <https://doi.org/10.1080/0969725X.2018.1451463>
- Cavaillès, Jean/Canguilhem, Georges (1994): *Œuvres Complètes de Philosophie des Sciences*, Paris: Hermann.
- Charbonnier, Pierre/Salmon, Gildas/Skafish, Peter (eds.) (2016): *Comparative Metaphysics: Ontology After Anthropology*, London: Rowman & Littlefield International.
- Collett, Guillaume (ed.) (2019): *Deleuze, Guattari, and the Problem of Transdisciplinarity*, London: Bloomsbury Publishing.
- Debaise, Didier (2017): *Nature as Event: The Lure of the Possible*, Durham, NC: Duke University Press. <https://doi.org/10.1215/9780822372424>
- Debaise, Didier (2018): 'The Minoritarian Powers of Thought: Thinking beyond Stupidity with Isabelle Stengers.' *SubStance* 47/1, pp. 17-28.
- Deleuze, Gilles (1994 [1968]): *Difference and Repetition*, New York: Columbia University Press.
- Deleuze, Gilles (1990 [1969]): *The Logic of Sense*, New York: Columbia University Press.
- Dencik, Lina/Hintz, Arne/Redden, Joanna/Treré, Emiliano (2019): 'Exploring Data Justice: Conceptions, Applications and Directions.' In: *Information, Communication & Society* 22/7, pp. 873-81. <https://doi.org/10.1080/1369118X.2019.1606268>
- D'Ignazio, Catherine/Klein, Lauren F. (2020): *Data Feminism*, Cambridge, MA: MIT Press. <https://doi.org/10.7551/mitpress/11805.001.0001>
- Duffy, Simon B. (2018): 'Lautman on Problems as the Conditions of Existence of Solutions.' *Angelaki* 23/2, pp. 79-93. <https://doi.org/10.1080/0969725X.2018.1451469>
- During, Elie (2004): "'A History of Problems": Bergson and the French Epistemological Tradition.' In: *Journal of the British Society for Phenomenology* 35/1, pp. 4-23. <https://doi.org/10.1080/00071773.2004.11007419>
- Erdur, Onur (2018): *Die epistemologischen Jahre: Philosophie und Biologie in Frankreich, 1960-1980*, Zürich: Chronos.

- Foucault, Michel/Rabinow, Paul (1984): 'Polemics, Politics, and Problematizations: An Interview with Michel Foucault.' In: *The Foucault Reader*, New York: Pantheon Books, pp. 381-397.
- Gilson, Erinn Cunniff (2014): 'Ethics and the ontology of freedom: problematization and responsiveness in Foucault and Deleuze.' In: *Foucault Studies* 17, pp. 76-98. <https://doi.org/10.22439/fs.voi17.4254>
- Grosz, Elisabeth A. (2017): *The Incorporeal: Ontology, Ethics, and the Limits of Materialism*, New York: Columbia University Press. <https://doi.org/10.7312/gros18162>
- Guattari, Félix (1995): *Chaosmosis: An Ethico-Aesthetic Paradigm*, Bloomington: Indiana University Press.
- Haraway, Donna Jeanne (1988): 'Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective.' In: *Feminist Studies* 14/3, pp. 575-99. <https://doi.org/10.2307/3178066>
- Haraway, Donna Jeanne (2004 [1985]): 'A Manifest for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s.' In: *The Haraway Reader*, New York: Routledge, pp. 7-45.
- Haraway, Donna Jeanne (2008): *When Species Meet*, Minneapolis: University of Minnesota Press.
- Hirsch Hadorn, Gertrude et al. (2008): *Handbook of Transdisciplinary Research*, Dordrecht: Springer.
- Kelly, Mark G.E. (2018): 'Problematizing the Problematic: Foucault and Althusser.' In: *Angelaki* 23/2, pp. 155-69. <https://doi.org/10.1080/0969725X.2018.1451528>
- Klein, Julie Thompson (2014): 'Discourses of Transdisciplinarity: Looking Back to the Future.' In: *Futures* 63/1: pp. 68-74. <https://doi.org/10.1016/j.futures.2014.08.008>
- Kuhn, Thomas S. (1996 [1962]): *The Structure of Scientific Revolutions*, Chicago: University Of Chicago Press.
- Lautman, Albert/Duffy, Simon B. (2010): *Mathematics, Ideas, and the Physical Real*, New York: Continuum.
- Lecourt, Dominique (ed.) (2006): *Dictionnaire d'Histoire et Philosophie des Sciences*, Paris: PUF.
- Macherey, Pierre (1998): *In a Materialist Way: Selected Essays*, London and New York: Verso.
- Maniglier, Patrice (2012): 'What Is a Problematic?' In: *Radical Philosophy* 173, pp. 21-3.

- Maniglier, Patrice (2019): 'Problem and Structure: Bachelard, Deleuze and Transdisciplinarity.' In: *Theory, Culture & Society*, online. <https://doi.org/10.1177/0263276419878245>
- Martin, Jacques (2020): *L'individu chez Hegel*, ed. by Jean-Baptiste Vuillerod, Lyon: ENS éditions. <https://doi.org/10.4000/books.enseditons.14784>
- Massumi, Brian (2009): "Technical Mentality" revisited: Brian Massumi on Gilbert Simondon.' Interview with Arne De Boever, Alex Murray and Jon Roffe. In: *Parrhesia* 7, pp. 36-45.
- Mittelstraß, Jürgen et al. (eds.) (2005-2016): *Enzyklopädie Philosophie und Wissenschaftstheorie*, 6 Volumes, Stuttgart: Metzler. <https://doi.org/10.1007/978-3-476-00134-4>
- Osborne, Thomas (2003): 'What Is a Problem?' In: *History of the Human Sciences* 16/4, pp. 1-17. <https://doi.org/10.1177/0952695103164001>
- Osborne, Peter (2015): 'Problematizing Disciplinarity, Transdisciplinary Problematics.' In: *Theory, Culture & Society*, 32/5-6, pp. 3-35. <https://doi.org/10.1177/0263276415592245>
- Pignarre, Philippe/Stengers, Isabelle (2011): *Capitalist Sorcery: Breaking the Spell*. Basingstoke/New York: Palgrave Macmillan.
- Rabinow, Paul (2009): *Marking Time: On the Anthropology of the Contemporary*, Princeton: Princeton University Press. <https://doi.org/10.1515/9781400827992>
- Savransky, Martin (2016): *The Adventure of Relevance*, London: Palgrave Macmillan UK. <https://doi.org/10.1057/978-1-137-57146-5>
- Savransky, Martin (2019): 'The Pluralistic Problematic: William James and the Pragmatics of the Pluriverse.' In: *Theory, Culture & Society*, online July 15th. <https://doi.org/10.1177/0263276419848030>
- Serres Michel, and Nayla Farouki (eds.) (1997): *Le Trésor. Dictionnaires des Sciences*, Paris: Flammarion 1997.
- Simondon, Gilbert (2005): *L'individuation à la Lumière des Notions de Forme et d'Information*, Grenoble: Millon.
- Simondon, Gilbert (2009): 'The Position of the Problem of Ontogenesis.' In: *Parrhesia* 7/1, pp. 4-16.
- Simondon, Gilbert (2016 [1958]): *On the Mode of Existence of Technical Objects*, Minneapolis: Univocal.
- Souriau, Étienne (2015 [1943]): *The Different Modes of Existence: Followed by, Of the Mode of Existence of the Work to Be Made*. Minneapolis: Univocal.

- Stengers, Isabelle (2009): 'William James: An Ethics of Thought?' In: *Radical Philosophy* 157, pp. 9-19.
- Stengers, Isabelle (2015): In *Catastrophic Times – Resisting the Coming Barbarism*, London: Open Humanities Press.
- Stengers, Isabelle/Debaise, Didier (2017): 'Towards a Speculative Pragmatism.' In: *Parse* 7, pp. 12-9.
- Stengers, Isabelle (2019) 'Putting Problematization to the Test of Our Present.' In: *Theory, Culture & Society*, online July 15th. <https://doi.org/10.1177/0263276419848061>
- Strathern, Marilyn (1988): *The Gender of the Gift: Problems with Women and Problems with Society in Melanesia*, Berkeley: University of California Press. <https://doi.org/10.1525/california/9780520064232.001.0001>
- Viveiros de Castro, Eduardo (2014): *Cannibal Metaphysics*, Minneapolis: Univocal.
- Voss, Daniela (2018): 'Simondon on the Notion of the Problem: A Genetic Schema of Individuation.' *Angelaki* 23/2, pp. 94-112. <https://doi.org/10.1080/0969725X.2018.1451471>