Compositional Methodology: On the Individuation of a Problematic of the Contemporary

Celia Lury

Introduction

The primary focus of Gilbert Simondon's writings is the problematic of individuation (1992; 2017); a subsidiary but integral dimension of this focus is a concern with *the individuation of a problematic*. In this essay, I explore some of the methodological aspects of this process. At a fundamental level, approaching the construction of a problematic as a process of individuation, Simondon provides an alternative to theories of knowledge in which the possibility of knowledge is grounded in the constituting activity of the knowing subject. As he puts it, 'We cannot *know individuation* in the common sense of the phrase; we can only individuate, individuate ourselves and in ourselves' (1992: 317).

In Simondon's approach to the individuation of a problematic, metaphysics and logic are merged in what is called transduction, that is, a recursive analogical operation in which the process of individuation 'between the real exterior and the subject is grasped *by* the subject due to the analogical individuation of knowledge *in* the subject' (Simondon quoted in Combes, 2012: 9; my italics). Transduction is the analogical and self-grounding dimension of the procedure of thought. As Adrian Mackenzie explains,

> Every transduction is an individuation in process. It is a way something comes to be. Importantly, transduction refers not only to a process that occurs in physical, biological or technical ensembles as they individuate. It also occurs in and as thought. Thinking can be understood as an individuation of a thinking subject; not just something that someone who thinks does. (2002: 18)

The individuation of a problematic is always double, both ontogenetic and epistemological. As Combes put it in her influential account, for Simondon, 'thought is nothing more than one of the phases of being-becoming, because the operation of individuation does not admit of an already constituted observer.' (2012: 7)

In what follows my concern is to explore the implications of the onto-epistemological doubling by focusing on issues of methodology. Given this concern, I risk falling into a kind of technocratic conception of the problematic, of inhabiting the position of a functionary (Flusser 2014), but I hope to avoid doing so by following Simondon in refusing to understand methodology as a principle or a set of principles that can simply be applied or put into effect. Instead, the aim is to see methodology as a principle – or perhaps better – and, to adopt Simondon's terminology, an operation, that *is itself constituted as it happens*: 'the transposition of the scheme is in turn accompanied by a composition of it' (Simondon, quoted in Combes 2012: 13). I put forward the term 'compositional methodology' to describe the dynamic and methodologically constitutive dimensions of the individuation of a problematic (Lury, forthcoming), the twisting of process into practice.

The use of the term 'compositional' is intended to draw attention to Simondon's distinctive notion of form. His criticism of hylomorphism – in which a pre-existing form is imposed on matter from outside – is well known. In Simondon's view, such an understanding is inadequate in that it does not recognise the potentials that are always emerging in a process of individuation. To acknowledge this potential, he proposes a concept of form related to the activity of in-formation. In this understanding, information designates 'the very operation of taking on form, the irreversible direction in which individuation operates' (Combes 2012: 5). This understanding of form as an operation – a continuous, variable process – is also present in other process thinkers, including A.N. Whitehead, who says that the comprehension of process requires 'an analysis of the interweaving of data, form, transition, and issue' (Whitehead 1968: 34).

A problematic of the contemporary

My aim here is to consider the methodological aspects of the individuation of a problematic by addressing the individuation of a problematic *of the contemporary*. Peter Osborne (1995) provides a note of caution for such a project when he suggests that the space of the contemporary is constituted as an illusory present in much social and cultural theory. He gives as an example those analyses that make use of the term 'new media' as if 'new-ness' provided its own context. This present-ism, he suggests, is a consequence of theory's modernism and its negation of the past. Acknowledging the pitfalls of such an approach, I propose instead to elaborate what might be involved in the individuation of a problematic of the contemporary by drawing on Paul Rabinow's anthropology of reason, which explicitly aims to move beyond modernity as a metric of inquiry.[1] Rabinow presents the contemporary as an assemblage of old and new elements and their interactions and interfaces: 'The contemporary is a moving ratio of modernity, moving through the recent past and near future in a (nonlinear) space that gauges modernity as an ethos already becoming historical.' (2009: 2)

In this way of thinking, the individuation of a problematic of the contemporary is emergent, where emergence refers to 'a state in which multiple elements combine to produce an assemblage, whose significance cannot be reduced to prior elements and relations' (2009: 2). Simondon himself uses the term contemporary to describe the individuation of living individuals, in contradistinction to that of physical individuals: he says that the living individual is contemporary with itself whereas a physical individual contains a past that is 'radically "past"' (1992). The restriction of this understanding of the contemporary to living entities is not adopted here since, methodologically, it is important to recognise the heterogeneity of milieu in which the individuation of a problematic takes place and acknowledge the significance of modes of conscious and non-conscious cognition that cut across the distinction between the living and the non-living (Hayles 2017). Although some scholars (Back and Puwar 2012) have proposed the term 'live methods' to galvanise methods across the social sciences, what is proposed here is a little different (though not incompatible): that is, a compositional methodology is

1 Relatedly, Rabinow says, 'it is only through discovering and giving form to elements that are already present that the inquiry can proceed' (2009: 9).

proposed in which the individuation of a problematic is a processual ensemble of living *and* non-living entities.

Having laid out some general methodological characteristics of the individuation of a problematic of the contemporary, let me now briefly introduce the notion of epistemic infrastructures to orient the discussion of the environment in which the individuation of problematics takes place. The term 'infrastructure' highlights the ways in which individuation requires and installs 'material supports' in the world, including 'buildings, bureaucracies, standards, forms, technologies, funding flows, affective orientations, and power relations' (Murphy 2017: 6). The term epistemic is used to signal that what is at issue is the nature of knowledge, justification and belief rather than (pre-formed) knowledge as such. Indeed, the relation of knowledge to truth, and the complex relations between knowledge, faith, feeling and belief are central to discussions of the individuation of the problematic of the contemporary (for different perspectives on these issues see Simone 1994; Connelly 1999; Esposito 2013; Blencowe 2015).

Crucially, infrastructures are never self-contained or discrete: they themselves leave legacies that impinge on environments, atmospheres and other material sites through complex interrelationships of energy transference, waste disposal and economics (for example, data centers globally currently account for 2% of global greenhouse emissions equivalent to aviation)' (Corby 2017: 368). And of course they are always changing. Consider, for example, the changes described by Alberto Corsín Jiménez (2014) in his discussion of beta or open source urbanism. By this he means the ways in which citizens are 'wiring the landscape of their communities with the devices, networks, or architectures that they deem worthy of local attention or concern' (2014: 342). He situates these developments in relation to the 'new economy of open knowledge' emerging from organisational forms, such as peer-to-peer networks of collaboration, and in doing so identifies the possibility of *a right to infrastructure*.

Corsín Jiménez identifies three dimensions to this right. One, conceptual: projects in open source urbanism populate urban ecologies with digital and material entities whose emergence destabilises classical regulatory distinctions between public, private or commercial property forms, technologies and spaces. Two, technical: open source urban projects are built on networks of expertise and skills that traverse localised boundaries. Three, political: open source projects transform the stakes in modes of urban gover-

nance. In an open source project, a community may assume political and expert management of its infrastructure. By bringing these three dimensions together, he suggests, it becomes possible to read the right to infrastructure as a verb, not a noun:

> The process of *infrastructuring* makes visible and legible the languages, media, inscriptions, artefacts, devices, and relations – the betagrams – through which political and social agencies are endowed with […] expressive capacity. (2014: 357)

But, as Corsín Jiménez also acknowledges, both the right to and the capacity for infrastructure are unevenly distributed. There is a precarious politics associated with the articulation of this right and the associated redistribution of expertise. For example, in the UK and more widely in Europe, academics in all disciplines are now routinely encouraged to extend collaboration outside the academy, not simply to engage representatives of business, government and the third sector, social movements and the public, but to invite them to participate in research activity as co-producers of knowledge. On the one hand, it is part of a shift in emphasis from the experimental as a knowledge-site to the experimental as a social process. On the other hand, it is also an unequal playing field, in which the nature and characteristics of the social are being redefined (Marres, Guggenheim and Wilkie 2018). At the same time, 'users' (that is, most of us who engage with digital media as part of our everyday lives) are increasingly required to take part in/be part of a variety of genres of participation, including tests, trials, games, competitions, experiments, quizzes and so on, also including various forms of tracking and tracing, where we are not so much participating as being participated. In these practices, knowledge-making is implicitly and explicitly tied to the creation of epistemic cultures of increasingly diverse, distributed heterogeneous kinds (Knorr Cetina 1999), including (multi-sided) markets. As the traditional entry and exit points of knowledge-creation become less clear 'information' asymmetries proliferate.

The politics of infrastructuralism is also at issue in the emergence of what are called global challenges or global problems. In these uses, the global is sometimes understood as size or magnitude, that is, some problems – such as climate change or disease – are understood to be so 'big' as to be global. In addition, the term is sometimes extended to a concern with the

heterogeneity of the actors said to be required to address such problems, and the necessity of including both human and non-human participants. On other occasions, much of the data and processes associated with what are called global problems are now held to operate below and before thresholds of human awareness. These kinds of formulations are increasingly hard to avoid. But the concept of the global and the related term globalisation are also contested, at least in some disciplines: it is argued that they cannot capture the intensities and unevenness of the variety of mobilities that crosscut the world (Sheller and Urry 2006). For this reason, some scholars prefer to explore the unevenness that might be introduced into an understanding of such mobilities by focusing on 'inter'-relations. This approach has more resonance with a consideration of the individuation of a problematic of the contemporary, and with an emphasis on the making or composing – rather than the finding – of problems.

Consider, for example, those scholars who have drawn on the idea of 'Asia as a method' (Chen 2010) to develop both an intellectual movement – Inter-Asia Cultural Studies (IACS) – and a methodology, Inter-Asia methodology. Inter-Asia as methodology involves visibilizing the normative frame that often has the 'West' as its key reference point, comparative work, and the identification of terms to become part of a broader conceptual framework. For Niranjana this includes what she calls the 'pressing' of concepts, that is a mutual or lateral interrogation of concepts with each other to reveal their interconnections and how they unevenly implicate simultaneously different Asian locations, the production of genealogies of the Asian 'present' (2013).

Infrastructural changes such as the increase in computational capacity, the growing availability of 'real-time' data and transformations in the ecosystem of data retrieval, have also contributed to a preoccupation with the relation of research to the future. In particular, these changes have stimulated discussion as to whether the future can somehow be brought into the present, that is whether the future can be not just predicted but in some sense anticipated. That is, for example, one way of understanding the changes in the calculation of risk associated with new techniques of statistical analysis (Amoore 2013). It is also linked to a resurgence of interest in design as a methodology and a concern with the performativity of method. The appropriation of design methodology is also associated with the making of artefacts of all kinds, including epistemic artefacts, synthetic materials or

even smart cities. In research linked to smart materials, smart cars or smart cities, design methodology contributes to the creation of cognitive and epistemic artifacts that are held to have the capacity to modulate the present in what is described as real time, bypassing more human forms of governance. As epistemic infrastructures come to be equipped with real-time instrumentation, including actuators (Hayles 2017), and a growing number of storage and memory artefacts able to mobilise and articulate the potential-izing capacities of individuation, Simondon's claim that time itself is 'the expression of the dimensionality of the being as it is becoming individualised' (1992: 314) is being activated methodologically.

-ing

By focusing on form as in-formation, the proposal of the term compositional methodology is designed to draw attention to the uneven, non-linear temporalities of this methodological activation. The thinking behind the term was developed in the perhaps unlikely context of working on an *International Handbook of Interdisciplinary Methods* (2018; with co-editors Rachel Fensham, Alexandra Heller-McCrea, Angela Last, Mike Michael, and Emma Uprichard), the working shorthand for which was -ing! Contributors were asked to describe the *do-ing* of their chosen methods.

An inspiration for this approach was the artist Richard Serra's claim that 'Drawing is a verb'. His artwork *Verb List* (1967-68) serves as a kind of manifesto for this pronouncement. In pencil, on two sheets of paper, in four columns of scripts, the artist lists the infinitives of 84 verbs – *to roll, to crease, to fold, to store,* for example – and 24 possible states or conditions – *of gravity, of entropy, of photosynthesis, of nature* among others. In an interview, Serra says, '[t]he problem I was trying to resolve … was: How do you apply an activity or a process to a material and arrive at a form that refers back to its own making?' (Garrels 2011). The art critic Rosalind Krauss suggests that the list describes Serra's own practice in terms of action that 'simply acts, and acts, and acts' (1985: 101). Serra himself draws attention to the relations in which the action that 'simply acts' takes place: he describes the list as a series of 'actions *to relate to oneself, material, place, and process*' (Buchloh 2000: 7; my emphasis).

The verbs in the list are transitive, that is, in linguistic terms, they can imply or express an object – to roll pastry, to crease paper, to fold metal, to

store data, for example. This formulation – of implication or expression – is important; the verbs are not 'applied' to materials – they imply or implicate an object in a process, 'something/happening' as one of the contributors, Thomas Jellis, says in a discussion of experimenting (Jellis 2018: 53). This, perhaps, is why 24 examples 'of' a variety of objects, conditions or states are also included in the list by Serra: verbs are expressions *of* objects, conditions or states, and objects, states and conditions are the implication or expression *of* verbs.

Perhaps most significantly for a compositional methodology, *how* the verbs in Serra's list imply or express an object is a problem – indeed, it is 'the' problem. As he puts it, the problem is how to accomplish a form by or in doing. Drawing on this insight, and the contributions to the Handbook, the proposal I want to advance here is that the individuation of a problematic of the contemporary is an accomplishment of the do-ing of a method or methods, that is, it is an accomplishment of a practice in which there is a referral back to person, place, matter and process. For Serra, as for Simondon, that this accomplishment emerges as a form cannot be assumed: the operation of methods may or may not arrive at a form, have purchase on a question, or individuate a problem.

> '[n]ot having turns of phrase and modes of conjugation indicating processuality (like the English form -ing that indicates an action in the process of happening) available to him in his language, Simondon is to some extent constrained, in order to introduce dynamism into his thought, to invent a style.' (2013: 109).

In contrast to Serra's use of the infinitive form of verbs in *Verb List*, the approach introduced in the Handbook places emphasis on what are, in the English language, known as *gerunds*, that is, active present tense forms that may also function as nouns (a doubling that is made explicit in Serra's phrase, 'Drawing is a verb').[2] Put rather grandly, the Handbook's concern with methods as gerunds or -ings is intended to identify the potential of methods to

2 In English, this verb form typically ends in -ing, which is why our informal name for the Handbook was –ings! As Rachel Fensham, one of the co-editors of the Handbook, pointed out in discussion, other languages do not necessarily have the same verb forms. Indeed, as Combes points out in her influential explication of Simondon's conception of individuation, '[n]ot having turns of phrase and modes of conjugation indicating processuality (like the English form -ing that indicates an action in the process of happening) available to him

compose problems as interruptions of the (historical) present. That is, the aim of a compositional methodology is to emphasise the role of methods in the making of problems as an activation of the present: they are of interest insofar as they contribute to the determination of a situation as a problem, that is, 'a state of things in which something that will perhaps matter is unfolding amidst the usual activity of life' (Berlant 2008: 4). Just as Simondon says of a concept that it 'is neither *a priori* or *a posteriori* but *a praesentia*, because it is an informative and interactive communication between that which is larger than the individual and that which is smaller' (1992: 310), so we sought to describe interdisciplinary methods. Put rather more prosaically, the aim was to consider how methods might constitute some aspect of what is given, the present – in all its geo-political complexity – as a situation that has potentials that can be methodologically activated in specific, precise ways.[3]

How to realise this aspiration is described in a variety of ways in the Handbook. Matthew Reason says in his discussion of the method of drawing, '[d]rawing is at once immediate, and yet takes time':

> When I ask a participant to draw me a picture I am inviting a different dynamic than if I had simply asked them to talk. I do not expect them to respond instantly. Instead drawing imposes a slowing down, a pause for reflection in the returning to memories. (Reason 2018: 48)

Gail Davies and Helen Scalway say of the diagram,

> […] it hasn't got a beginning, it hasn't got an end but nonetheless the incommensurable meanings are there, written in, but it hasn't got to have that linear structure of time. (Davies and Scalway 2018: 226)

---

in his language, Simondon is to some extent constrained, in order to introduce dynamism into his thought, to invent a style.' (2013: 109)

She continues: 'For all its subtlety, this style is nonetheless tangible, relying in large part on a specific usage of punctuation: it is thus not rare to see deployed, in a phrase composed of brief compositions connected with semicolons, all the phases of a movement of being or an emotion.' (ibid)

3 LaMarre, in his translation of Combes, uses the word 'givenness' in place of 'il y a' (which he also describes as a gloss on 'es gibt'), all phrases used to refer to 'being as such', in contradistinction to individuated being.

Alex Wilkie observes of speculating:

> Speculation, however, requires a shift in approach from analysing how probabilistic futures are manifested, managed and contested in the present – how actors imagine, model, predict, coordinate and in turn configure the future to the present – to the construction of adequate concepts and devices for exploring possible latent futures that matter. A word of caution is in order here, however: speculation is both prospective and retrospective. It applies as much to the politics of explaining past events (what might have been) as it does to the capturing of future possibilities (what might be). (Wilkie 2018: 347)

Catherine Ayres and David Bissel use the term suspending to describe the analytical potential of acknowledging the multiple durations present in an interview. They say,

> Different durations resonate at different times, sometimes immediately, and sometimes years after the initial encounter. Following Ingold's (1993) observations about the multiple co-existent temporalities of landscapes, we want to show how the interview "landscape" is steeped in the pasts and possible futures of researcher and researched alike, a site in which trajectories converge and transform. We want to revisit the interview event between Catherine and John to draw out "suspending" as a methodological intervention filled with theoretical, practical and ethical possibilities for thinking empirical encounters. (Ayres and Bissell 2018: 76)

Jussi Parikka says:

> As a method, digging opens up historically constructed material reality. It does not merely expose "ruins" but the multiple historical realities where material infrastructures have been layered, revealing different "distinctive temporalities and evolutionary paths" (Mattern 2015: 14). In this sense, digging opens the different temporalities that are all the time layered in infrastructures of cities, in media technological objects and in everyday situations. (Parikka 2018: 164-5)

Importantly, this activation of the present in the individuation of a problematic is not something that is a one-off, a discrete procedure, but rather, something that itself is typically conducted as part of a distributed and collaborative process in which a problematic individuates and is individuated. In other words, just as LaMarre notes in his discussion of technical individuation, 'because machines also exist in series and in ensembles, we also need to look at their phylogeny, at the relation between reproduction and transformation' (1999: 104), so also do we need to look at the distributed or differentiated reproduction of problems. To use a different, although related, set of terms, problems are always the methodologically induced property of distributed practical fields, themselves comprising researchers, methods, materials and media, connected to each other in time and space in diverse ways as part of the constantly changing epistemic infrastructure. Or, as Combes puts it, transductive unity is accomplished through 'a relative store of the "spacing out of being", its capacity for dephasing' (2013: 6).

To explore what all this might mean in relation to an individuation of a problematic of the contemporary let me return to the notion of process described by Simondon as transduction, and described by Whitehead as conformation–the interweaving of data, form, transition, and issue. Simondon says:

> By transduction, we mean a physical, biological, mental or social operation, through which an activity [of relation] propagates from point to point within a domain, grounding this propagation in the structuration of the domain, which is operated from place to place: each region of the constituted structure serves as a principle of constitution for the next region. (Simondon, quoted in Combes 2013: 6)

In this process, the operations of in-formation link the problematic and the associated milieu *and* ground the links between internal and external milieu. This is a difficult process to grasp but it is one way to acknowledge that a problem does not simply take place or individuate in an unchanging context, nor only to recognise that it is simply the context that is changing, but to acknowledge that the changing context is (also) changed by each action. One way of understanding this is through the notion of recursion, where recursion is understood as a repetition that sums as it sequences. In other words, the action that simply acts in the individuation of a problematic of the con-

temporary is not so simple at all, but, rather, compounds the problem. A paradigmatic example is free software, where the infrastructure (code) is self-grounded by the very collaborative effort that sets it in motion (Kelty 2008). In earlier work (Adkins/Lury 2011; Lury/Wakeford 2012) I used the term auto-spatialisation – adopted from the philosopher Gilles Châtelet (1999) – to describe this process of individuating a problem. From a compositional methodology point of view, the operation of individuation as auto-spatialisation can be taken to mean that a problem is always both a composite and compositional, that is, a form that is *of* the process of being *in*-formed. And this composition continually actualises potential as it makes relations between a problem and (the changing) context anew: a problem individuating is never fully solved but always in suspension.

Auto-spatialisation

Let me give some examples from a variety of disciplinary and interdisciplinary practices.

First, sampling. Zeilinger (2014) proposes that we recognise sampling as a methodological intervention, not simply as borrowing or stealing, but as a purposeful replacement of a recognizable original. He gives two cases. The first concerns a record of the Bobby Darin 1959 hit song *Dream Lover*, which as a result of the repeated playing of selected passages is scratched so that the needle gets stuck, repeating certain grooves: 'the jumping needle transforms the line "Dream lover, where are you – with a love oh so true?" into a loop that sounds like: "Dreamlo-lo-lo-lover where are yo-u-u-u-u […]?"' (2014: 163-164). The effect of this stuttering, he says, subtly changes the line's connotation: 'The scratched record takes on the quality of a new utterance […], and, from its inscribed involuntary repetitions and stammering, the listener may discern the longing for love, the insecurities, and the unfulfilled desires of a whole generation of listeners.' (2014: 164) The second case concerns the film *Alone*. Zeilinger says,

> [b]y my estimation, Arnold's *Alone* appropriates a total of around two minutes from several source films and, by inserting countless repetitions of sampled snippets, stretches the source material to roughly eight times its original duration. This intervention allows the filmmaker to focus on a number of arche-

> typical character constellations (such as Father-Son, Father-Mother-Son, and Mother-Son-Love Interest) and to foreground in these constellations psychological issues that the cultural mainstream tends to gloss over. (2014: 164)

Through these two cases, Zeilinger argues that sampling can uncover, foreground, and repurpose the meanings of original materials. He shows how sampling can *return* the past to the present and the future. In making this argument he is very much concerned with the ways in which repetition is sequenced, that is, in the terms being developed here, how the organisation of auto-spatialisation can individuate a problematic in very particular ways:

> When we sample, we do not necessarily produce anti-authoritative ruptures (that would be the legal action of the sampling artist as pirate); rather, sampling allows us to become part of circuits of meaningful repetition that can create new intimacies, new rapports between us, the original work, and the sampling piece itself. Sampling simultaneously dismantles and reinstates a work, an idea, or a unit. (2014: 169)

A second example comes from a study of Fluidity, the name of an open source computational code that is the key methodological resource of a large group of scientists at the Applied Modelling and Computation Group at Imperial College in London. In his ethnography of this group, Matthew Spencer describes the complex temporalities that are involved in the transformation in use of this code by scientists in different disciplines, working both independently and collaboratively, in syncopated rhythms with each other. He writes,

> [r]esearch projects carry with them the whole weight of their past. While the trajectory of construction may move from a mathematical model of an analytical solution to a model of a well-studied experiment, the results of these previous stages become concretised in the apparatus as part of a testing system. When a scientist moves on to model something new, it is important to be assured that changes made in doing this have not undone earlier successes that built the foundation for the project. So as a test incorporated into the automated build and test suite, the earlier result will be run every time modifications are made to the code, ensuring that confidence from past success can still hold. […] When a model is under active development, it is

> never enough to cite validations and verifications that have been made in the past, because these have been made with respect to a different code. All past verification and validation accreted in the present system of research is thus carried forwards with current research projects, applied over and over again to every new iteration of the code. (Spencer 2013: 107)

This characteristic – the operationalisation of repetition in ways that actively engage and exploit a context that is itself changing – is an aspect of all individuation (including the individuation of a problematic), so Simondon would suggest. As Spencer acknowledges, scientific practice has always been repetitively distributed in space and time, but his study shows the newly enhanced methodological importance of the changing organisation of that repetition in a shared computational infrastructure *that is itself being deliberately changed* in a process of auto-spatialisation.

A third example relates to the use of computer-generated images (CGIs) in urban planning. Rose, Degen and Melhuish (2014) argue that rather than seeing them as still images, as static representations of urban space, they should be understood as interfaces circulating through a dynamic software-supported network space:

> […] the action done on and with CGIs as they are created takes place at a series of interfaces. These interfaces – between and among humans, software, and hardware – are where work is done both to create the CGI and to create the conditions for their circulation. (2014: 386)

Crucially, understood as interfaces, the circulation of a CGI is not secondary to its creation, but both a condition and a consequence of its methodological value in a process of auto-spatialisation.

A fourth example – perhaps the paradigmatic one – concerns the increasing importance attached to search in the conduct of re-search. David Stark observes a shift in the ways in which networks are transforming the processes of classification that are fundamental to many kinds of research (2011: 169). Things changed, he says, when the founders of Google reorganised search from a classificatory to a network logic:

> […] new social technologies exploit, radically in recombination, the three basic activities of life on the Web: *search, link, interact*. [… S]earch based on the

> structure of the links […]. Interact based on the structure of searches […] [L]ink based on the structure of the interactions. (2011: 171)

Stark emphasises the capacity of this new logic of search to correct a deficiency of methods that conceive databases as 'passive' and model search as information retrieval, that is, assume that the existing, often static, structure of an information resource contains all the relevant knowledge to be discovered. In contrast, Stark says, '[o]nce the vast databases are seen as an associative knowledge structure, the goal is to make them accessible as evolving knowledge repositories' (2011: 171). New categories emerge by treating users themselves as information resources with their own specific contexts. While the concept of category is not abandoned it is reconceived in relation to contexts produced in relation to circulation or movement:

> […] short-term categories bring together a number of possibly highly unrelated contexts, which in turn create new associations in the individual information resources that would never occur with their own limited context. (Stark 2011: 173)

Each of these examples demonstrates the methodologically constitutive operation of auto-spatialisation, including, perhaps most significantly, practices of contexting that provide (unevenly) shared resource for the individuation of a problematic in terms of movement within and through changing milieu.

Rendition

To consider what is at stake in these practices for the individuation of a problematic of the contemporary let me introduce the artist Hito Steyerl's description of how the practice of film editing is currently being transformed. It is, she says,

> […] being expanded by techniques of encryption – techniques of selection – and ways to keep material safe and to distribute information. Not only making it public, divulging or disclosing, but really finding new formats and circuits for it. I think this is an art that has not yet been defined as such, but it is,

> well, aesthetic. It's a form. […] Now it's not only about narration but also about navigation, translation, braving serious personal risk, and evading a whole bunch of military spooks. It's about handling transparency as well as opacity, in a new way, in a new, vastly extended kind of filmmaking that requires vastly extended skills. (Steyerl/Poitras 2015: 311)

Steyerl proposes that the question of how information is 'stored, secured, circulated, redacted, checked, and so on [… the] entire art of withholding and disseminating information and carefully determining the circumstances' is a 'formal decision'. She emphasises that this decision has an unstable temporality:

> When I'm working with *After Effects*,[4] there is hardly any real-time play back. So much information is being processed, it might take two hours or longer before you see the result. So editing is replaced by rendering. Rendering, rendering, staring at the render bar. It feels like I'm being rendered all the time.
>
> What do you do if you don't really see what you edit while you're doing it? You speculate. It's speculative editing. You try to guess what it's going to look like if you put key frames here and here and here. Then there are the many algorithms that do this kind of speculation for you. (Steyerl /Poitras 2015: 312)

In dialogue with Steyerl, the filmmaker Laura Poitras discusses the programme TREASUREMAP used by the US National Security Agency (NSA) to provide analysts with 'a near-real-time map of the internet and every device connected to it'. She suggests that at the core of the NSA's approach to data collection is a 'retrospective querying – how to see narrative after the fact' (Steyerl and Poitras 2015: 312).[5]

In the terms being developed here Steyerl provides a description of a specific form of auto-spatialisation – one which I suggest is increasingly dominant: rendition (see also Day and Lury 2017). Rendering or rendition is a term with many everyday as well as technical definitions, including: a per-

4 Adobe *After Effects* is a software tool for video compositing, motion graphics design and animation.

5 Following this line of thought, phenomena such as 'fake news' can be understood as epistemic artefacts of practices of rendition.

formance, a translation, an artistic depiction, a representation of a building executed in perspective, as well as meaning to return, to make a payment in money, kind or service, to pay in due (a tax or tribute) and, in legal terms, to transfer persons from one jurisdiction to another. The origin for all these uses of the term is the Latin *reddere*: 'to give back.' However, as Steyerl's description makes clear – and the current salience of the term 'forced rendition' also highlights – rendition can operate in ways that are deeply challenging to artistic practice. More widely, Steyerl's description of the changing conditions of editing provides a way to identify some of the issues facing anyone concerned with the individuation of a problematic of the contemporary. Among many others, these include: the 'auto' of auto-spatialisation; the composition of styles of reasoning; and transcontextualism and radicalizing contexts.

First, the 'auto' of auto-spatialisation. In relation to the changes in epistemic infrastructures described earlier, the provocation provided by my introduction of the notion of rendition makes visible the political importance of negotiating the tension between auto-as-autonomy and auto-as automatism. This concern is perhaps most evident in discussions of algorithms in general and machine learning in particular (Mackenzie 2017), since the evaluation of these methods relates to how they operationalise recursion (Fuller and Goffey 2012; Totaro and Ninno 2014). What is of concern is the kinds of control – the new kinds of normal, for example – that are established as recursion is used to 'organise heterogeneous material into a continuous, self-consistent pattern'. And while 'each recursive event is different, in terms of its scale, location in time, in the complications it may entail, and in terms of its place in relation to its nesting within other recursions or to those in which it is in turn nested', it is still by no means clear whether and how these methods are able to automate statistical induction to meaningful effect (Pasquinelli 2017).

This point leads onto the second issue – composite styles of reasoning. Simondon is keen to distinguish transduction from both deduction and induction. He says that, unlike deduction, transduction 'does not seek elsewhere a principle to resolve the problem at hand; rather, it derives the resolving structure from the tensions themselves within the domains' (1992: 315). And transduction is not comparable to induction, he says, 'because induction retains the character of the term of the reality as it is understood in the area under investigation – deriving the structures of analyses from these terms themselves [...] it only retains that which is positive, which is to

say, that which is common to all the terms, eliminating whatever is singular' (1992: 315). Abduction – as it is commonly understood as the formation of explanatory hypotheses – has more affinity with transduction insofar as it is often explicitly defined in terms of inventiveness or creativity (Schurz 2008). However, the examples of auto-spatialisation outlined above suggest that transduction need not be restricted or reduced to any of deduction, induction or abduction, but that – in the individuation of specific problematics – all such styles of reasoning may play a role, in different ways, in different phases. Perhaps this is one way to think of a moving ratio?

Certainly the changes in epistemic infrastructures described above invite and support re-combinations of styles of reasoning: they allow, for example, for a variety of kinds of feedback, reciprocity and repetition. These, in turn, enable a more explicit engagement with what Simondon describes as the allagmatic dimensions of individuation, in which the concern is with description rather than explanation, or perhaps better, there are more ways to link description and explanation (Uprichard 2013; Mackenzie 2015). These include ongoing (epistemologically diverse and heterogeneously composite) experiments in anticipation (Ramírez and Selin 2014), speculation (as above and see Wilkie, Savransky and Rosengarten 2017), prototyping (Corsín Jiménez 2017), agent-based modelling, and simulation (Gilbert 2008; Gilbert and Troitzsch 2005). At the same time, the questionable epistemological status of, for example, 'narratives after the fact', the unstable evidential value of the possible rather than the probable, and concerns about whether and how anticipation comes to be associated with a pre-emption of the future all point to the political as well as epistemological dilemmas involved in the individuation of a problematic of the contemporary.

The third issue provoked by the notion of rendition and shared by the examples above can be understood in terms of the genus of syndromes that Gregory Bateson describes as transcontextualism. By this term, Bateson refers to a variety of cognitive tangles sharing common features, which he says are a result of the 'weaving of contexts and of messages which propose context – but which, like all messages, whatsoever, have 'meaning' only by virtue of context' (1972: 275-276). He says that most of these syndromes are not to be regarded as pathological (although his own thinking about the transcontextual relates to his attempts to understand schizophrenia), but should rather be understood as 'double takes' of a variety of kinds. Examples include when

'[e]xogenous events may be framed in the context of dreams, and internal thought may be projected into the contexts of the external world' (1972: 200).

While Bateson's discussion of the implications of transcontextualism is largely confined to the level of the individual organism, his observations have considerable relevance in relation to the individuation of a problematic of the contemporary insofar as there is now an increased potential for contexts to be multiplied, and for heterogeneous cultures of contexting (Seaver 2015) to collide as well as for contexts to be equipped so as to be able to be interactive (Lury and Marres 2015).[6] As Bateson notes, there are a variety of ways to respond to or inhabit the transcontextual, including minimizing encounters with the transcontextual and actively resisting transcontextual pathways. However, neither way seems adequate at a time of 'radicalizing contexts'. As Antoinette Rouvroy and Thomas Berns point out, 'action based on the anticipation of individual behaviours could in the future be increasingly limited to an intervention on their environment, especially if the environment itself is reactive and intelligent, that is, if it collects data in real-time through multiple sensors, and shares and processes them to constantly adapt to specific needs and dangers, which is already the case at least during the significant part of life that individuals spend online' (2013: 172). Moreover, as both Bateson and Simondon acknowledge, (knowledge) propositions are always affective and have the potential to be pathological. Bateson writes,

> [p]sychologists commonly speak as if the abstractions of relationship (dependency, hostility, love, etc.) were real things which are to be described or expressed by messages. This is epistemology backwards: in truth, the messages constitute the relationship, and words like 'dependency' are verbally coded descriptions of patterns immanent in the combination of exchanged messages. (1972: 201)

6 For Cooley, communications provide for not only an extension, but also a possible multiplicity of environments. As a consequence, selection emerges as a formative, infrastructural dynamic in which 'a million environments solicit' the emergent individual (Cooley 1897: 23). A mundane example of this is the situation in which wifi networks solicit you (or your machine) to join them, the relative strength of their signals disrupting any continuity of context.

Conclusion

This discussion has addressed a subsidiary but integral dimension of Simondon's thinking: the individuation of a problematic. It introduced the term compositional methodology to draw attention to the methodological dimensions of this process, focusing on the temporalities involved in what was described as the activation of the present or the folding of process into practice as part of the individuation of a problematic of the contemporary. It further sought to demonstrate that the methodological aspects of the individuation of a problematic of the contemporary cannot be separated from the affective, moral and political aspects of this process by introducing the notion of rendition alongside the term auto-spatialisation.

In conclusion, I want to return to the understanding of the contemporary and its significance for an understanding of the individuation of a problematic. On the one hand, if we wish to avoid the present-ism of which Osborne speaks it is important to acknowledge Simondon's relation to the cybernetic theory that was emerging at the time of his writing (see Hörl 2012). He himself recognised the importance of doing so, distinguishing between what he considered to be his own qualitative interpretation of information and the quantitative understanding operationalised by Shannon and Weaver (Hayward and Geoghegan 2012). But still the question remains: Does Simondon's use of the concept of in-formation rely on an understanding that is insufficiently distinguished from that which is operationalised in the practices which are, very often, the object of study? That is, does his reliance on a notion of in-formation make him unable to challenge cybernetic thinking and practice and so make his understanding of individuation inadequate for understanding the contemporary? On the other hand, to avoid the pitfalls of a deterministic historicism, perhaps we need to recognise that the individuation of a problematic of the contemporary has potentials that can only be actualised in relation to the impersonal power of a shifting present (Esposito 2012). While being aware of the possibility of foreclosure of thought implied in rendition, the analysis above suggests that we should not retreat to the (un)certainties of a knowing subject, but rather assess what it means for uncertainty about to be distributed unevenly, and what conceptual personae – the idiot (Stengers 2005), the lurker (Goriunova 2017), the digital subject (Wark 2018), the machine learner (Mackenzie 2017) – might be adequate as we 'individuate, individuate ourselves and in ourselves'.

References

Adkins, Lisa/Lury, Celia (2011): 'Introduction: Special Measures.' In: Sociological Review 59/2, pp. 5-23. https://doi.org/10.1111/j.1467-954X.2012.02051.x

Amoore, Louise (2013): The Politics of Possibility: Risk and Security Beyond Probability, Durham, NC: Duke University Press. https://doi.org/10.1215/9780822377269

Ayres, Catherine/Bissel, David (2018): 'Suspending.' In: Celia Lury et al. (eds.), International Handbook of Interdisciplinary Methods, London: Routledge, pp. 76-80. https://doi.org/10.4324/9781315714523-9

Back, Les/Puwar, Nirmal (eds.) (2012): Live Methods, Oxford: Wiley-Blackwell.

Bateson, Gregory (1972): Steps to an Ecology of Mind, Chicago: University of Chicago Press.

Berlant, Lauren (2008): 'Thinking about feeling historical.' In: Emotion, Space and Society 1/1, pp. 4-9. https://doi.org/10.1016/j.emospa.2008.08.006

Blencowe, Claire (2015): 'The matter of spirituality and the commons.' In: S. Kirwan/L. Dawney/J. Brigstock (eds.), Space, Power and the Commons: The Struggle for Alternative Futures, London: Routledge, pp. 185-203.

Buchloh, Benjamin (2000): 'Process sculpture and film in the work of Richard Serra.' In: H. Foster/G. Hughes (eds.), Richard Serra, Cambridge, MA: The MIT Press, pp. 1-19.

Châtelet, Gilles (1999): Figuring Space: Philosophy, Mathematics and Physics, New York: Springer. https://doi.org/10.1007/978-94-017-1554-6

Chen, Kuan-Hsing. (2010): Asia as Method: Toward Deimperialization, Durham, NC: Duke University Press. https://doi.org/10.1215/9780822391692

Connelly, William E. (1999): Why I am not a Secularist, Minneapolis: University of Minnesota Press.

Cooley, Charles H. (1897): 'The process of social change.' In: J. D. Peters/P. Simonson (eds.), Mass Communication and American Social Thought Key Texts 1919-1968, Lanham, MD: Rowman & Littlefield.

Combes, Muriel (2012): Gilbert Simondon and the Philosophy of the Transindividual, Cambridge, MA: MIT Press.

Connor, Steven/Corby, Tom/Nafus, Dawn/Redler Haws, Hannah/Smith, Marquard/Teasley, Sarah, Numbers/Data: A Roundtable. In: Journal of Visual Culture 16/3, pp. 355-85. https://doi.org/10.1177/1470412917742083

Corsín Jiménez, Alberto (2014): 'The right to infrastructure: a prototype for urban source urbanism.' In: Environment and Planning D: Society and Space 32, pp. 342-62. https://doi.org/10.1068/d13077p

Corsín Jiménez, Alberto (ed.) (2017): Prototyping Cultures: Art, Science and Politics in Beta, Abingdon: Routledge. https://doi.org/10.4324/9781315529493

Davies, Gail/Scalway, Helen (2018): 'Diagramming.' In: Lury et al. (eds.), International Handbook of Interdisciplinary Methods, London: Routledge, pp. 209-227. https://doi.org/10.4324/9781315714523-31

Day, Sophie/Lury, Celia (2017): 'New Technologies of the Observer: #BringBack, Visualization and Disappearance.' In: Theory, Culture and Society 34/7-8, pp. 51-74. https://doi.org/10.1177/0263276417736586

Esposito, Elena (2013): 'Digital prophecies and web intelligence.' In: M. Hildebrandt/K. de Vries (eds.), Privacy, Due Process and the Computational Turn: The Philosophy of Law Meets the Philosophy of Technology, Oxford and New York: Routledge, pp. 121-42.

Esposito, Roberto (2012): Third Person: Politics of Life and Philosophy of the Impersonal, Cambridge, UK: Polity Press.

Flusser, Vilém (2014): Gestures, Minneapolis: University of Minnesota Press. https://doi.org/10.5749/minnesota/9780816691272.001.0001

Fuller, Matthew/Goffey, Andy (2012): 'Digital Infrastructures and the Machinery of Topological Abstraction.' In: Theory, Culture and Society 29/4-5, pp. 311-33. https://doi.org/10.1177/0263276412450466

Garrels, Gary (2011): 'An Interview with Richard Serra (2010).' In: Richard Serra Drawing: A Retrospective, Houston: The Menil Collection.

Gilbert, Nigel/Troitzsch, Klaus G. (2005): Simulation for the Social Scientist, Maidenhead: Open University Press.

Gilbert, Nigel (2008): Agent-Based Models, Thousand Oaks: Sage. https://doi.org/10.4135/9781412983259

Goriunova, Olga (2017): 'The lurker and the politics of knowledge in data culture.' In: International Journal of Communication 11, pp. 1-17.

Hayles, N. Katherine (2017): Unthought: The Power of the Cognitive Nonconscious, Chicago: University of Chicago Press. https://doi.org/10.7208/chicago/9780226447919.001.0001

Hayward, Mark/Geoghegan, Bernard D. (2012): 'Introduction and catching up with Simondon.' In: SubStance 41/3. https://doi.org/10.1353/sub.2012.0027

Hörl, Erich (2012): 'Luhmann, the non-trivial machine and the neocybernetic regime of truth.' In: Theory, Culture and Society 29/3, pp. 94-121. https://doi.org/10.1177/0263276412438592

Ingold, Timothy (1993): 'The temporality of the landscape'. In: World Anthropology 25/2, pp. 152-74. https://doi.org/10.1080/00438243.1993.9980235

Jellis, Thomas (2018): 'Experimenting'. In: C. Lury et al (eds.), Routledge Handbook of Interdisciplinary Methods, London and New York: Routledge, pp.53-7. https://doi.org/10.4324/9781315714523-4

Kelty, Chris (2008): Two Bits: The Cultural Significance of Free Software, Durham, NC: Duke University Press. https://doi.org/10.1215/9780822389002

Knorr Cetina, Karen (1999): Epistemic Cultures: How the Sciences Make Knowledge, Cambridge, MA: Harvard University Press.

Krauss, Rosalind (1985): The Originality of the Avant-Garde and Other Modernist Myths, Cambridge, MA: MIT Press.

LaMarre, Thomas (2012): 'Afterword: Humans and Machines'. In: Muriel Combes (ed.), Gilbert Simondon and the Philosophy of the Transindividual, Cambridge, MA: MIT Press. pp. 79-108.

Lury, Celia/Wakeford, Nina (eds.) (2012): Inventive Methods: The Happening of the Social, London: Routledge. https://doi.org/10.4324/9780203854921

Lury, Celia/Marres, Noortje (2015): 'Notes on objectual valuation.' In: M. Kornberger/L. Justessen/A. Koed Madsen/J. Mouritsen (eds.), Making Things Valuable, Oxford: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780198712282.003.0012

Lury, Celia/Fensham, Rachel/Heller-Nicholas, Alexandra/Lammes, Sybille/Last, Angela/ Michael, Mike and Uprichard, Emma (eds) (2018): Routledge Handbook of Interdisciplinary Methods, London and New York: Routledge. https://doi.org/10.4324/9781315714523

Lury, Celia (forthcoming): Problem Spaces: Why Methodology Matters, Cambridge, UK: Polity.

Mackenzie, Adrian (2002): Transductions: Bodies and Machines at Speed, London: Bloomsbury Academic.

Mackenzie, Adrian (2015): 'The production of prediction: What does machine learning want?' In: European Journal of Cultural Studies 18/4-5, pp. 429-45. https://doi.org/10.1177/1367549415577384

Mackenzie, Adrian (2017): Machine Learners: Archaeology of a Data Practice, Cambridge, MA: MIT Press. https://doi.org/10.7551/mitpress/10302.001.0001

Marres, Noortje/Guggenheim, Michael/Wilkie, Alex (2018): Inventing the Social, Manchester, UK: Mattering Press.

Mattern, Shannon (2013): 'Infrastructural Tourism', online: https://placesjournal.org/article/infrastructural-tourism/ https://doi.org/10.22269/130701

Murphy, Michelle (2017): The Economization of Life, Durham, NC and London: Duke University Press.

Niranjana, Tejaswini (2013): Introduction to Genealogies of the Asian Present: Situating Inter-Asia Cultural Studies, online: https://www.academia.edu/14934670/Introduction_to_Genealogies_of_the_Asian_Present_Situating_Inter-Asia_Cultural_Studies.

Osborne, Peter (1995): The Politics of Time: Modernity and Avant-Garde, London/New York: Verso.

Parikka, Jussi (2018): 'Digging.' In: Celia Lury et al. (eds.), International Handbook of Interdisciplinary Methods, London: Routledge, pp. 164-68. https://doi.org/10.4324/9781315714523-25

Pasquinelli, Matteo (2017): 'Machines that morph logic: Neural networks and the distorted automation of intelligence as statistical inference.' In: Glass Bead Journal, Site 1, Logic Gate: The Politics of the Artifactual Mind.

Rabinow, Paul (2009): Marking Time: On the Anthropology of the Contemporary, Princeton: Princeton University Press. https://doi.org/10.1515/9781400827992

Ramírez, Rafael/Selin, Cynthia (2014): 'Plausability and probability in scenario planning.' In: Foresight 16/1, pp. 54-74. https://doi.org/10.1108/FS-08-2012-0061

Reason, Matthew (2018): 'Drawing.' In: Celia Lury et al. (eds.), International Handbook of Interdisciplinary Methods, London: Routledge, pp. 47-52. https://doi.org/10.4324/9781315714523-3

Rheinberger, Hans-Jorg (2010): An Epistemology of the Concrete: Twentieth Century Histories of Life, Durham, NC: Duke University Press. https://doi.org/10.1215/9780822391333

Rose, Gillian/Degen, Monica/Melhuish, Clare (2014): 'Networks, interfaces, and computer-generated images: learning from digital visualisations of urban redevelopment projects.' In: Environment and Planning D: Society and Space 32, pp. 386-403. https://doi.org/10.1068/d13113p

Rouvroy, Antoinette/Berns. Thomas (2013): 'Algorithmic governmentality and prospects of emancipation.' In: Réseaux 177, pp. 163-96. https://doi.org/10.3917/res.177.0163

Schurz, Gerhard (2008): 'Patterns of abduction.' In: Synthese 164, pp. 201-34. https://doi.org/10.1007/s11229-007-9223-4

Seaver, Nick (2015): 'The nice thing about context is that everyone has it.' In: Media, Culture and Society 37/7, pp. 1101-9. https://doi.org/10.1177/0163443715594102

Serra, Richard (1967-68): Verb List. https://www.moma.org/collection/works/152793

Sheller, Mimi/Urry, John (2006): 'The new mobilities paradigm.' In: Environment and Planning A: Economy and Space 38, pp. 207-26. https://doi.org/10.1068/a37268

Simondon, Gilbert (1992): 'The genesis of the individual,' In: J. Crary/S. Kwinter (eds.), Incorporations, Cambridge, MA: MIT Press, pp. 297-319.

Simondon, Gilbert (2017): On the Mode of Existence of Technical Objects, Minneapolis: University of Minnesota Press.

Simone, Abdoumalique (1994): In Whose Image? Political Islam and Urban Practices in Sudan, Chicago: University of Chicago Press.

Spencer, Matthew (2013): Reason and Representation in Scientific Simulation, PhD thesis, Goldsmiths College.

Stark, David (2011): The Sense of Dissonance: Accounts of Worth in Economic Life, Princeton/London: Princeton University Press.

Stengers, Isabelle (2005): 'The cosmopolitical proposal.' In: Bruno Latour/Peter Weibel (eds.), Making Things Public, Cambridge, MA: MIT Press, pp. 994-1003.

Steyerl, Hito/Poitras, Laura (2015): 'Techniques of the Observer: Hito Steyerl and Laura Poitras in conversation.' In: Artforum, May, pp. 306-17.

Totaro, Paulo/Ninno, Domenico (2014): 'The Concept of Algorithm as an Interpretative Key of Modern Rationality.' In: Theory, Culture and Society 31/4, pp. 29-49. https://doi.org/10.1177/0263276413510051

Uprichard, Emma (2013): 'Describing description (and keeping causality): The case of academic articles on food and eating.' In: Sociology 47/2, pp. 368-82. https://doi.org/10.1177/0038038512441279

Wark, Scott (2018): 'The Subject of Circulation: On the Digital Subject's Technical Individuations.' In: Subjectivity 12, pp. 65-81. https://doi.org/10.1057/s41286-018-00062-5

Whitehead, Alfred North (1968): Modes of Thought, New York: The Free Press.
Wilkie, Alex (2018): 'Speculating,' In: Celia Lury et al. (eds.), International Handbook of Interdisciplinary Methods, London: Routledge, pp. 347-51. https://doi.org/10.4324/9781315714523-49
Wilkie, Alex/Savransky, Martin/Rosengarten, Marsha (2017): Speculative Research: The Lure of Possible Futures, Abingdon/New York: Routledge. https://doi.org/10.4324/9781315541860
Zeilinger, M. J. (2014): 'Sampling as Analysis, Sampling as Symptom: Found Footage and Repetition in Martin Arnold's Alone. Life Wastes Andy Hardy.' In: D. Laderman/L. Westrup (eds.), Sampling Media, Oxford: Oxford Scholarship Online, pp. 159-71. https://doi.org/10.1093/acprof:oso/9780199949311.003.0012