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Smrke, Jurij

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Jurij Smrke

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Jurij Smrke

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Abstract

This thesis intervenes in the ways in which we evaluate academic labour via citations, joining theoretical reflection with elements of practice-based technological research and development. It is a practice based exploration of possible *technological* improvements to the citation-based *evaluation* of *academic labour* with the potential to strengthen *non-capitalist* modes of existence. It develops a theoretical framework based on *multiplicity* to overcome the disadvantages of over-reliance on dualisms (natural/artificial, social/technical, theory/practice etc.) common in ethical and political activities. I employ it to research and develop attempts at sociotechnical change focused on practices of valuation.

The result is a mix of software and theory exhibiting experimental, observational, interventional and performative qualities. Firstly, I assemble a useful collection of modes of existence and relationships between them, which can be used as heuristic devices for techno-social change. Secondly, I develop a number of minimum viable products in the form of computer code, which allow us to transfer value from one mode of existence - one regime of valuation - to another.

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1 Introduction

This thesis intervenes in the ways in which we evaluate academic labour via citations, joining theoretical reflection with elements of practice-based technological research and development.
In a broader sense it has four main concerns or topics of interest:

- The challenge of creating and maintaining non-capitalist modes of production and existence.
- Valuation as a social process through which politics happen.
- The challenge of embracing technological solutions in the age of (techno-)solutionism.[1]
- The terrain of academic research and citation practices as a site where all these concerns overlap.

In sum, it is an exploration of possible *technology-based* improvements to the citation-based *evaluation* of *academic labour* with the potential to strengthen *non-capitalist* modes of production and existence.

In this context I have focused on the way citation metrics are created and used in order to assess and manage knowledge production. While there are many other ways of evaluating (academic) labour, citation metrics are often combined with the highest degree of automation (which is of relevance to this thesis in the context of technological development), and carry a lot weight in many national settings when it comes to managing knowledge production (Ochsner, Kulczycki, and Gedutis 2018: 2). Additionally, while metrics arguably play a valuable role in the

1 “[T]he idea that given the right code, algorithms and robots, technology can solve all of mankind's problems, effectively making life ‘frictionless’ and trouble-free, [..] which shuts down other avenues of progress and leads ultimately to an algorithm-driven world where Silicon Valley, rather than elected governments, determines the shape of the future (Tucker 2013)”.

processes of knowledge discovery, using indicators for information management is something quite different from employing them for the purposes of research and labour evaluation. Because the rise of research evaluation is clearly part of a larger shift in the way we manage our universities under capitalism, and because one of the aims of this work is to move from critique towards intervention, the thesis aims to address the topic of achieving meaningful social change under current conditions. Changing the management of universities inevitably raises some daunting age-old questions. What does it mean to change (capitalism)? How does one go about that? How can an intervention in the way we evaluate academic research/labour contribute to this aim?

1.1 The problem(s)

We can split the problem this thesis addresses into three parts.

Firstly, there is the way in which knowledge production is hurt and held back by the way we use metrics, and specifically citation metrics, in an academic setting. It creates the wrong incentives, instantiates unhealthy competition in places where it should be kept healthy (or simply eliminated), promotes evaluation based on a single criterion and reproduces long-standing (social) inequalities in academia. This is akin to what economic actors and forces do in many other settings in pursuit of the expansionist logic forming the core of (contemporary) capitalism.

Secondly, existing attempts to criticise and/or intervene in such entanglements of technology, economic systems, and the social are often held back by relatively inflexible understandings of the activities through which change happens. The way (economic) value, (social) values, and the socio-economic practice of evaluation are conceptualised is particularly striking in this regard.

Thirdly, and much along the lines of the above, the ways in which we think about technology, and the ways in which we practice technological development, suffer from a similar affliction. While the second point is predominantly aimed at thought critical of capitalism, an analogous approach to technology is much more general. What is striking is that one of the main arguments against the tide of techno-deterministic entrepreneurial (or not) solutionist tech development, is that it does not consider “the social aspects”. There is merit to that argument, to saying - you think you are doing something neutral but actually your app/machine/system will have dubious political consequences. That much should be said. But what if these people actually *do* consider the socio-political consequences of their actions? Or what if they don’t at the moment but will, when nudged in that direction, and then end up pursuing unattractive socio-political goals – stupid ones, delusional ones, evil ones, complacent ones? Adding the social component does not guarantee a desirable outcome. The form cannot be the goal. It is not enough. Therefore we need to get better at working with or against technology.

1.1.1 Research question(s)

The aim of this thesis is to address these problems by placing thought in a productive tension with code.

How can a reconceptualisation of technology and valuation inform technical interventions (in the form of code/software) in practices of evaluation, and how can the experience of writing code influence the thought that accompanies it? Does such an approach make better contributions towards the challenges of postcapitalism, of tech development and of the evaluation of academic labour?

This is the main research question that this thesis aims to address, as well as its method in the most plastic sense: writing theory and code as a way of researching and improving the practice of theorising and coding for political ends. Or – to stay in sync with the title of the thesis – researching the politics of valuation by performing the politics of valuation. By way of my methodology and my methods I set out to develop an approach in this thesis (which will always contain theoretical and practical elements) which has the capacity to see the activities of evaluation in a wider, socio-political, context, while keeping them in a productive tension with the socio-technical feasibility of transforming them, taking into account the mundane experiences of the practitioner.

1.2 Methodology

Through an engagement with existing attempts at socio-technical change, I develop in this thesis a critique of the over-reliance on binary oppositions in this context. These are dualisms (natural/artificial, social/technical etc.) which we are used to operating with ethically, politically, intellectually, and practically. While often useful and unavoidable, they can't do all the work for us. One of the first aims of this thesis is to deconstruct this binary reflex and open up other possibilities, which I will do in the next chapter. This will inform my method in the more abstract sense, or rather my methodology, my outlook on methods and the principle by which I have organised them.

My methodology has been designed to afford more productive activity in the context of socio-technical change. Articulating this methodology mainly takes the form of gathering a number of sociological and philosophical accounts of multiplicity and world-making. I outline how these approaches are valuable, because they help me *acknowledge a greater variety of activities* (dualisms included) which can function as legitimate ways of world-making, each with their own advantages and disadvantages. In the name of widening our political imagination as well as the assortment of tools at my disposal in the context of this thesis, I describe the rationalities that define these alternative activities and focus on the relationships between them. These relationships are especially important in relation to the problems I am responding to, because they offer better opportunities for cooperation between different methods or political projects.

Using multiplicity as a unifying concept for the various activities making up the present research effort helps consider how, for example, code and social theory do not have fixed meanings and effects set in the technological and social realms respectively. Code can be a social force and theory can work technologically. Yet rather than seeing this kind of recategorisation (technology is political! There is social bias in code!) as revelatory, I see these kinds of operations as rather mundane and try to use that to my advantage in my argument.

1.3 Kinds of methods

Beyond this onto-epistemological framework stressing the multiplicity of existence, my methods are composed of four more elements.

First, I will engage with a collection of tactics and methods of social change and claim that we can make better use of them once we start working with multiplicity. As I argue in the next chapter, while these tactics can be considered contradictory, they are only seemingly so. I will present how each of them has a valid place in the context of effecting techno-social change. Tactics or methods of parasitism, gradual change, construction and deconstruction, utopian demands and temporary autonomous zones. They all matter.

Second, after reviewing these methods I will draw on them to construct the methods that underlie this thesis, borrowing the term *reflexive coding* from Winnie Soon to give them a name. In a very plastic sense, I am talking about a constant back and forth between reading/writing code and text, which has given rise to most of the outcomes of this thesis. The important thing to highlight here is the way these two parts have continuously influenced one another, either by way of inspiring or by keeping each other in check.

The third element of my methods is more self-reflexive and has involved remaining aware of anything implicit in my activities and choices, such as the fact that I am doing a PhD on the topic of valuation of academic labour while I am conducting academic labour myself (for which I will be evaluated).

Finally, there is the categorisation of outcomes this ensemble of methods aims to produce, which has given shape to the whole project.

1.4 Aims and Outcomes

The ambition of this thesis extends beyond facilitating and documenting fruitful encounters between code and theory. The aim is to develop three viable software products able to form “alliances” with users so that they can practice the politics of valuation themselves. The software projects I have developed as part of this project are *Radovan* (from planet Meta), *Linqr*, and *Libra*: a search aggregator of open access texts and two web applications which encourage users to cite politically.

These and other outcomes can be categorised as follows:

- This thesis is **experimental**, because it results in two software prototypes and a feasibility study without knowing how beneficial, useful or worthwhile they will turn out to be.
- It is **observational** because it observes and reports on the experience of doing software development with a “raised philosophical/sociological awareness”.
- It is **interventional**, because it aims to create prototypes of solutions to a set of problems.
- Finally, this thesis is **performative**, since it attempts to practice what it preaches in a number of ways.

1.5 Original contribution to knowledge

In what ways, then, does this mix of experiment, observation, intervention and performance contribute new knowledge on the subject of the politics of valuation?

First, as I will argue, there is something to be gained by combining a number of existing theoretical conceptualisations of multiplicity, which could help us navigate particular situations better: political sectarianism, facing sublime opponents, working at the intersection of theory and technology, inquiry and innovation etc. I do just that by showing how Bruno Latour, Michel Foucault and Boltanski and Thévenot understood onto-epistemology in a way similar enough for us to use their concepts alongside each other. In this thesis I assemble a useful collection of modes of existence and relationships between them, which can be used as heuristic devices for techno-social change.

This thesis’ second contribution to the politics of valuation consists of a series of minimum viable “products” in the form of computer code, which allow us to transfer value from one mode of existence, one regime of valuation to another. They help us cite in a way that counteracts malicious trends in academic publishing and make obvious a number of political decisions possible through this mundane practice.

1.6 Personal motivations

The interest in many of the issues addressed in this thesis stem from my engagement in various forms of political activism over the past 10 years – I have worked as a journalist, I have worked in the theatre, I have been involved in grass roots campaigns as well as intra-institutional struggles. I have worked in analogue ways as well as with technology. My work with experimental journalism and publishing has put me in closer contact with programming. While working with professional programmers was fruitful, I have felt the urge to understand and write code myself. In the current conditions it feels like one of the languages we should be learning from a young age. The fact that I have written computer code for this thesis is deeply connected with that.

This thesis is also an attempt to come to terms with the different paths people around me have taken in their activist careers as time went on. The opening pages of the third chapter (on politics) can be seen as a contextualization of these developments.

1.7 Structure

You are nearing the end of the first chapter in which I have provided the broad stokes of the problems this thesis responds to, the methods it employs to that end and the aims it hopes to achieve. Four more chapters follow.

In chapter 2 I develop a theoretical framework, which eases my reliance on a number of common linguistic, ethical, political, conceptual divisions used, when discussing, assessing or justifying the activities beings. What I am looking to articulate is something more adept at describing, comparing, using and strengthening/weakening different - sometimes contradictory - ways of world making side.

Chapter 3 situates the thesis in relation to political topics and urgencies. Against the backdrop of the horizontalist vouge of the 2010s, I present evidence for a rekindled interest in challenging capitalist hegemony on a larger scale, in a more mediated form. The overarching claim I make is that in order to be able to develop political practices in such a direction, we need to pay attention to boring mundane beings (such as spreadsheets or calendars) which make many associations between us possible. I call these beings grey (after Fuller and Goffey 2010) and/or logistical media. I show how many of these are employed in practices of valuation and why valuation can be one of the central concepts for those interested in social change. I establish (e)valuation and the means with which we accomplish it as central objects of the thesis and the main target of its politics. I transition towards citations as important grey media for the evaluation of academic labour by analysing the evaluative role of its close relative, the hyperlink.

In the fourth chapter I present the three programming projects at the core of this thesis – *Radovan*, *Linqr* and *Libra*. I describe the process of their development, their functions, their strengths and weaknesses as well as what puts them in a position to perform political tasks in the context of the evaluation of academic labour. I situate the push to evaluate academic labour via citations in relation to the centrality of knowledge for the economy, claiming that as the perceived value of knowledge for our economies increased so did the need to manage its production.

Chapter 5 serves as the conclusion. I discuss the outcomes of my research thesis. I address the advantages and disadvantages of my approach and highlight possible starting points for further research.

2 By any method possible

qualitative/quantitative, immediate/represented, complex/simple, real/manufactured, natural/artificial, science/ideology, nature/culture, mind/body, reason/emotion, equality/inequality, object(ivity)/subject(ivity), human/machine, physics/metaphysics, raw/cooked, nature/culture, words/things, sacred/profane, real/constructed, abstract/concrete, savage/civilized, modern/premodern

It used to be that.

Quantification was bad.

Representation was problematic.

Hierarchies were dangerous.

The spread of the commodity form to be resisted.

Tactical interventions - the best.

Resistance at the level of basic logics the only redeeming activity.

Relativism and deconstruction the go to critical moves.

Transgression.

Desubjectivation the thing to try.

What now?

This chapter develops an argument which guides the rest of my inquiry, a theoretical framework, which eases my reliance on the same old linguistic, ethical, political, conceptual divisions (such as the ones listed above), when discussing, assessing or justifying my research or the activities of other beings. What I want to articulate in this chapter is something more adept at describing, comparing, using, and strengthening/weakening different - sometimes contradictory - ways of world-making. It is my contention that moving in that general direction can make us into better politicians, technologists, activists, researchers etc. In particular it helps me employ the diverse set of means at my disposal when researching and practising the politics of valuation.

I begin this chapter by discussing the detriments of over-reliance on binary oppositions in this context. I propose that not being quite so rigid in that regard can actually improve the chances of political struggles, including those which rely on the articulation of dualisms in the first place.

I then proceed in four steps.

First, I present a minimal typology of what to pay attention to when thinking about a better approach to world-making. Generally, I claim that we need to appreciate the merits of both totality and situatedness, both durability and ephemerality. Specifically, I cover parasitism, gradualism, construction, deconstruction, impossible demands, and grey zones, each understood as a tactic or method of politicking. I write that these are the types of methods, which a theoretical framework should help me describe and practice.

I then survey and summarise several existing theoretical frameworks, which have the particular quality of being up to that challenge. Rather than just picking one or the other I argue why and how they are compatible and proceed to combine them in a novel way. I proceed to create a list of rationalities,[2] and an open-ended list of relationships possible between them.

What follows in the section after is an application of these findings, to make the merits promised here more obvious.

Finally, I conclude by summarising the achievements of this chapter as well as the methods at work in this thesis, which together form my own toolbox of methods to draw from.

2 I see the term rationality as a sort of post-dualist, post-representative take on essence.

2.1 On inefficient methods

> [B]uilding a political form that actually manages to hold together witches, engineers, elders, perverts, Christians, mothers, and Leninists long enough ... (Haraway 2004, 13)

To begin a chapter dealing with methods and methodology with a citation about politics (and witches) should not seem outlandish. Methods are established procedures, ways of cutting the world up, sociotechnical devices which help us reproduce particular relationships between entities, often on an industrial scale (Law 2004, 5-8, 11). They play a role in setting the conditions of possibility for organisation, coordination, and collective action, which is how they connect to politics (ibid, 10).

Not only are group formation and the use of methods analogous because they are on some fundamental level about organising entities around a rationality, they are also connected through - to echo someone who has perhaps been cited too many times – the nexus of power/knowledge. The kind of methodology we practice, the kind of knowledge we create, is tightly connected to the ways in which we exercise power and form groups. This is why it is necessary for a thesis dealing with the question of socio-political change – to acknowledge this at the outset.

That said, regardless of the exact quality of the entanglement between politics and method, both milieus seem to suffer from an overdependence on binary oppositions.

> Dualism has its charms, but it takes the anthropologist only a few months of fieldwork to notice that dichotomies do not have, among the Moderns in any case, the extraordinary explanatory virtue that the anthropology of remote cultures so readily attributes to them. The raw and the cooked, nature and

> culture, words and things, the sacred and the profane, the real and the constructed, the abstract and the concrete, the savage and the civilized, and even the dualism of the modern and the premodern, do not seem to get our investigator very far. (Latour 2013, 146)

In this thesis I want to go further. Even beyond the opposition between binary oppositions and multiplicity. We need to acknowledge a wide variety of these entanglements of beings (dualism included) as legitimate ways of world-making. In this chapter I do just that and patch together a theoretical framework best fitted for describing, comparing, and using different - sometimes contradictory - ways of world-making side by side.

I am not interested in privileging a particular type of relationship between subjects and objects or claiming that it is more complicated than we think – this relationship is not “simply” one of correspondence, determinism, or independence. In this sense, I am post-becoming. Post agential cuts. Post-controversies. The main problem, the remaining problem, even after all these exquisite arguments about the order of things have been made, is how to navigate this landscape of onto-epistemologies as a socio-political actor. For one, we need to have a sense of what makes these worlds come about, endure, and what defines them. What makes them stronger or weaker? Another thing to consider are the ways in which actors go about pitting worlds against each other. Is a typology of interactions between them something to pursue?

This would be of interest to someone who wants to act in the world. What humans seem to be particularly passionate about are the ways in which they can be the prime mover, the one who can make other entities dance to their tune. This is fair enough – since this is of course part and parcel with the challenge of maintaining oneself in existence – but we do tend to forget that we do not operate solo nor as we please – and not always consciously either.

There are so many other options, however. In this chapter I want to describe the different ways in which the world attempts to open up or settle these controversies about the existence and agency of entities and I want to draw lessons from this for the sake of becoming a better “politician” (in the widest sense possible). Sometimes words determine the way we treat the world outside, sometimes they are completely powerless. Sometimes things do a dialectic dance, sometimes they are in a fixed state, sometimes in flux.

It is important to determine where this research project will be situated in this respect - how much will it try to settle, how much will it try to unsettle, when will it try to leave something out or reduce it, what will it make complex? How does politicisation happen? Are entities political before we call them political as such? Does it matter? Do implicit and explicit politics differ markedly? How does calling something political compare to calling something natural, for example? How does making an argument in writing compare to enacting an argument in a technical way (building a tool)? Can we do one without the other? Do we ever? Does quantification equal commodification? Or do many things need to happen for the quantitifed to become commodified? Are scientific methods the only worthy procedures of world-making? How do they compare to others?

It is questions like these that I think we can answer in a more interesting manner if we “learn to count beyond two (Latour 2013, 146),” while reserving the right to solely count to two sometimes.

As hinted at in the introduction … When it comes to being explicitly ethical or political, we are mostly binary. Our practice, however, is multiplicitous. As Boltanski and Thévenot (2006) show most beings do not adhere to one logic at all times.

It follows that I will also need some way to make use of many contradictory types of veridiction in this thesis, from objectivity to various forms of critique, from purely modern humanist to posthuman positions, even modes of existence that we don't usually think of in the context of producing meaning, such as technology or organisation. Therefore, in this thesis I will *practice many types of cuts* (cf. Barad), some of which I will inherit and never question. For this enactment of subjects and objects and their agency does not solely take place through thinking or writing but through more or less every activity in our capacity, or the capacity of other beings, for that matter (and, that being said, the capacities of matter too).

What is concerning, though - as people making such points often do – is how this particular stress on the importance of "situatedness", time, and the diversity of the ways in which we engage with the world, would lead the reader to believe that changing what counts as truth consequently becomes prohibitively easy. Not at all. It remains difficult and costly. The need to speak about things in general and to gauge their universality and immutability remains. The crucial difference between before and after the argument is that our understanding of what this particular type of truth is and how we arrive at it, becomes better.

This is a very important point, because the 'modern' definition of truth is something almost every one of us, and the scientific community in particular, has a relation to. It is something we cannot imagine living without. I therefore find the question unavoidable when embarking on a project like this. As did Bruno Latour:

> Unfortunately, we cannot sidestep this question; it has to be faced at the start. Everything else depends on it: what we can expect of the world and what we can anticipate from language. We need it in order to define the means of expression as well as the type of realism that this inquiry has to have at its disposal. (Latour 2013, 71)

Latour claims that ‘the Moderns’ have a lacking attitude towards one of the things they hold so dear - science, rationality, objectivity. There is a gap between what science/rationality/objectivity does or is and what ‘the Moderns’ claim it is or does. Latour goes ahead and tries to resolve this issue, to better define what objective, universal statements do in the world and how they come about.

But what makes Latour’s definition of what objectivity does better, superior, to the predominant one (the knowing subject grasping the known object without transforming it in any way)? Latour is not a colonial anthropologist trying to teach us the true ways of the world. Instead, it would seem his attitude is much more emphatic. He is proposing “a different formulation of the link between practice and theory that would make it possible to close the gap between them and to redesign institutions that could harbour all the values to which the Moderns hold, without crushing any one of them to the benefit of another” (Latour 2013, 65).

Latour’s diction around this section could almost be seen as a patronising reassurance. As if he is saying: ‘don’t worry, people, you are not losing anything here, your experiments are still valid, you will still be able to tell the true from the false, you’ll still be able to travel vast distances and use the same principles to manipulate the environment anywhere you go.’ But he argues that this doesn’t involve a figuring out what things really are in and for themselves, as they are not immediate or unfabricated. Because that’s what objectivity certainly is not. As he states:

> [C]an we reassure the rationalists as to the solidity of their values, even as we refine what they cherish in a way that makes it unrecognizable, at first glance? Can we really convince them that their values, thus represented and

> redefined, will turn out to be better grounded than in the past? (Latour 2013, 67)

This is what I want to explore more in depth in this chapter. And all these big words will end up sounding quite empty if I don't demonstrate how a different description of our wrestling with/in the world leaves this thesis better off. Or what it would mean to "harbour all the values without crushing any one of them to the benefit of another".

(Except when need be.)

2.1.1 Do more things more often

The choice of efficiency as a term to describe a potential advantage is more of an allegory than a true measuring stick. The idea is that there is something to be gained which could help us navigate particular situations better: political sectarianism, facing sublime opponents, working at the intersection of theory and technology, inquiry and innovation etc. In other words, help us navigate the messiness of the world while trying to order it. The sooner we embrace the messiness, the better we will be at ordering it and the less we will think that things are not working out because they are not 100% implemented yet due to some degree of impurity. As Ingold argues in this respect:

> So long as we suppose that life is fully encompassed in the relations between one thing and another – between the animal and its environment or the being and its world – we are bound to have to begin with a separation, siding either with the environment vis-à-vis its inhabitants or with the being vis-à-vis its world. A more radical alternative, however, would be to reverse Heidegger's priorities: that is, to celebrate the openness inherent in the animal's very captivation by its

> environment. This is the openness of a life that will not be contained, that overflows any boundaries that might be thrown around it, threading its way like the roots and runners of a rhizome through whatever clefts and fissures leave room for growth and movement. (Ingold 2011, 83)

The choice I make for the theoretical set-up applied in this thesis is based on the expectation that it could allow us to *do more things more often*. To think along pragmatic, cumulative lines: “The skilled practitioner is one who can continually attune his or her movements to perturbations in the perceived environment without ever interrupting the flow of action” (Ingold 2011, 94). But this choice is a reserved one; for it is also guided by the idea that formal innovation is more often than not overtaken by other types of action. Making and growing new organisational forms guarantees nothing. For example, you put your faith in the democratic potential of the network and twenty years later you are faced with a surveillance leviathan like none before (see the internet).

This chapter proceeds in three sections, slowly connecting methodological considerations to the rest of the thesis until finally arriving at the topic of the politics of valuation in contemporary academia.

2.2 Five focal points

There have been numerous works published discussing the difficult task of navigating a post-dualist world. One of the things that many of them have in common is the way they place their research at the intersection of several disciplines. Latour and other STS affiliates like John Law or Annemarie Mol are always treading the waters of various disciplines and crossing the boundaries between natural and social sciences and the (post)humanities. The same goes for Donna Haraway or Karen Barad, who actually enter these debates after (or perhaps while) being trained in biology and physics. Deleuze and Guattari have made a name for themselves with the beautifully diverse *A Thousand Plateaus* – it is hard to imagine what this book is not about. One could say Tim Ingold’s (or Manuel Delanda’s) work proceeds along similar lines.

What fascinates me about this - and what I take as a lesson for my thesis - is how their work often functions as an exercise in commensuration. As I was working through code and text it became increasingly clear to me how increasingly irrelevant it is whether some part of my work is essentially sociology, computer science, philosophy, media studies, or engineering. No commitment to any of these relatively well delineated entities guaranteed good results in light of my research goals. What did help, on the other hand, was anything which would help me organise things along different trajectories. Something which would, for example, move the debate from arguing over whether a response to an issue needs to be social or technological to the more important question of the characteristics of this inevitably socio-techno-biologico-political solution.

A technology won’t necessarily become less discriminatory just because we will consider its social aspects. As much as we see income inequality or racism as *social* issues, they are actually much more complex assemblages. It is not by adding “social elements” to a situation that we create a less structurally racist society, it is by adding less racist “elements”, regardless of the exact ratio between social, technical, organizational, political elements (it is however true that this needs to be done collectively, which is a useful connotation of the word social).

Calling someone out for not considering the impact a certain activity will have on the relationships between people is still a worthwhile act, but - just like pointing out the constructed nature of an entity is - but it can only be a first step. Once we are faced with the task of actually building something better, a more complex understanding of the ways in which different elements can interact is required. In this sense, *we need ways to see how a rich array of actants can contribute to strengthening or weakening the rationality defining our ethics and politics*. This is one of the things commensuration (see Espeland 1998) can do and it is therefore an important first step and the first demand I make of this theoretical framework geared towards greater efficiency for post-capitalist struggles. This theoretical framework needs to be able to reduce and expand, to see *stuff*[3] as the same as well as differentiated. Like an epistemological accordion. Full of folds.

But there are other demands I have towards a theoretical framework to adopt in this thesis. I am looking to work with:

- a framework which is good for thinking about parasitism, diplomacy, and intersections of coexisting modes of existence;
- a framework which is good for keeping track of increments/gradual growth, for describing how small gains accumulate, how less important changes lead to more important ones;

3 I mostly use the word stuff deliberately as a technical term – for naming entities without precluding their position on the subject-object spectrum.

– a framework which is as focused on deconstruction and critique as it is on construction, durability, and large scale agency (the order of things, rationality, structure);

– a framework which considers utopian visions and “impossible” demands as just as worthwhile as tactical interventions, imperfect solutions, grey zones, dirty hacks, and small-scale prototypes.

A couple of things follow from these minimal requirements. If not as a direct consequence, then at least as a possibility:

- The need to keep critical theoretical analyses of powerful social structures and processes in touch with the interests and motivations of the people embedded in them. For engagement and empowerment to be possible the specificities of their work must be considered when we frame techno-socio-political questions (Pignarre, Stengers, and Goffey 2011).
- It would be beneficial if the framework came with an - always incomplete - catalogue of moves possible within it (that we know of) in order to serve as a heuristic device for people wondering what/how to do next.

I proceed by addressing the four demands listed above, each in their own sub-section and I make clear why they are sensible and important in the context of the goals of this thesis. Finally, I present multiplicity as the philosophical crutch, which can help us respond to these demands.

As I will argue, almost all the requirements elaborated above are about appreciating both sides of divisions along which we often orient our political and ethical choices - purity or hybridity, efficiency or openness, fixity or flux, go total or go partial. The capacity to do that depends to being able to accept reality as multiple.

2.2.1 It's personal, it's class struggle: On diplomats and parasites

Parasitism and diplomacy are two possible approaches which need to be considered seriously as useful ways of transferring resources between modes of existence. In this section I discuss why this is the case, or what makes paying attention to these kinds of transfers important. I start with an anecdote.

A couple of years ago I was part of a theatre production, where the participants were asked to engage in a table tennis tournament. The games were accompanied by a band, who, to the best of their abilities, tried to adapt Bowie's song *Absolute Beginners* to the rhythm dictated by the erratic sounds of the balls, the table, and the rackets colliding. If you lost, you had to sit down with the band and sing along for the duration of the next game or set. If you won, you received a little camera and the opportunity to find perverse joy in filming the all-around clumsiness.

One of the artistic directors of the theatre in question refused to come "see" the show, claiming that competition is a neoliberal disease - something she stays away from. That didn't sit well with me at that point, though I didn't know exactly why and we didn't discuss this issue further either.

But I did reflect on it later. This particular competition produced a clumsy ensemble of amateurs being bad at various things together - which was a lot of fun. The victor received a round of applause at the end, but the main result of the event (from my point of view) was the fostering of acquaintances and friendships (it is much easier to get to know people when getting to know people is not the main objective). The outcome of the game was social ties different from what neoliberal competition produces (though I am sure it can also be involved in producing friendship). In fact, we were strengthening the antidote to neoliberal competition: with friends we are generous, we give gifts and we don’t keep accounts.

In short - not all competition is the same. Competing for research monies in front of a public body is different to competing for buyers in the yoghurt market (for now). In the latter case the only arbiter judging whether the specific needs an activity is addressing have been fulfilled is the market. More importantly, this arbiter only has one measuring stick - one that measures money.

Competition is a prominent concept when defining neoliberalism. Most research heading in this direction is inspired by Foucault’s lectures:

> [The] society regulated by reference to the market that the neo-liberals are thinking about is a society in which the regulatory principle should not be so much the exchange of commodities as the mechanisms of competition. It is these mechanisms that should have the greatest possible surface and depth and should also occupy the greatest possible volume in society. This means that what is sought is not a society subject to the commodity-effect, but a society subject to the dynamic of competition. (2010, 147)

Will Davies (2014, 2016), Pierre Dardot and Christian Laval (2014), David Beer (2016) and Kean Birch (2015), follow these insights from Foucault to make further claims about the centrality of competition for the neoliberal project and its expansion.

Such a narrative naturally makes competition a high profile “target” for projects attempting to construct alternatives to neoliberalism. The problem is, however, that ceasing all competition is not something we can do at one fell swoop while waiting for the whole structure to collapse.

I want to make clear that this is not a stab at activism centred on ethical improvement, which supposedly disregards structural factors. The same goes for other usual suspects including quantification, measurement/metrics, “networky” ontologies, automation, surveillance, and commodification. If we envision some sort of autonomy for non-capitalist modes of existence or perhaps even a hegemony on their part as the endgame, then there is no looking past the size of the task. It might need some measurement and even some competition to make it happen.

In addition to this, it is not as if capitalism didn’t “parasitise” on the commons (Polanyi 2001; Thompson 2016) or feudalism to get where it is today. And it is not as if capitalism ever ceased to do this (Sassen 2014; Mason 2015, 180; Christophers 2018; Harvey 2003, 158). There are examples of parasitism from the other side too. In extreme(ly interesting) cases, they even enter the stock market – see for example the Robin Hood Coop, which “trades on the Wall Street with an algorithm called ‘Parasite’ in order to return profits to its members and fund projects that expand the commons” (RobinHoodCoop 2017). This kind of co-optation of the “capital into the commons by subjecting it to the rules of the commons” was named *transvestment* by Michael Bauwens (2016).

This is an important lesson for thinking about change, for moving the debate from an initial rejection to the more intricate question - how? While they are good first steps, suggestions like “we need to change the value form” or “we need to change subjectivity” (which can amount to every bit of our coexistence) are overwhelming and underwhelming at the same time.

These suggestions are underwhelming because it is fairly easy to make small changes to the objects (value form, subjectivity) in question. And they are overwhelming because it is fairly hard to make *meaningful* changes (or to decide when they become meaningful). Such a framing might be good for mobilisation and the description of hegemonies, but it can be quite petrifying when devising step by step solutions or attempting to engage specialists (Pignarre, Stengers, and Goffey 2011).

Kluitenberg (2011) thinks about social change in relation to artistic practice. Drawing on the lessons of critical theory he starts by positing that the subject is just an intersection of the wider practices that produce it (2011, 46-47) and that these wider practices should be the focus of research and political activity, including: “political conflict, economic strife, suppression and human rights abuses” (ibid). He values this idea but claims that the focus it inspires blinds us to “other concerns and other spaces of opportunity” (ibid) and makes “the space of action extremely hard for artists to navigate” (ibid). Instead, he suggests that “the artist’s subjective interrogation of the symbolic orders of society and politics” (ibid) be kept at the heart of critical practice. In place of the position of a beautiful soul, sitting hands crossed in judgement of the inevitable shortcomings of others, Kluitenberg suggests that one should think/act about subjectivity as perverse, as never pure or innocent. This opens the possibility of doing two things at once, namely to both “embrace **and** critique the prevailing social, political, and technological conditions”. In other words, as Kluitenberg advises, “submit knowingly to your perverse subjectivity in order to escape the perversion of subjectivity” (2011, 53).

We can illustrate the logic behind this statement even better by considering an old argument that aims to highlight the structural nature of capitalism. It goes that many owners of the means of production are perfectly nice people who aim to do well - you might even run into them at artsy table tennis competitions - but that these idiosyncrasies don’t matter in the grand scheme of things. The crux of the matter is the structural pressures of the economic system (see, for example, Nunn in Nunn 2012, 7). To reproduce themselves as capitalists, they must abide by the logic of the market, competition (ibid), or whatever other rationality currently makes up capitalism. And it is this problematic expansionist logic that is at the root of all other related issues, including the depletion of nature (Smith 2008), terrible working conditions (Greenfield 2017, 23), and terrible work as such (Graeber 2015).

The Marxian framework provides us with a helpful diagnosis in this respect. It highlights how it is “the system” in its totality that we are up against. Its base and its (super)structure and its rationality and its everything. However one wants to dice it up. It implicitly follows that without a change at the systemic level - or of that magnitude - we cannot speak of a new hegemony and thus of meaningful change.

But in order to get there - or somewhere similar - we should not discard small insignificant changes as such. What if we were to assign them meaning? Not in cheap general humanitarian terms – e.g., it is really great that the Gates foundation is helping with aids and malaria and is publishing open access (Hall 2016) - but in terms of pragmatic benefits for counter-hegemonic struggles. Marx himself would probably never have achieved what he has without the extensive (financial) help of Engels, “the eldest son of a wealthy German cotton textile manufacturer (Wikipedia 2017)” and Marx’s wife Jenny (Fluss and Miller 2016). It clearly mattered that they were “nice people”. Or at least that they loved Karl.

This sort of entanglement is not necessarily a fancy and ingenious strategy - for most of us, it is simply a fact of life. To a large extent, our reproduction depends on capitalism - the modern market, wage labour, money, credit, commodities, private property, competition. We are always in it, with one foot at least.

I do not mean to discourage anyone with this argumentation who would want to embark on an attempt at total autonomy or complete hegemony. Actually, taking the entangled nature of rationalities seriously, should make it easier to become autonomous or hegemonic, to creep up on the tipping point. Mason describes this gradual advance as the spread of “something more dynamic that exists, at first, almost unseen within the old system, but which breaks through, reshaping the economy around new values, behaviours and norms” (Mason 2015, 11).

In sum, the lesson learned here is that none of the ever-present practices or ontologies that are supposed to be essential to neoliberalism or capitalism are the only thing that matters.

To paraphrase Brett Christophers (2018, 24), for every William Davies (competition) there is a Ben Fine, suggesting neoliberalism is all about financialisation, or a Jamie Peck (2010, xii), calling neoliberalism a “politically assisted market rule” or a Wendy Brown (2015) claiming it is about the economisation of everyone and everything or a David Harvey (2005) writing that it is “just” another reassertion of class power. Finally, there is Christophers himself, claiming that the most important characteristic distinguishing neoliberalism from plain old liberalism is the privatisation of public ownership: “For while privatization is central to neoliberalism, it was not a significant feature of liberalism – partly because there was, in Britain as in much of the rest of the liberal capitalist world, no substantive public sector to be privatized” (Christophers 2018, 26).

Usually particular rationalities or modes of existence need to intersect with others to give rise to something as complex as neoliberalism. When one is competing, the exact type of measures employed, the reward system, or the relations between participants that are allowed and encouraged etc., can all make a difference as to what exactly a particular competition strengthens, what makes it endure. Not all competition makes us better homines economici. Capitalist logics can be employed towards other ends. Value can be transformed from exchange value to something valuable in the commons.

This is why I am putting stress on articulating a framework, which is able to integrate parasitism and diplomacy into thinking about social change. One where go-to ethical and political cuts don’t catalyse a certain blindness to the messiness of the challenge of existence. And retard action thereby.

2.2.2 Increments, growth, scale

If we are not simply doing the opposite of what we have defined as undesirable, then we might need a form of feedback which at least tells us that we are cumulatively moving in the right direction (for example that we are increasing the share of needs fulfilled via commons-based production and distribution). What we have are theories based on which we can say - this is not enough, we shouldn’t be focusing on that (Aschoff 2019). But we don’t seem to have many “instruments” to measure how much our actions might still be contributing to change. In spite of the fact that these actions do not suffice to bring about real/continued/durable change.

Under such circumstances it becomes quite difficult to think about the sustained growth of an alternative economic system (for example) as it becomes be hard to plan and deliberate over tough choices. The number of indicators we are surrounded by daily is unprecedented (Beer 2016), but very rarely do they measure levels of de-growth. Or the increase in the share of needs covered by non-market-based mechanisms. How is a growing social force (movement, political party, cooperative) interested in such activities supposed to demonstrate its success? Know where it is at as a movement? Or detect its shortcomings?

All this might sound like wishful thinking, to imagine that we can ever know in advance how valuable our actions are. To imagine that we can somehow take “the difficult” out of difficult decisions (and perhaps the decision too). This all sounds like a technocratic fantasy. Instead, we might need to accept the fact that uncertainty will always be along for the ride. Or maybe that trying to tame it and failing to do so, is part of the process.

2.2.3 Flux and fix, critique and construction

The third demand I make towards a theoretical framework to adopt in this thesis, is similar to the first demand, because it is too about being able to appreciate the worth of relatively contradictory operations. This time the focus is on recognising activities which are good at disrupting existence as well as those good at making them last.

One of the activities aimed at halting a particular order of things, is critique. A staple of the critical spirit is demonstrating the constructed nature of an entity - sexuality for example. This is valuable because it hints at the fact that things could have turned out differently and that things can be different in the future. In addition to this, a strong critical analysis will demonstrate what a *diverse set of forces* is needed to make an apparatus persist. How, for example, do actants take part in an apparatus not only by being forced to do so, but also because they have some kind of positive attitude towards it and some sort of acquired capacity from it (cf. Foucault). How certain conditions have to coincide for the power-knowledge-subject kite to really take off. How power works in mysterious ways.

While analyses which denaturalize such setups are extremely valuable, we must not fetishise this type of critical operations at the expense of those procedures which are geared toward “naturalising” better ways of being, making them more robust. In other words, we should not be letting go of what one can gain by arguing within a certain episteme or in the name of a value, a category, or a subjectivity. Instead, we should defend it. Not only can we easily think of a couple of things we would like to keep the same; quite often moments involving the affirmation of a subjectivity are also moments of transformation - the signifier may remain the same, but the coordinates of - say - womanhood may change dramatically. In sum, both more de-constructive[4] and more constructive world-making or world-defending procedures can contribute to the endeavours Foucault (in Schmidt 1996) deemed “the art of not being governed quite so much”.

To be clear - an example of a radically de-constructive approach would be the queer standpoint, arguing that we should get rid of (gender based) divisions as such (i.e., diminish their importance for public life), rather than making things better for this or that category. My claim is that these two standpoints are not really mutually exclusive. Quite similar to the point I made about Marx’ personal life - for most of us they are simply a fact of life. Sometimes we question and disrupt the state of things and other times we try to make it last. If we accept both as worthy and inevitable, then the question is no longer whether to choose one or the other, but rather how to do both better.

2.2.4 Totality and temporary autonomous grey zones

Just as important as holding together critique and construction is the ability to appreciate both hegemonic and escapist endeavours: both projects geared towards universality and totality, and those aimed at particular, temporary, and autonomous solutions. The crux of the matter, developed at length in the next chapter in relation to the political philosophy of Chantal Mouffe, is again that there is no contradiction between these two types of activism.

Imagining and promising a complete transformation of society is a powerful tool for political mobilisation. It is hard to achieve even small change without promising more than is realistically achievable. People tend to not get passionate about changing things just a little bit. They would much rather imagine they can

4 I use the term deconstruction here quite literally (construction undone), without any intended resonance with Derrida’s work.

have it all. On the other hand, temporary experiments in innovative social practices can serve as prototypes and stepping-stones for longer lasting, further reaching, and less likely changes (an argument much in line with the previous section on gradualism).

In this respect the existence and experiences of temporary autonomous zones can improve the chances of impossible demands and the zeal kindled by wild political imaginaries can strengthen the chances of working prototypes.

2.2.5 The five demands

Almost all the requirements for a theoretical framework as elaborated above are about appreciating both sides of the divisions which frame our political and ethical choices - purity or hybridity, efficiency or openness, fixity or flux, totality or partiality. The capacity to do so depends on being able to accept reality as multiple. It is time to discuss these various tools, diversity of practices, and multiplicity itself as a concept.

2.3 Multiplicity - on worlds and their crossings

In this section I want to show appreciation for a number of authors who have done important work on multiplicity, while highlighting contributions by Bruno Latour, Luc Boltanski, and Laurent Thévenot (as well as Michel Foucault) as especially interesting for this thesis and to operationalise some of their concepts as (parts of) my methods.

One of the authors who has written very concisely about multiplicity is Annemarie Mol. In her text *Ontological Politics* (Mol 1999), she makes a couple of very important points about ontological multiplicity which I would like to echo at the outset. The first is that to talk about reality as multiple, demands an unusual set of metaphors. Rather than speaking of observing reality or constructing it, we need to speak of *intervention* and *performance*:

> Rather than being seen by a diversity of watching eyes while itself remaining untouched in the centre, reality is manipulated by means of various tools in the course of a diversity of practices. Here it is being cut into with a scalpel; there it is being bombarded with ultrasound; and somewhere else, a little further along the way, it is being put on a scale in order to be weighed. But as a part of such different activities, the object in question varies from one stage to the next. (Mol 1999, 77)

The second important thing Mol does is that she opens up the question of choice and relationships between these realities:

> [W]e would need to ask where such options might be situated and what was at stake when a decision between alternative performances was made. We would also need to ask to what extent are there options between different versions of reality

> if these are not exclusive, but, if they clash in some places, depend on each other elsewhere. (Mol 1999, 74)

This second point is where epistemology and ontology meet politics and is therefore of extreme importance for this thesis and it is one of the central issues of this chapter. It is exactly because I am interested in these relationships and choices, that the contributions by Latour, Boltanski, Thévenot, and Foucault are more useful for my project than those by other theorists such as Barad, Deleuze, Haraway, or Whitehead. The former have namely put effort into a typology of "multiple realities" as well as accounts of the frequent interactions between them. These lists are not meant as exhaustive or fixed in stone, but rather as limited and evolving collections. They represent a step forward from an attitude such as Barad's, who states that:

> In particular, what is needed is a method attuned to the entanglement of the apparatuses of production, one that enables genealogical analyses of how boundaries are produced rather than presuming sets of well-worn binaries in advance. (Barad 2007, 30)

While such a focus on genealogy, process, and becoming is worthwhile, it does leave a relatively large swathe of our activities on the side. We forget that "presuming sets of well-worn binaries in advance" is something beings do. Something we need to do. Something that is useful. We rely on the fixity of many aspects of the world to get things done. We needn't be categorically discouraged from it.

Furthermore, what is important is not only how boundaries are produced but also how many there are, how they differ, which ones are more important, and what they are good or bad for. Barad would say that we cannot settle this in advance, but it is hard to say when we are in advance of any of the moments where the production of boundaries happens. Or even more importantly, it is difficult to claim that making temporary "in advance" decisions about boundaries between the subject and the object isn’t just a rather innocent way of initiating the dance of becoming (with some other entity).

That is why in this section I list a number of rationalities (Foucault), modes of existence (Latour), and orders of worth (Boltanski and Thévenot), as different but analogous ways of conceptualising multiplicity. After that I will consider overlaps and interactions between them as well as the specific character of the activity which keeps each of “the worlds” in existence.

Foucault’s rationalities, the lines that separate the qualified from the disqualified within the apparatus, are as follows: sovereignty, discipline, biopower, competition, and control. To arrive at this Foucault employs a number of methods which he grouped under the name “examination of eventualization” in one of his interviews (Foucault in Schmidt 1996, 50) - a tripartite analysis composed of archaeology, genealogy, and strategy.

Just like in the case of rationalities, each mode of existence, as conceptualised by Latour, affords certain capacities to its beings which in turn sustain it. Certain alterations (as he calls them) become possible when we mobilise and work within these modes. Thus one can (Latour 2013, 488-489): explore continuities (reproduction), explore differences (metamorphosis), obtain essences (habit), fold and redistribute resistances (technology), multiply worlds (fiction), reach remote entities (reference), circumscribe and regroup groups (politics), ensure the continuity of actions and actors (law), achieve the end times (religion), change the size or extension of frames (organisation), calculate the impossible optimum (morality), extend associations (network) or keep/maintain things the same despite the other (double click). Latour arrives at this via a philosophy-heavy anthropological account of a number of case studies. This work is accompanied by a web site where new modes can be documented and old ones disputed.

Boltanski and Thévenot speak of various regimes of engagement with the world: the regime of familiarity, the regime of love and friendship and the regime of violence. Or in Thévenot’s later re-conceptualization: the regime of familiarity, the regime of regular action, and the regime of justification (Thévenot in Thévenot 2001). These regimes are differentiated according to the different ways in which the good and the real are linked together (Thévenot in Law and Mol 2002, 76). Boltanski and Thévenot have developed their work on the regime of justification the furthest. The key term in this context is order of worth. “Ideal typical” orders of worth, extracted from philosophical works, are called *polities* on the one hand (Boltanski and Thévenot 2006), and *worlds* — the actually existing, fully functioning, orders populated with objects and subjects — on the other. Altogether Boltanski and Thévenot describe 6 worlds: the world of inspiration, the domestic world, the world of fame, the civic world, the market world, and the industrial world.

One way to start operationalising this for the purposes of the thesis is to compare the similarities and differences of the concepts described above. *What do we learn from each individual conceptualisation that we don’t learn from the others? And what makes them all similar enough that we can use them together?*

2.3.1 Differences

Boltanski and Thévenot put a lot of stress on the intentional actions of humans and their need for and capacity to criticise and justify. Their focus is very “modern”, following the enlightenment tradition, and seems almost discourse-centric at times, were it not for their repeated remarks as to the importance of objects for critique or justification. Latour, on the other hand, is very good at stressing or describing the capacities of non-human entities for world-making and he has handled the difficult task of speaking about the world in such a different setting in a helpful manner. In this sense performing multiplicity in language, living it, rather than describing it as an observed object is something he does exceptionally well. It can be quite difficult to express a different order of things in languages which are so used to pit objects against subjects. Latour is also very good at articulating the implications of different onto/epistemological frameworks. However, what differentiates Foucault's work from Boltanski and Thévenot's and Latour's, is that his writings have the most explicit references to power and politics.

2.3.2 Similarities

Since I am trying to make use of a combined number of "modes of existence", the similarities I want to outline underneath between Foucault, Boltanski and Thévenot, and Latour, are more important than the differences.

The most important thing that all three frameworks have in common is how they conceptualise **durability**, or what one could call **structure**, for lack of a better word. They all do so by *paying attention to the work needed for inclusions and exclusions to/from modes of existence based on particular types of veridiction*.

> Maintaining oneself in existence, being rather than not being, is without question one of the components —and perhaps the most important one— of what we usually call "true" or "false." Consequently, instead of having on the one hand a language that would say what is true and what is false — but without being able to follow the reference networks — and on the other hand "things" enunciated that would be content to verify the utterances by their simple presence or absence, it is more fruitful to give up both notions, "word" and "thing,"

> completely, and to speak from now on only of modes of existence, all real and all capable of truth and falsity — but each according to a different type of veridiction. (Latour 2013, 86)

Despite the allusion to diction, veri-diction does not automatically have anything to do with saying things. Answering the challenge of maintaining oneself in existence according to a certain logic (veridiction, rationality, the good) is very much a "by any means necessary" type of endeavour. At least in relation to the usual categorisations of means. The authors we are dealing with categorise "the worlds" according to the form of veridiction they correspond to, or as Latour puts it, "a particular way of leaping over discontinuities" (Latour 2013, 102). As he states:

> [O]ur inquiry bore on the identification of a type of trajectory whose seeming continuity was actually obtained by a particular way of leaping over discontinuities that were different in each case [..] we have also learned that, to resolve the contradiction between continuities and discontinuities, each pass or each mode had defined its own forms of veridiction that allowed it to define the conditions for the success or failure of such a leap. (ibid)

In Foucault's parlance we can consider the continuous work of de/subjectivation as this leaping over continuities/discontinuities. We maintain ourselves and/or are maintained in existence as beings of discipline, biopolitics, sovereignty, control etc. through a heterogeneous ensemble of means - the apparatus. Just as in Latour's case there is a certain logic which the beings (subjects and objects in some cases) produced through these socio-technical devices must be in tune with in order to avoid a type of death (desubjectivation). A death which results in the loss of the affordances on offer by a particular regime. *Structure is simply the name for a force which cannot be overcome "alone", without a certain shift in alliances.*

Just as Latour’s *modes* and Foucault’s *dispositifs*, *orders of worth* - for Boltanski and Thévenot - describe a certain type of endurance or coherence : “In a same common world, people share the same worth. Disagreement can find a solution through a test of worth. But agreements are more difficult to reach when people invoke different orders of worth” (Godechot 2009, 194).

Boltanski and Thévenot’s typology of structures and what makes them persist is quite rich, descriptive and therefore worth exploring in greater detail. One of the things they stress when describing orders of worth is how accumulations of tests make the resolution of controversies within them easier. The orders acquire a type of structural stability and agency as the handling of disturbances within them is ritualised or even industrialised. This makes them persist. A description of the various worlds or orders is might be useful in this regard.

For example, the industrial world is the world of technological objects and scientific methods. As Boltanski and Thévenot describe, “the ordering of the industrial world is based on the efficiency of beings, their performance, their productivity, and their capacity to ensure normal operations and to respond usefully to needs” (Boltanski and Thévenot 2006, 204). This world is oriented towards the future, prediction, and reliability. Consequently, unworthy beings are not only those that are inefficient, unproductive, or inactive but also those who remain static and refuse to evolve. In this context, the failure to use human potential “is a serious breach of human dignity” (ibid, 204). The more dignified people are competent professionals with many responsibilities.

The industrial world relies heavily on all kinds of objects to answer the challenges of production, measurement, standardisation, calculation, prediction etc., including “tool, resource, method, task, space, environment, axis, direction, dimension, criterion, definition, list, graph, chart, calendar, plan, goal, quantity, variable, series, average, probability, standard, factor, cause“ (ibid, 206).

In the domestic world, however, the tests are more akin to rituals. Occasions when the worth of beings changes or is being settled come in the form of celebrations, births, funerals, weddings, and other social events. Judgement stays with the superior, the most-worthy being, “who bestows his trust, appreciates, respects, congratulates, judges, betrays contempt, delivers criticism, makes critical observations, or administers a dressing down” (ibid, 176), based on evidence in the form of anecdotes often identifying exemplary behaviour. As Boltanski and Thévenot describe, “it is through reference to generation, tradition, and hierarchy that order can be established among beings of a domestic nature” (Boltanski and Thévenot 2006, 165).

This is the higher common principle, the rationality, of the domestic world. Worthy beings achieve hierarchical superiority and they possess qualities that manifest permanence (firmness, loyalty, punctuality, thoughtfulness, attention). They act naturally and they are moved by habits: “This arrangement, locked into the body, ensures the stability of behavior without requiring obedience to instruction“ (ibid, 167). In the domestic world the subjects are defined by their relationship with others and worthiness usually follows generational lines. The objects are primarily valued for the way they support and maintain hierarchical relations - they are central pieces of proper behaviour and good manners (where gifts also play a big role). To gain worth in this world, one has to reject selfishness, be considerate to others and try to make life more agreeable for them and social relationships smoother.

Importantly, all these *modes of existence are not to be seen as firmly tied to particular settings* - the domestic world is not something that we participate in only when we are at home, just as discipline overflows disciplinary institutions.

Relationships between modes of existence

While the previous section focused on the activities within these relatively coherent milieus (intra-action), this section is concerned with interaction. While simply acknowledging that some form of interaction happens between modes of existence is a worthy point in itself, however, the focus here will be on collecting, describing, and classifying these meetings, overlaps, or conflicts.

The latter is a good place to start, as it is features strongly in Boltanski and Thévenot’s conceptualisation of interactions between orders of worth. Conflicts often arise, when the functioning of one order is put under question from the position of another. As this tense situation persists, chances are it might be resolved in one manner or another. According to Jagd describing these resolutions is a forte of Boltanski and Thévenot’s framework:

> A particular strength of the order of worth framework is that it supplies a theoretical framework for analysing different ways of reconciling competing orders of worth. Boltanski and Thévenot operate with three different types of agreement: clarification in one – dominating – world only at the expense of the other competing worlds; the local arrangement aimed at a temporary and local agreement around specific decisions; and the compromise aimed at a more durable agreement constructed on the basis of different worlds. The compromise is consolidated by specific constructions (dispositifs) that present a common justification based on different worlds. (Jagd 2011)

In summary, a conflict can end in the domination of one order of worth over another (e.g., practices of commodification), a temporary local compromise, or a more durable agreement. A good example of a more durable agreement is Boltanski and Thévenot’s description of “the sphere of economic relations” as composed of a number of logics: “The market world must not be mixed up with the sphere of economic relations, since economic relations are based on at least two main forms of coordination, by the market and by the industrial order" (Jagd 2011, 347; Boltanski 2006, 193-194). Logics need to coincide and work together for something as complex to arise and remain stable.

In comparison Latour lists a number of other relationships: "we are going to be able to speak of commerce, crossings, misunderstandings, amalgams, hybrids, compromises between modes of existence (made comparable in this sense according to the mode of understanding that we have already recognized under the label "preposition" [pre]), but we shall no longer have to use the trope of a distinction between world and language" (Latour 2013, 146).

Upon closer inspection one notices that (in *The Inquiry into Modes of Existence*) Latour only elaborates on three distinct types of relations. He speaks of misunderstandings, hybrids, and amalgams interchangeably, while reserving specific meaning for commerce as well as crossings.

Situating oneself at a **crossing** makes it possible "to compare two modes, two branchings, two types of felicity conditions, by revealing, through a series of trials, the contrasts that allow us to define what is specific about them" (Latour 2013, 63).

Commerce is seen as a relationship of varying intensity which can give rise to a new, hybrid type of existence, such as "objective knowledge". As an example, here is how Latour describes a successful laboratory, a site of intense production of objects and subjects:

> [I]t will have established (if it is well run) with some of the beings of the world — beings that have been mobilized, modified, disciplined, formed, morphed — such regular commerce, such efficient transactions, such well-established comings and goings that reference will be circulating there with ease, and all the words that are said about the beings

> will be validated by those beings through their behavior in front of the reliable witnesses convoked to judge them. Such access is not guaranteed, but it is possible; there is no shortage of examples. (Latour 2013, 147)

We can thus think of successful commerce as a way of establishing relatively durable relationships between two (or more) modes. This can give rise to a relatively stable division of capacities, which can be easily propagated. Commerce can thus be seen as a way of describing the correspondence between modes. As Latour explains:

> Here in a laboratory’s grasp of things that it has chosen to engage in the destiny of objectivity we have an example of what it means for two modes of existence to interact to some extent, to correspond to one another gradually; and this reality is specific, sui generis. Let us not be too quick to say that this grasp necessarily mobilizes either things or words or some application of words to things. We would lose all we have gained in our exploration, and we would forget that it is one of the effects of reference to engender both a type of known object and a type of knowing subject at each of its extremities; object and subject are then no longer the causes but only the consequences of the extension of such chains and, in a way, their products. The more these chains lengthen, thicken, and become more instrumented, the more ‘there is’ objectivity and the more ‘there is’ objective knowledge that circulates in the world, available to speakers who want to plug into it or subscribe to it. (Latour 2013, 90)

Commerce and correspondence are different from **misunderstandings, hybrids and amalgamations**, of which Latour mostly speaks as category mistakes, situations when a mode grasps other modes “according to its own type of existence — and misunderstands each of them in a particular way” (ibid, 215). To stay with the theme of this thesis, one example of an amalgam is the notion of matter, which encourages us to see one type of existence, where there are actually three. “The thing in itself” is a fetish which hides the work of reproduction, reference, and politics. But rather than defining matter as something that is more real the less we are in contact with it, Latour argues that it is a stable composite of three challenges,[5] with a lot of interaction and influencing going on between the various beings involved. A category mistake in this case would be to continue qualifying matter as unmediated, that is to grasp three other modes of existence from with the mode Latour calls “Double Click”.

Foucault is less systematic (or explicit?) than Latour or Boltanski and Thévenot in mapping the way rationalities overlap, but he still stresses its significance. Reading his account of the birth of biopolitics, it is obvious that its success would have been impossible, perhaps even unimaginable without the pre-existing disciplinary techniques. Unsurprisingly, the management of the population as a whole depends - among other things - on the success of the ways of handling people as individual bodies. As Foucault argues:

> Now I think we see something new emerging in the second half of the eighteenth century: a new technology of power, but this time it is not disciplinary. This technology of power does not exclude the former, does not exclude disciplinary technology, but it does dovetail into it, integrate it, modify it to some extent, and above all, use it by sort of infiltrating it, embedding itself in existing disciplinary techniques. This new technique does not simply do away with the disciplinary technique, because it exists at a different level, on a different scale, and because it has a different bearing area, and makes use of very different instruments. Unlike discipline, which is addressed to bodies, the new non disciplinary power is applied not to man—as—body but to the

5 These challenges are: the challenge of reproduction or continued existence; the challenge of overcoming distances and dissemblances between forms; and a wrestling with the impossibility of being represented or obeyed.

> living man, to man—as—living-being; ultimately, if you like, to man—as—species. (Foucault et al. 2003, 242)

It would seem that this overlap was crucial for the effectiveness, and a certain hegemony on the part of biopolitics or biopower as a governmentality of the modern nation state. Indeed, Foucault considered this state itself as a dynamic form of relations, an effect of a regime of multiple governmentalities: “the mobile shape of a perpetual statification (étatisation) or statifications, in the sense of incessant transactions which modify, or move, or drastically change, or insidiously shift sources of finance, modes of investment, decision-making centers, forms and types of control, relationships between local powers, the central authority, and so on” (Foucault and Senellart 2008, 76).

All in all this means that, when it comes to relationships between modes of existence, Boltanski and Thévenot write of domination, local agreements and durable compromises. Latour writes of crossings, commerce and misunderstandings. Foucault uses words like infiltration, integration, embedding and writes of co-existence and cooperation on different scales.

2.3.3 Summarising multiplicity

In the preceding sections I have stated that our capacity to appreciate both sides of purity/hybridity, efficiency/openness, fixity/flux, or totality/partiality (which should make us better at acting socially) depends on us being able to accept reality as multiple. I have covered a number of conceptualisations of multiplicity here and have gathered some of them under the same umbrella, along with the relationships between and within them. How then does this help us in relation to the divisions in question?

Take the example of parasitism through the lens of temporary local agreements as presented in this section. Squatting is a good example in this regard. The evidence given below is anecdotal, based on my personal involvement in the scene.

Ljubljana, a city I spend a lot of time in, has lost a precious place this winter (2021). After years of tensions between the municipal government and the users of ROG, a social, political, and cultural hub in the space of a squatted ex-bicycle factory, the municipality jumped at the opportunity presented by the covid-19 pandemic (the place was relatively empty) and brought the dozers in. They will renovate the impressive old industrial estate and build a social, cultural, and political hub in its place.

There is a lot to unpack here, but let’s focus on parasitism. It is clear after all these years that ROG lived at the intersection of the public, the private/commercial, and the commons. It was a temporary local agreement between these modes of existence which allowed it to exist and function in the centre of a European capital for 15 years. Parasitism was going on in all possible directions:

- the squatters had control of a large and architecturally appealing estate erected by industrial capital, which attracted people;
- the commercial activities in the squat (like concerts, parties, food, bike shops) directly (benefits) or indirectly[6] supported other activities such as anti-racist and pro-migrant activism, which in turn gave legitimacy to the place in the eyes of those more appreciative of purist politics (autonomists, anti-capitalists);
- the area which the squat was in was developed in an “edgy”-ish direction by the municipal government, which benefited from the touristic appeal this created;

6 By drawing large amounts of those who wouldn’t be appreciative of other activities but now had a stake in the place and would defend it.

– the strength of the community and the fact that there wasn’t ever any money to build something in its place (which can again be attributed to a number of things) made the temporary (inexplicit) agreement possible;

– ultimately, it is questionable whether the decision makers would ever elect to basically build a watered-down version of the squat in its place, were it not for 15 years previous activity in that direction.

The main point of this is that we now call such a situation a temporary local agreement and are more attentive to all the things which sustain it. We can use the lessons from Boltanski and Thévenot, for example, to study other local agreements and see what can be done to push in the direction of other resolutions. But this kind of illustrative application of the toolbox, which is taking shape, is the topic of the next section.

2.4 Beyond fact and fiction

There are a number of activities which are particularly important for this thesis. Normally we would call them research, technology, politics and (e)valuation. For my analysis I have picked a project which covers them all to discuss these activities at length. The task is threefold: to talk about these activities as they relate to my project; to talk about these activities from the “point of view” of multiplicity, and lastly to further demonstrate the previously listed gains of “conversing with them” in this manner.

The project of interest is a text by Christopher Kelty called *Two Fables* (Kelty 2016, 1), which contains two fables about the future of publishing. Kelty focuses on “questions of algorithms, publishing practices (commercial and scholarly), information retrieval and indexing, sorting, searching and measuring value in terms of the movement of social media trends and metrics” (ibid, 1). Because the text is essentially a work of fiction, it serves as a very good example of how, if we were to assay it through the usual lens of truth and falsity, we would completely miss its *value* as an excellent piece of research.

Kelty covers a lot of ground but the basic idea seems to be that things could go one of two ways. Either publishing - academic or otherwise - goes deeper in the direction of surveillance capitalism and automation (at the service of capital) or the content creators take control through a coordinated effort and use the technological capacities at their disposal to revolutionise the way scientific output is created, organised, accessed and evaluated in a different way - to the benefit of the knowledge produced and our planet as a whole.

The first scenario kicks off with a change in copyright law: “Among the many changes that the Trump presidency forced in its fourth term in office, copyright was reduced to a 1-year term” (ibid, 3). It became clear that originality no longer served as a guarantee of profit, that copyright no longer seemed to present an incentive:

> [I]t became increasingly impossible to sell a book or script just because no one had ever written something like it before. It turned out, actually, that this was always false, and it was far easier and cheaper to update Trollope than to pay Franzen for his ‘novel’ on the same topic. (ibid, 9)

The initial benefits came from savings - no need for licensing deals and legal fees for policing content - but eventually more and more focus was put on extracting value from metrics/data in the platformised future. The challenge was no longer to get people to buy books, but to read them:

> [I]t wasn’t just about knowing what people were reading and when they stopped, it was about linking that to social media profiles, networks of friends and followers, and ultimately monitoring in real time the reading experience and its effects. Finally, no one read alone any more, even if they were lying in bed by themselves. And no one “bought” a book either, the money flowed like words on a page. (ibid, 5)

Until it didn’t. And at that point it became necessary for publishers to get creative to try and keep readers engaged - changing the books as people read, inserting cliff-hangers, clickbait and extremely effective notifications, for example, People were essentially writing their own books as they read. All that was needed to sustain this was to keep the personal and the collective in perfect balance - so that people would still be able to talk about books. As Kelty describes: “locative media, personal assistant software, and lifestyle apps could be correlated across overlapping networks of people so that the texts they were reading were similar enough to facilitate discussion, but different enough to give every reader the experience they desired” (ibid, 10).

Kelty’s dystopian vision of the sphere of academic publishing is oriented around the intensification of current trends as well as the intensification of algorithmic cataloguing and indexing until “no two scientists could find the same paper in the literature”, the rise of streams of articles curated by diverse actors (to the detriment of the journal and the book), the death of pre-publication peer review (too slow) and in its place the institutionalisation of a system of likes, mentions, and “discusses”. In this great future we see the continued growth of the divide between rich and poor universities, until finally “administrators, politicians, pundits and engineers [..] realized that having humans in the loop was not only a source of noise, but the single biggest drain on the economy as well” (ibid, 18).

The second scenario is narrated in a more optimistic tone and is an alternate reality that Kelty stops “just short of advocating” (ibid, 1). Burdened with financial difficulties brought on by corruption, decrease in public funding and the increasing cost of journal subscription fees, universities become tense places and “a group of radicalised librarians, archivists, students, professors and a few disenchanted Silicon Valley engineers-cum-Wikipedians” (ibid, 20), band together to “turn off access to the entire scientific literature provided by the big publishers at hundreds of universities around the world” (ibid, 20).

Out of this initial rejection grows a parallel ecosystem (*sci-hub.wikipedia.io*), with free access to texts, new metrics, new ways of evaluating research. and reconstructed relations between disciplines and topics - “Wikidemians explicitly rejected hierarchical tree-like relations among scientific topics in favor of cyclic interlinking and recursive substructures” (ibid, 24).

Just as in the dystopian scenario, the corpus of academic texts and the accompanying conversations organised in sub-pages called “observations”, “story”, and “discuss” could be linked, mined, sorted, and indexed, but the ways in which this was done were transparent. These operations served as the basis for a new way of judging the quality of research:

> Rather than a fake measure like ‘impact factor’ measuring the number of citations a journal received (which meant nothing for an article that just happened to be in that journal but was never cited), Wikidemia preserved a record of all discussions and all disputes about an article right alongside it on the talk page. People could watch their publications for activity; committees could look for evidence of people reading, disputing, clarifying or linking to an article. (ibid, 27)

The publishers responded to this by initially agreeing that it is good that the entire scientific record be openly available through one platform. They proceeded to publish their papers on Wikidemia and hiked up the processing fees. This caused a rift within universities with some pressuring the administration to simply pay up or “the result would be catastrophic for the reputation of the departments and the university” (ibid, 26), and the other camp arguing that journal and publisher names, metrics of citation or impact should be removed from texts altogether in faculty promotion procedures.

The reader never finds out how this crisis was resolved but one thing is made clear. The new infrastructure was already having unforeseen positive effects on the academic landscape. As Kelty explains:

> If one ignored the measurement systems of the big publishers, and instead focused on the content of the articles, the discussions, the network of linkages and indexed references produced by volunteers, it became clear that certain kinds of scientific problems — both practically pressing and theoretically challenging — had been ignored for decades. Whole new areas of possible research opened up to the curious; the topology of the scientific record appeared to be

> dramatically skewed by the emphasis on journal names, citations and impact factors, all of which pointed to a tightly linked self-referential, self-citing cluster of scholars at fewer than 100 universities. (ibid)

How do we make sense of this fable by Kelty? Is this just fantasy? Should we completely disqualify it or qualify it differently? Our pre-position, based on the fact that Kelty is an academic, that he presented this paper at an academic conference, is to regard the product as a research paper, a truth-bound text, a discourse focused on the correspondence between the subject and the object. One of the reasons why the text works is that it does indeed correspond to the requirements of scientific discourse in some respects. Kelty’s extrapolations into the future are well based on documented events or trends, which he cites quite appropriately. Still, a knee jerk reaction would be that - because it is mostly a figment of Kelty’s imagination - the text should probably be “qualified” into the fiction bin and forgotten.

This is the difficult part. One has to disentangle the relatively well-bound narrative presented above to make room for the different rationalities that interact and are strengthened or weakened in this text; to uncover what Kelty and his human and non-human allies do by way of this text.

Through claims about events and trends accompanied with appropriate citations, Kelty is creating chains of reference to reach remote entities or states of affairs, transforming their appearance in a way that keeps their gist intact. Bringing back “that aptitude for maintaining a constant across the often very lengthy and very trying cascade of inscriptions” (Latour 2013, 251). In Latour’s diction he is making use of the crossing between the mode of reproduction and the mode of reference to craft objective statements, objects, and subjects. Their specific quality is not that they are more real than other beings but that they allow us to reach and/or manipulate entities from far away.

How well and how effectively they do that is the criterion for their “reality”.

Secondly, by imagining the future, Kelty is instituting beings of fiction - Wikidemia, for example. Again, their key characteristic cannot be that they are “fake”. The way they move us is markedly different from the way a train (a technological being) moves us but it is not “not real”:

> Fiction is not fictional in opposition to ‘reality’ (which in any case possesses as many versions as there are modes), but because as soon as those who are being displaced lose their solicitude, the work disappears entirely. This is indeed objectivity, but in its own mode, which requires being taken up again, accompanied, interpreted. (Latour 2013, 248-249)

Were we to disregard this type of veridiction - that they either move us or not, compel us to keep interpreting them or not - we would lose a slice of reality, as well as all the other effects, which fiction can have in concert with other modes. In Kelty’s text we see beings of fiction work together with beings of technology, metamorphosis, politics, and even reference. If we were moved as academics, or publishers, or administrators by Kelty’s account, then fiction has contributed to us imagining ourselves as a particular group. It has contributed to *the formation of a group (politics)*. If we were touched by the fictional descriptions of novel transformations (new ways to measure and evaluate research, the deeply uncanny prospect of bots rewriting books as we read them) then beings of fiction have *inspired us to pursue or resist* new types of metamorphosis, change, not-remaining-the-same. Even reference, that mode with the help of which we create objective knowledge, depends on fiction, as Latour explains: “Every scientific article, every story of an expedition, every investigation is populated with stories experienced by these beings who always seem to have sprung from the unbridled imagination of their authors” (ibid, 250). Fiction at the heart of facts.

2.5 Summary

The methods discussed and developed in this chapter are designed to respond to the challenge of doing technopolitics better, with the aim of challenging capitalist hegemony. They are to be employed and assessed in the context of the evaluation of academic labour. I have put most work into articulating an onto-epistemological framework, which should allow us to do work within that context in a productive way. In more general terms I have argued in defence of practising multiple, sometimes contradictory, ways of world-making, or rather of being aware that we almost inevitably do so.

“Articulating the onto-epistemological framework”, mainly took the form of describing and gathering various definitions and incarnations of the apparatus (cf. Foucault). I have argued that there is enough similarity between apparatuses, orders of worth, and modes of existence to put them all in the same basket. Next to that basket I have tried to fill another one with a list of relationships possible between apparatuses.

I have demonstrated how faulty understandings of our own (political) practice (in the widest sense, which includes theory) can make us less efficient actors and posited that improvements can be made by appreciating parasitism, gradualism, construction *and* deconstruction, utopian demands, *and* temporary (autonomous) grey zones.

The collections of apparatuses and the relationships between them make it easier to consider all these as worthy activities and as such they make up the most abstract layer of my methods. One would normally call this theory, but in the spirit of this framework it makes little sense to separate it too firmly from any subsequent layers. For they (the layers) are all capable of doing the same kind of world-making work, regardless of their purported essence.

For example, see computer programming, which is just as (if not more) capable of creating, strengthening, or weakening rationalities. It is one of the ways in which I go about addressing the imbalances perpetuated by the predominant way of evaluating academic research via citations. But what makes it into a method proper is the way it is qualified by the theoretical framework of this thesis. Theoretical gymnastics allow it to be integrated with all my other activities.

But this theoretical framework would not be what it is without the influences fed back into it by code, the experience of trying to implement a logic in the form of software. To assume a top-down relationship between theory and code would be a mistake. In fact, the most concrete description of the way in which I approached the challenge of doing technopolitics better, is a constant back and forth between reading texts and writing code. That is my method at its barest. If nothing else, it expresses a reflexive relationship between two relatively well-defined areas of activity. I do not however really see them as separate. In my experience it is all one continuous flow of action. As Winnie Soon describes:

> [R]eflexivity can be thought of as being undertaken by a practitioner who reflects continuously before, during and after actions and allows differentiated events to emerge through practice. On the other, the documentation demonstrates some of the processes of how code, materials and artworks inform and unfold the understanding of things. This is to illustrate how I think with things and how the materials inform the critical discussion of software (art) practice. (Soon 2016, 112)

For the tools I resorted to to address the challenges of writing code and text and keeping the project going, I mostly leaned on well-tested methods in software development such as versioning (with git), flowcharts (visualizing how the code gets executed), testing, profiling (improving execution time) etc. I also found literature on artefact design (in particular the work of Karl Ulrich (2011)) very useful as it helped me organise the iterative process of developing the code and the text.[7]

At this point I can clearly point out three elements of my method:

- an onto-epistemological framework stressing the multiplicity of existence accompanied by a list of apparatuses and relationships between them;
- parasitism, gradualism, construction, deconstruction, utopian demands, grey zones;
- a back and forth between code and theory.

But there are two more elements to this set-up:

- the context, everything that escapes the narrow focus of research proper;
- the categorisation of the outcomes this layered ensemble of methods aims to make.

The specific or situated context I found myself in while writing this thesis I would like to mention here too. Consider, for example, how coming to research possible improvements of the evaluation of academic labour at a university as a fully-funded PhD student, is part of the method. That employing money created within the capitalist mode of production to sustain a person who

7 The amount of time spent on programming “little helpers”, which were to magically organise the mountain of texts I read and the notes I made, is perhaps better left unspecified. It would perhaps have been better spent by just reading and writing more. But I do consider them part of the method just as my involvement in the academic ecosystem of mentoring, conferencing, and publishing is.

creates discourse and tools which become part of the commons, is a way of practising politics of valuation.

While that is interesting, the categorisation of the outcomes of this thesis is more important as it situates it in relation to the usual achievements of academic work. It is also meant to overcome the confusion that the distributed nature the methods in question might cause. They are ways of describing the concrete outcomes in the form of written discourse and working computer code.

In summary, I detect four types of action at work in this thesis.

1. This thesis is **experimental**, because it results in two software prototypes and a feasibility study without knowing how beneficial, useful, or worthwhile they will turn out to be. It implicitly asks the question whether these projects can be helpful and effective in performing political tasks.
2. The thesis is **observational** because it observes and reports on the experience of doing software development with a “raised philosophical/sociological awareness”.
3. The thesis is **interventional**, because it aims to create prototypes of solutions to a set of problems.
4. Finally, the thesis is **performative**, since it attempts to practice what it preaches. This thesis is a testing ground for my prototypes. It thus enables a limited *observation of* how useful my tools can be as part of the research or academic workflow.

There are two more aspects of performativity present in this thesis. One is the focus on open-source software development. The code is and will be publicly available on github under the GPLv3 license. This is a way of perpetuating an economy that circumvents market exchange, scarcity, and competition. The other is the way in which my method is entangled with my object of research. The politics of valuation are both something I study as well as something I do. In this respect I am studying the politics of valuation in order to practise them better while practising them - such are my methods, folded in curved and tortuous windings.

In the upcoming chapter I move towards contextualising the project in a wider sense (political climate, urgencies) and relating it to valuation. I will demonstrate that valuation is central to politics as well as to technological development and how it is also an important technosocial practice for the reproduction of academic research.

In general, practices of valuation are often described as very large “social” phenomena, which generate a good amount of controversy. This implies that research and innovation in this area can carry a lot of weight - that is - a considerable amount of potential impact. Very often the authors discussing valuation give the impression that valuation is a grand lever, well-illustrated by DeAngelis’ claim that different types of value pursuit reproduce different types of societies (more on that in the next chapter). If you change valuation you change society itself![8] This is one of those statements which are overwhelming and underwhelming at the same time. By drawing on the points developed in this chapter, we should aim to make this more manageable.

8 This is a simplistic assumption, which should be discussed. I do not believe that only important, large or impactful phenomena deserve our attention, but it is one way of narrowing down choices.

3 Technopolitics of valuation

As mentioned, this chapter is about situating the thesis in relation to bigger political topics and urgencies and dissecting two concepts central to that discussion – politics and valuation.

Against the backdrop of the horizontalist vouge of the 2010s, I present evidence for a rekindled interest in challenging capitalist hegemony on a larger scale, in a more mediated form. The overarching claim I make is that in order to be able to develop political practices in such a direction, we need to pay attention to boring mundane beings (such as spreadsheets or calendars) which make many associations between us possible. I call these beings grey (after Fuller and Goffey 2010) and/or logistical media.

I show how many of these are employed in practices of valuation and why valuation can be one of the central concepts for those interested in social change. Echoing my multiplicitous methodology, I try to tear down the well-established opposition between economic value and social values as well as between explicit and implicit practices of valuation. I posit that these distinctions are relatively useless in a situation where we need to be gradualist parasites, deconstructive and constructive, realist and surrealist – all at the same time.

Through this, I establish (e)valuation and the means with which we accomplish it as central objects of the thesis and the main target of its politics. I transition towards citations as important grey media for the evaluation of academic labour by analysing the evaluative role of its close relative, the hyperlink.

3.1 The rising interest in scaling up

One of the outcomes of the Occupy movement was a subsequent rejection of its rejection of mediation. Well justified or not, it has accompanied the post-2008 public gatherings since their very beginning: “The Occupy camps have become trapped in endless meetings and it became clear, there was a terrible confusion at the heart of the movement. The radicals believed that if they could create a new way of organising people, a new society would emerge. But what they did not have was a picture of what that society would be like, a vision of the future.” (Curtis 2016, 2h13min45s)

Throughout the duration of the movement this has caused many participants to double down on the merits of direct democracy, consensual decision making and temporary autonomous zones (Razsa and Kurnik 2012) - demands, visions and hierarchies were exactly what the movement defined itself *against*. Others, equally interested in the possibilities of alternative economic and power constellations, started looking towards the potential of durability and scaling up. How do we provide longer lasting and more extensive solutions to contemporary ills? Is there a way to combine getting on with our lives with resisting the expansion of the market, competition and individualization? There are already so many alternatives, how do we sustain them? The interest in scaling up took and takes many forms. Some have, with differing outcomes, decided to give representative politics another try (En Commu: Barcelona, Podemos: Spain, Združena levica: Slovenia, Momentum/Labour: UK, the reinvigoration of democratic socialism in the US) - even if only as means of strengthening other forms of democracy. Others have opted for trans-national platforms, such as DiEM25, a “pan-European umbrella group that aims to pull together left-wing parties, grassroots protest movements and ‘rebel regions’ from across the continent” (Oltermann 2016).

In social sciences and humanities the interest in scaling up took the form of the re-appearance of various research topics. Examples include alternative currencies (Lovink 2015), automation and accelerationism (Mackay and Avanessian 2014, Srnicek and Williams 2015), logistics (Cowen 2014, Cuevas et al 2015), cybernetics (Galloway 2014), algorithms (Terranova 2014), management/accounting/organisation (Harvie and Milburn 2010, Harney 2006), the revisiting of past attempts at large scale alternatives (especially those that were transgressive of the Eastern/Western block divide) - such as Chilean socialist experiments with cybernetics (Medina 2011), Yugoslav self-management (Horvat 2015) - and new attempts at utopian thought (Wark 2015). A special strand of investigation and practice focuses on the pitfalls and opportunities that come with the affordances of the internet, to cast the net wide. Many seek alternatives to data/sharing economy giants such as Uber, Airbnb, Facebook or Academia.edu (Dyer-Witheford 2013, Hall 2015, Scholz 2016a, Scholz 2016b, Morozov 2016, The Academia.edu Files), explore the possibilities of different approaches to data and visualization (Dear Data, Transforming Data, Digital Methods Initiative, Queercircuits) or publishing (Centre for Disruptive Media, Open Science Framework …).

There are other examples (such as attempts at alternative social networks, developments in open hardware and 3D printing …), but the above should suffice for the claim that we've moved away from the focus on immediacy somewhat. If the 90s spurred the "rethinking of life after capitalism" in light of the implosion of the USSR (Dyer-Witheford 2013, 2), with a scepticism towards the state, representation, hierarchies, immutability, recent years have done the same but in relation to Occupy - exploring the potentials of (and perhaps the necessity for) more durable ways of organizing, with less scepticism towards delegation, mediation, representation, automation etc. Such movements are not necessarily about uniquely new discoveries, but about a return of fundamental concepts that might have been in vogue previously. Perhaps there is difference to be found in this repetition.

Were the debates about social change not always mostly situated between same old coordinates (Abbott 2001), one could make a convincing claim that we are at a point where the readiness for a certain pluralism of approaches exists. But even if this is not the case - or if this is always the case - one can propose that a certain pluralism of approaches is desirable. But what kind of pluralism?

3.2 Mouffe's definition of politics as a starting point

Dissecting the work of Chantal Mouffe and her conception of pluralism is a good step (because of the prominence of the author) towards answering this question. We see a certain concentration of most of her work in *Agonistics: Thinking the World Politically*. In this collection of essays, Mouffe uses the arguments she developed previously in The Return of the Political, The Democratic Paradox, Hegemony and Socialist Strategy (with Ernesto Laclau) and On the Political to comment on issues in international relations (global and European), radical politics and art. She does so to examine the relevance of her agonistic approach in these different milieus. She calls her writings "theoretico-political interventions" whose "aim is to foster an agonistic debate among those whose objective is to challenge the current neo-liberal order" (Mouffe 2013, xvii).

Accordingly, the authors she bases her thoughts on and converses with are mostly philosophers and/or sociologists (almost exclusively male and from the West). The language of the book is specialist, one at home in leftist activist and academic circles, who are the supposed audience of her text.

Beginning with the presentation of her view of politics in general and her view of agonistic politics in particular, she defines "the political" as the potential present in all human societies for groups to to face each other off about issues to do with living together - "it's a dimension that can never be eradicated". In other words - she proposes that we call issues which involve making a choice between conflicting alternatives, political. She proposes to call the means (practices, discourses, institutions) by which we handle these conflicts, politics. By doing politics we "seek to establish a certain order and to organize human coexistence" (Mouffe 2013, 1-3).

In the book there are three archetypal toolboxes for doing politics that she takes issue with. (Neo-)Liberalism, communism and political-representation-denying-(leftist)-insurrections. To demonstrate what agonistic pluralism brings to the table, why it is better than these other approaches, the reader is in for a presentation of what they lack. The main problem of liberalism and communism per Mouffe is that they approach political issues with a permanent solution as the end goal in mind, one that wants to remove the aforementioned tendency of humans to antagonize each other over things that matter for common living indefinitely. She highlights liberalism betting on rational procedures (be it science ending in proof or rational deliberation ending in consensus) and communism going for the harmonious classless society, where political institutions are not necessary anymore (the state, law). Both ways of doing politics aim at eradicating a dimension of human life that can, so Mouffe, never be eradicated. Radical politics (or Arendt and Nietzsche inspired understanding of agonism in general), don’t go too far, but rather stop short (Occupy). Mere disruption or rejection of institutions is not enough if the goal is a lasting challenge to neo-liberal hegemony.

Mouffe’s thoughts are much in line with the post Occupy zeitgeist sketched above. She argues, as she always has, for a third way. The agonistic model for politics she proposes follows this diagnosis and while emphases differ - depending on whether she speaks about the future of the EU, post-operaism or artistic practices - her solution always comes down to setting up conditions under which conflicts can take an agonistic form, “where the opponents are not enemies but adversaries among whom exists a conflictual consensus” (Mouffe 2013, xii). They share “a common allegiance to the democratic principles of ‘liberty and equality for all’, while disagreeing about their interpretation” (ibid). Conflicts aren’t going away, neither are institutions (they shouldn’t, says Mouffe) and neither are “irrational” political allegiances (“the centrality of collective identities and the crucial role played by affects in their constitution”) - so we better figure out a way to stay with the trouble and organize ways to continuously contend for hegemony, without trying to eradicate each other: “when institutional channels do not exist for antagonisms to be expressed in an agonistic way, they are likely to explode into violence” (Mouffe 2013, 121).

There are a couple of things in Mouffe’s account which can be improved. The first is to *widen the array of things we discuss when discussing politics*, that is to politicize more. This can also be seen as an attempt to be more hospitable - or hostispitable - to those who don’t speak your specialist language. The second is to be more forgiving towards utopian thought. Connected to that can be an attempt to *see beyond the opposition between binary oppositions and distributed agency,* discussed in the methods chapter. In concert they could improve Mouffe’s conception of agonistic pluralism.

3.3 The Widening of politics as a way of scaling up

The politics in *Agonistics* are happening in the agora - the public arena, civil society, within and around (democratic) institutions. She discusses politics as they happen on the street, between nation states, through art. What about the politics of the lab? Politics of the workplace? Politics of technics?

While Mouffe stresses the need for counter-hegemonic struggles to develop in different settings (Mouffe 2013, 99), she more or less stays within one discourse and one milieu, making her writings problematic in a typical manner:

> To be sure, the perpetual restructuring of work can always be explained by reference to critical shifts in the mode of production or strategies of accumulation. But the pragmatic value of doing so is less certain - there is always the risk (Pignarre and Stengers refer to it as one of ‘poisoning’) that the ‘objective’ judgements one feels licensed to make leave those they concern prisoners of an abstraction that makes it difficult for them to get a hold of. How does a critique of the alienation of workers looking for a cure for AIDS enable these researchers to rethink the structure of the research process? (Geoffrey in Pignarre, Stengers, and Goffey 2011, xvii)

What Pignarre and Stengers suggest is a thorough engagement with the other. In Mouffe’s/Derrida’s terms – it is a particular version of hostispitality “where the tensions between the different approaches contribute to enhancing the pluralism that characterizes a multipolar world” (Mouffe 2013, 41). But Mouffe’s descriptions of hostispitality are too focused on people meeting in the public to discuss things.

A good example of a hostispitable approach towards other forms of politics such as technoscience is some of the work in software studies, like that of Bernhard Reider. His explanation of his coming to grips with Google's PageRank algorithm is worth quoting:

> My main goal is to show how a multilayered yet contained reading of a very specific computational artefact can produce a nuanced account that is attentive to "cultural logics", but does not dissolve concrete technical concepts and decisions in a homogeneous and homogenizing logic of "computationalism". While I do believe that the network approach to evaluative metrics implies a reductionist and often totalizing conceptual horizon, I will argue that concrete algorithmic objects do not follow teleologically from this horizon, that there are "margins", and that these margins are far from insignificant. (Reider 2012)

Reider recognizes that too often critical analyses of technology are content with drawing parallels between an all-encompassing social logic and large swathes of our lives, without engaging with everything in between. This, according to Stengers and Pignarre, often merely leads to *politics of mobilization* - politics that have people drop what they are doing and follow a flag, without rethinking how they can honour the critical moment of politicization right where they live. How they can intervene in their own situation by their own means (this too can be a collective and large-scale endeavour). Again, the important thing seems to be to hold the two in a productive tension.

In the section on valuation I will show, that that is what cyborgs tend to do anyway - we have the amazing ability to draw things together and operate on different scales at once.

3.4 Why Mouffe's scepticism of science and utopia is too intense

Based on Agonistics, one could almost think that people are simply too passionate for rationalism to prevail - "it is impossible to understand democratic politics without acknowledging 'passions' as the driving force in the political field" (Mouffe 2013, 6). An important task of democratic politics is therefore "not to eliminate passions or to relegate them to the private sphere in order to establish a rational consensus in the public sphere, rather, it is to 'sublimate' those passions by mobilizing them towards democratic designs" (Mouffe 2013, 9). But that is probably not what Mouffe's argument is about. If it were, she'd leave us with a false opposition between the rational and the affective - with the idea that the settlement of controversies always comes from the rational side, the side of consensus, while the affective side is the one that stirs them up. Were it not for passions, we would be able to agree on things, calculate everything and stop with politicking once and for all. But she herself writes about the importance of the affective in the process of identification, group formation and adversary designation (Mouffe 2013, 46-47). In this sense she is obviously aware of the constructive side of passions, and thus probably of the deconstructive side of the rational as well.

There is a different twist to the undecidability argument:

> Conflict and division, in our view, are neither disturbances that unfortunately cannot be eliminated nor empirical impediments that render impossible the full realization of a harmony that we cannot attain because we will never be able to leave our particularities completely aside in order to act in accordance with our rational self - a harmony which should nonetheless constitute the ideal towards which we strive. Indeed, we maintain that without conflict and division, a

> pluralist democratic politics would be impossible. To believe that a final resolution of conflicts is eventually possible far from providing the necessary horizon for the democratic project, is to put it at risk. (Laclau and Mouffe 2014, xvii)

In other words it is not that we are unable to decide once and for all. We just shouldn’t if we care about the democratic project. So why write that it is impossible if what you are trying to say is that it is not desirable? That’s somewhat confusing. Let’s try to “unconfuse” this.

Why does the belief in the final resolution of conflicts put the democratic project at risk? And what is the belief in the final resolution of things? I’ve already mentioned liberalism and communism as having a problem with that. In the preface to the second edition of their foundational text Hegemony and socialist strategy, Laclau and Mouffe continue dissecting the problem of liberalism. They are mightily worried about the post-political-there-is-no-alternative culture of Western politics after the disintegration of Soviet and Yugoslav state-capitalist attempts at socialism. They claim that the division between the left and the right has imploded, resulting in the politics of radical centre. Any political option in power is simply managing their state’s relation to the changing moods of the market: “politics is no longer structured around social division [..] political problems have become merely technical (Laclau and Mouffe 2014, xv)”. Obviously that is not how they want their/our politics. They want their own definitions of politics and the political, ones that are better. They say that *that is politics* and *this is the political*, which hints at the fact that arguing about the true reality or real interests is an important counter-hegemonic step, even if one tries to abandon the “opposition between what is constructed and what is not constructed” (Mouffe 2013, 80). Laclau and Mouffe make a judgement about which differences matter and which don’t (also Barad). They choose to stand with the claim that what matters is a counter-hegemonic struggle against the current incarnation of "social objectivity".

The authors could be more explicit about all that. It would improve some of their claims. Putting forward a definition of politics is a step towards bringing it about, however insignificant it may seem in the grand scheme of things. And as they rightly recognize, criticizing anything for being constructed doesn't bring one very far. It might open up the debate and make a different settlement possible in the long run, but it is not a move in any direction, it is only about opening up the possibility of a different world. After that we customarily take to differently grounded truths, as Laclau and Mouffe do as well, by proposing their vision of politics, for fear of violence by science and utopia (that is by grounding it ethically using evidence from the past). As Latour has suggested - politics are about constructing things well (Latour 2010, 474), or in Barad's words about making responsible cuts (Barad 2003, 827).

Any contemporary or future attempt at this cutting and construction would be greatly impoverished without science and/or utopia. Because these two are also crucial components in thinking about scaling up, some distinctions need to be made. Laclau and Mouffe's fear of violence by science stands in so much as we believe in science as some sort of immutable black box. But as various STS studies have shown (Latour 1999, Latour 2003, Law 1991, Law and Mol 2002), things are much more open, quite fiercely contested and even if not - agreement in scientific circles doesn't necessarily or smoothly translate into effects in the "real world". Therefore there is no good reason to shun science as such - the division between science and politics just does not apply in this respect.

It is quite similar with utopia. Mouffe argues against a certain kind of utopian thought, one that is convinced that we are not there yet because we have not been consistent enough. One that is characteristic of both neoliberal reason and Stalinism. On the other hand - things very rarely go to plan. And to have an idea of what one wants to achieve is often no guarantee that it will come about, especially when we are discussing something as complex as social change. In fact, that is what I began this section with. I’ve portrayed Occupy in this light. It could have been more utopian, and it could have been more focused on scaling up (perhaps even with the help of science). And despite being opposed to Occupy, Mouffe repeats these two shortcomings.

3.5 Logistical and grey media

In light of the expressed interest in more durable change, and in light of the hegemonic “social objectivity” of competition and market-based exchange, which depends on increasing the surveillance and commodification of ever larger swathes of externalities (Terranova 2014), a particular kind of media become an important point of interest/intervention.

While much of media studies is still (and justifiably so) focused on “big media”, be it broadcasting, print or social media giants, I see this project as an attempt to enrich the field of media studies by further exploring what one could, following Goffey and Fuller (2012), call grey media - those less apparent materials and procedures that we use to organize our lives and worlds - spreadsheets, logs, tables, graphs, algorithms, sketchpads, mindmaps, personal assistants, accounting … Many of us are more often in touch with these micro-media than with social media, or traditional media.

I see the relatively recent appearance of studies of logistical media in this same vein - as an attempt to understand the more minute ways in which media intervene in our lives.

> Anticipated in the work on “logistical modernities” by urban theorist and military historian Paul Virilio, and elaborated to some extent in the study on gameplay and war simulations by media philosopher Patrick Crogan, the term “logistical media” is named as such by communication historian and social theorist John Durham Peters. (Rossiter 2014a)

Among the group of scholars concerned with this new field, Ned Rossiter is one of the more visible (due to his prolific publishing). Together with his colleagues (Cuevas et al. 2015) he is focusing on media employed in warehousing, education, transportation, healthcare, financial services and global logistics. They are interested in how labour is organized and governed through software interfaces and media technologies - “questions of securitisation, control, coordination, algorithmic architectures, protocols and parameters are among those relevant to a theory of logistical media” (ibid). I share, with these researchers, the impression that these large-scale assemblages have an important impact on our lives, coordinating labour and life, resources, natures and cultures (ibid) and I wish to make two more steps to broaden and enrich our understanding of the phenomena involved.

Firstly, I think it makes sense to debate and clarify the merits of the use of logistical media as a concept.

Secondly, if logistics are about making optimal choices (concerning the use of resources for example), then media technologies used in logistics are first and foremost allies with the help of which we evaluate our environment. Thus, there is much to be said about the relationship between these technologies and the kinds of valuation we accomplish.

How did Peters define logistical media? He is a media/social theorist with a long-lasting interest in basic concepts (Iowa 2016). In line with this, his definition of logistical media is very wide:

> Logistical media arrange people and property into time and space. They stand alongside more obvious media that overcome time (recording) and space (transmission) and produce messages and texts. Logistical media do not necessarily have ‘content’ - they are prior to and form the grid in which messages are sent. (Peters 2013, 17)

Based on this he is able to list very diverse things as logistical media: “maps, names, addresses, archives, museums, census, stamps and seals, compasses, astrolabes, and the shofar as well … money - perhaps the paradigmatic case” (ibid). He claims that the relevance of logistical media (though ancient) is “urgent” today “thanks to new media such as Google, whose power owes precisely to its ability to colonize our desktops, indexes, calendars, maps, correspondence, attention, and habits” (ibid).

Stylistically speaking the main part of the text is a rhythmically exciting listing of curiosities and facts from the history of time and space in general; plus calendars, the clock, towers and their social roles in particular. From these examples one could draw connections and parallels to/with various issues in humanities and social sciences. Someone interested in - say - science and technology studies, could find good examples of, firstly, why a plain-old and non-gadgety thing such as the calendar can/should be considered a technology, and secondly, how ways of time keeping have historically been places of political and religious struggles. This point can also be made by using Peters’ descriptions of the “logisticality” of media, the ways in which the technologies in question “arrange people and property in time and space”, the ways in which they “form the grid in which messages are sent”.

Unfortunately, Peters’ text itself is quite ungenerous with explicit references to technology or politics. When looking into calendars the closest he gets to explaining the “arranging in time and space” idea is stating that they are designed to “coordinate periodic astronomical events (years, solstices, phases of the moon, days, etc.) with periodic human events (commemorations, anniversaries, holidays, Sabbaths, etc.)”. How exactly this changes human existence in a politically significant way is left to the readers’ imagination or prior knowledge, though he does hint at the calendar being one of the key ingredients of civilization (as in large human societies) alongside phenomena such as writing or the division of labour. One could speculate that keeping in sync with seasons or the flooding of middle eastern rivers (Nile, Tigris) is a key precondition for growing yields able to sustain larger numbers of people. If the calendar was good enough for Sumerians and Egyptians, the industrial revolution required the clock to coordinate “the cumulative actions of people (ibid)”. These are points which Ned Rossiter picks up on in his work too.

Liam Cole Young (another researcher who did work in this field), however, is more interested in the “priority” of logistical media. The way in which they make experience and/or a particular mode of co-existence with our surroundings possible. As Peters (Peters 2013, 1) puts it: “They (calendars, J.S.) are at once modes of representation and instruments of intervention: they constitute time in describing it”.

Cole Young (2015) claims that this direction of developing the concept of media, this push towards something all-encompassing is something that has already happened in German media studies. He shows how three concept building projects in the Anglo-Saxon world of media studies share the concerns that Kittler, Siegert, Visman, Ernst and others have had for a while now - among those are logistical media as developed by Peters and Rossiter (to whom I turn later). In particular he traces this development as an aftermath of Kittler’s engagement with Foucault’s thought:

> Kittler went a layer deeper than Foucault’s archaeologies did or could, showing the archive and discourse to be themselves always structured by media technologies: no discourse without pens, paper, and typewriters, no archives without recording media and address systems, no governmentality without files. (Young 2015)

It should be noted that Kittler did this (in 1986) after Foucault started developing the concept of the dispositif, which tries to name the diversity of entities needed to erect, foster and spread a certain rationality, epistemology, subjectivity. And also that the concept in question was left underdeveloped by Foucault. But, in any case, how did the German scene react to this widening of the concept of the media?

According to Cole Young, Siegert and others stopped using the term media but kept the focus on “ontic operations that reproduce, displace, process or reflect the distinctions at the core of any society – e.g. inside and outside, subject and object, nature and culture, matter and form” (Young 2015).[9] They replaced media, a concept they found totalizing (along with the network, power and similar) and called these “ontic operations of interest” Kulturtechniken or cultural techniques in English: “inconspicuous techniques of knowledge like card indexes, media of pedagogy like the slate, discourse operators like quotation marks, uses of the phonograph in phonetics, or techniques of forming the individual like practices of teaching to read and write” (Siegert 2011, 14). For Cole Young these practices are more basic, they precede what we common-sensically call media and he uses the list as a case in point (Young 2015): “What is included in a list vs. excluded is a basic distinction upon which rests all kinds of second-order operations, speculations, and actions that comprise media networks of trade and circulation, whether in Ancient Sumeria, early modern Europe or Wall Street in 2008”.

It is these operations of trade and circulation that interest Ned Rossiter, a media theorist based at the Western Sydney University. In 2016 he published a book entitled “Software, Infrastructure, Labor: A Media Theory of Logistical Nightmares”, yet his interest in logistical media has been apparent for a while from his talks and various publications mainly reposted on his blog (Rossiter 2014b, 2014a, 2015a, 2015b). Furthermore, he has been part of a research project focused on the global impact of logistics, financed by the Australian Research Council.

Judging by his writings, Rossiter is aware of the rudimentary and radical (as in radis, root) culture of the concept as described

9 This sounds much like Karen Barad’s definition of the cut.

above. He recognizes Peters’ theoretisation of the “infrastructural role of logistical media” and notes the importance of German media theory - in addition to “network studies, software studies, critical organization studies, Canadian communications research (Innis, McLuhan, J.S.)” and “anthropological and historical research on infrastructure” - for the development of a theory of logistical media (Rossiter 2014a). He starts many of his arguments by highlighting the wider operations that can be attributed to logistical media, which are those of “coordinating, capturing and controlling the movement of people, goods, information (ibid)” or “organizing the production of life and labor” (Rossiter 2015a) or “extract(ing) value by optimizing the efficiency of living labour” (Rossiter 2014a), but then chooses to narrow it down by focusing on concrete technologies used in global supply chain management - technologies, infrastructures, software (from GPS to RFID chips to management tools such as SAP) (ibid).

This decision can be read in two ways. On the one hand it could mean that he chooses to focus on the wide topic of global logistical chains and the effects this has for the government and organization of labour. On the other hand, he might be thinking along the lines of Stefano Harney (one of his collaborators): “the assembly line is today ubiquitous [..] this is the real meaning of the social factory [..] if for operations management a factory is a line, then the social factory is nothing other than the constant connecting and reconnecting of lines of assembly running through society” (Harney 2013). In other words, in times when algorithms, surveillance and optimization technologies are part of our daily lives, supply chain management is a much wider term. Not only for Marxian media theorists but especially for capitalists and their management who have embarked on this path a long time ago (70s, 80s) - as Harney (ibid) and Deborah Cowen claim (Cowen 2014, Chapter 1).

Either way he is pointing at the ways in which “the combinatory force of logistical media has a substantive effect on the composition of labour and production of subjectivity” (Rossiter 2014a), two terms which in Marxian media theories are tightly connected to the concept of value.

It is from this perspective (of value) that another thinker has come to speculate about the usefulness of describing certain media as logistical. Atle Mikkola Kjosen, working on his PhD dissertation at the University of Western Ontario in Canada, has come to think about the logistical functions of media by criticizing the efforts of Nicholas Garnham and Christian Fuchs to fuse political economy and media studies. In his mind these conceptualizations lack the understanding of media beyond “mass media and the means of communication and transport”. According to him a way of moving forward from this “pre-Kittlerian”, “pre-McLuhanian” definition of media is to consider the role media play in the three stages of the circulation of capital (Kjosen 2011). This suggests a new typology of media, one that is attentive to the ways in which media “augment or accelerate the functions of money-capital (1), productive-capital (2) and commodity-capital (3) (ibid)”: the function of media in purchase (purchase media), the function of media in production (production media) and the function of media in the sale (sales media).

This opens up a way to observe the mediating functions of technologies that would normally not be considered media “for example, ideology, markets, advertising credit, technology, machinery, forms of organization (e.g., Taylorism), just-in-time production, automation and robotization” (ibid) and allows a wider sensibility towards all that is included in capital’s movement through the world and capital’s movement of the world.

One characteristic of all these accounts is the already mentioned desire to look at/for media and mediation in places where media studies focused on representation and communication have not attempted to look. Some (Peters, Cole Young) are more interested in extending the concept toward questions of the organization of human experience, others (Rossiter, Kjosen) towards questions of distribution and circulation of goods, people - anything - in time and space. Thinking a bit further one could even go as far as to reduce one side to the other. Media are seen (by Cole Young, Siegert) as something that communicates and orders and cultural techniques are what “engenders the distinctions and operations required for media to do their communicative and ordering work (Young 2015)”. It would seem that one can reduce sense-making to ordering in time and space and vice-versa.

While interesting this is not the main takeaway of this section. The more interesting part of the gathered arguments is that they establish a connection between grey, logistical media and the social. Specifically, the way they highlight how these small mundane objects can shape the societies they are part of. How, though small, grey media operate on a large scale.

This argument spills into the next section, where I discuss valuation, a social practice which relies heavily on grey media.

3.6 How to value the value of value and (e)valuation?

One way to enter current debates about valuation is to look at the thoughts of the editors (Helgesson and Muniesa 2013) of the *Valuation Studies* journal.

They open with an exposition of valuation as a wide-ranging social practice based on the film Moneyball. The film depicts, they say, how experimentation with new valuation practices has re-ordering effects for the functioning of the baseball club, how some things in the club have to change at the organizational level in order to make this change in valuation possible. They go on to illustrate how valuation is going on everywhere, how “wherever we set our eyes, there appear to be a plethora of valuations going on (ibid, 3)”. The examples they list include “valuations of credit worthiness regularly translate into interest rates”, “the valuation of the worth of damaged nature might translate into economic damages”, “the valuation of academics might translate into who gets research grants or attractive positions”, to restate and thereby emphasise that valuations are ubiquitous practices participating in the ordering of society.

The study of valuation appears “in many places and in many guises”:

> from several disciplines such as sociology, economic sociology, science and technology studies, management and organisation studies, social and cultural anthropology, history, market studies, institutional perspectives in economics, accounting studies, cultural geography, philosophy, and literary studies. (ibid)

Despite this richness of research or perhaps exactly because of it, a greater challenge lies ahead - and that is the call that Valuation Studies purports to answer: “to facilitate [the] dialogue and debate between different scholars of different approaches and disciplines” (ibid). According to the editors, what ties all this together is the treatment of valuation as a social practice.

Such a broad scope means that valuation might denote both “something like the establishing of a monetary price for the sale of a book and the non-monetary assessment of the academic quality of a scholarly journal article” (ibid, 6). The editors value the flexibility of the notion because “it allows for interesting juxtapositions of studies of different phenomena” (ibid) and “opens for examination [..] the concurrent co-existence of different valuations” (ibid).

Editors of another publication on valuation (and measurement), Liz Moor and Celia Lury, see two reasons for the increased interest in these topics:

1. Capabilities developed outside of work are increasingly perceived as crucial for productivity of workers (social relations, communicational capability, empathy, caring …):

> One reason [..] is the perception that the economic value-form now incorporates and depends to an ever greater extent upon communicational and relational as well as formally productive forms of work. Such ‘immaterial’ forms of labour are recognized to extend to consumer or public activity, making social relations and practices outside the sphere of paid employment a potential source of economic value. (Moor and Lury 2011, 440)

2. The increased integration of social concerns into the operation of capitalist organizations. They refer to Boltanski and Chiapello to argue that this can be “understood as part of a tendency for critiques based upon non-instrumental or anti-capitalist values to be absorbed into, and used to reinvigorate, capitalist economies ” (ibid).

The focus on such fusions between social values and economic value is of particular interest in the context of this thesis, because of potential benefits it can bring for the practice of politics of valuation. This fusion is the focus of studies by Boltanski and Thévenot (2006), Thévenot (2007), David Stark (2011) and David Graeber (2001), which I review here.

Stark (2011) makes several observations about the origin of the separation of value from values.

He begins with linguistics and claims that the rift came into the English language with the introduction of the word value from Latin. Previously, English used worth as a term fusing both meanings we are dealing with here (economic and moral worth).

He then moves on to academia. He defines economic sociology as the specialization that deals with “societal and organizational questions of the valuable” (ibid) and presents Talcot Parsons’ political prudence in the early days of sociology as an important factor in shaping the division of labour between economics and sociology. Fearing that “economics might thwart his agenda if his program was perceived as encroaching on its territory (ibid)” he “walked down the hall in Harvard’s Littauer Center to his colleagues in the Economics Department, alerting them to his ambitious plans and assuring them that he had no designs on their terrain” (ibid). According to Stark this was the beginning of the separation of academic labour between the two disciplines, one now keeping to the inquiry into value**s** and the other value.

Stark chooses to problematise this division and returns to the term worth to highlight the idea that all economies have moral components.

Save for Stark, all of the works addressing the separation of values from value, display worry about the hegemony of one way of valuing human activity - that which has a quantified monetary/market based expression. They hope to gain helpful insights by fusing the concepts of economic value and values, **based on the similarity of their social roles**.

We can gather from Moor and Lury that this operation is not exclusive to academic studies – it might be even more intense in contexts where the goal is to “reinvigorate capitalist economies”.

In the age of social media, our perceived influence can be used to gain easier access to wage labour as in the case of Klout (Gerlitz and Lury 2014), our daily, leisurely, activities such as exercise can be minutely tied to insurance payments (“Vitality members can pay from £69 upfront for an Apple Watch Series 2 and nothing more if they stay active with Vitality”). A tendency exists towards trying to measure the value of what was previously beyond measurement, the common stock of capacities, knowledge and infrastructure that people bring to the labour market, the reasons why people pursue the things they pursue (such as economization of morality (see Shamir 2008)) and socially sensitive accounting procedures (Power 2007:133-134).

> The last three decades have witnessed an expansion of interest in corporate social responsibility (CSR) and in organizations whose mission is to promote it. (Boli and Thomas, 1999; Boli, 2006)
>
> In place of critical social audits conducted by external parties in the 1970s, experiments with new “socially sensitive” accountings have become evident, such as value-added statements (Burchell et al., 1985), social indicators, eco-balance sheets, triple bottom line accounting, and sustainability reporting. (GRI 2000)

This can be seen as part of corporate risk management as well as the commodification of corporate social responsibility. It means that pointing out or overcoming the division can hardly be a (political) goal in itself (to echo the concerns expressed in the chapter on methods). So why do these critical studies of valuation pursue the fusing of value and values?

Graeber (2001, 12) writes that separating the domain of value (economy) and values (everything else) is a feature of capitalism or any other market-oriented system of resource allocation and notes that there are/were many societies where this distinction does not exist.

He seems to be convinced that keeping the domains separate as well as fusing them are valid operations under different circumstances. Writing about Bourdieu:

> *By reducing everything to forms of capital, Bourdieu ends up arguing that all fields are organized, at least tacitly, in the same way as the economic field: as an arena of struggle between a collection of maximizing individuals. (Graeber in De Angelis 2005, 18)*

He then adds that Bourdieu’s theory is nevertheless indispensable when it comes to understanding the “strategies by which people can move back and forth between fields, and especially, by which some are excluded from them” (ibid).

According to Graeber the separation of values from value is one of the founding gestures of economics:

> The economy, after all, is ultimately a gigantic system of means and not of ends. Neoclassical economics has in fact only been able to make a successful claim to being a science since it has effectively vanished the analysis of ends — of values, of why people want the things they do — entirely from its purview. It can thus reduce human life to a series of strategies by which rational actors try to accumulate different forms of value: while exiling the study of value itself to other, inferior, disciplines: psychology, sociology, anthropology, and so on. (ibid)

This means that researching the fusing of value and values is **important for getting to know the manner in which a hegemonic form of valuation spreads as well as for thinking about alternatives.**

Before moving on, another important strand of research into valuation should be mentioned. It is exemplified by Fourcade (2009, 2011), Espeland and Sauder (1998; 2007; Espeland 2008) and some accounts (inspired) by Michel Callon (Callon, Millo, and Muniesa 2007; Callon 2005; Gerlitz 2014), and is more interested in the way measurements and valuation shape what they measure. These accounts include valuable lessons, such as the fact that rankings tend to bring about self-fulfilling prophecies, as in the case of university rankings analysed by Espeland and Sauder (2007).

While this research resonates strongly with some of the points developed in the methods chapter about world-making and performativity - as well as the evaluation of academic labour – it is only one of the ways in which we can politicise metrics and valuation.

3.7 Recasting politics in terms of value(s); the struggle over and the pursuit of values

David Graeber (in De Angelis 2005, vol. 10, and Graeber 2001) argues for an anthropological understanding of value(s), developed in the 80s by anthropologists (Terence Turner and Nancy Munn) at the University of Chicago and amended by his own work in the 90s.

He begins by expressing concern because market economies and economics as a discipline have separated social action into two domains - one of value and the other as values. One being the turf of economic analysis, rationality and calculating profit maximizing individuals, the other being the turf of irrational emotions and ideals, uncalculating altruism and “lesser” disciplines like “psychology, sociology, anthropology and so on” (ibid, 15). In “traditional” life, life removed from the market, these spheres are much more entangled, he claims, bringing ethnographic evidence. The creation of markets changes our lives by reducing parts of it to a series of profit-maximizing strategies.

What is at stake in such divisions is the battle for the “apparatus of the creation of people” (ibid, 15). In a market-based society we are talking about a certain hegemony of all those procedures which help cement voting through paying as the main expression of what matters - from money, debt, lack of economic democracy, accounting practices. A lot is involved in maintaining this setup (Mirowski 2013, Davies 2016). And not everyone can afford to pursue non-monetary values (Graeber in De Angelis 2005, 13-14).

Graeber tries to recast politics in terms of value(s) - to understand that the ultimate stakes of politics is the “ability to define what’s important in life”. The capacity to value in different ways is thus in a way an issue of democracy:

> In value terms, the question becomes: who has the right to translate their money into what sorts of meaning? Who controls the medium through which, and the institutions through which, our actions become meaningful to ourselves, by the very act of being publicly recognized in some kind of public arena? (ibid, 14)

In other words, the moment we stop trying to keep value and values separate “we realize that what on a personal level is a battle for access to the right to behave altruistically becomes, on a political level, a battle over control of the apparatus for the creation of people (ibid, 15)”.

There are others who have written along similar lines.

Adam Arvidsson, writing about how value and affect converge in the information society, argues for the multiplication of values that people chase:

> It would seem that the devices that are presently emerging as measurements of value in terms of General Sentiment are effectively paying heed to Tarde’s call for a more multidimensional economic analysis. Ultimately this might lead to a recognition that value decisions are ever more based on multiple and diverse processes of public deliberation, rather than on universally valid rules; and that such decisions are essentially political, or perhaps better, ethical. In such a situation a political agenda could reasonably aim for the opening up and democratization of such deliberative processes, allowing them to reflect a multitude of different perspectives and value horizons. (Arvidsson 2011, 54)

Drawing on Graeber’s work Massimo De Angelis argues that value “is the way people represent the importance of their own actions to themselves” (De Angelis 2005, 66), and that in this respect there is no difference between prices expressing the values of the importance of different human labours or striving to give “a beautiful name to their brother's daughter" or hoping "to be able to play an important part in the performance a collective ritual" in Kayapo society (Graeber in De Angelis 2005, 46). They are just *different ways to organize the reproduction of our collectives/societies*: "different types of value pursuit, hence of value practices, reproduce different types of societies, of wholes, of self-organising systems" (De Angelis 2005, 66). Thus:

> [T]he study of how we reproduce capitalist society is a study of how we pursue the values that are characteristic of it. The politics of alternatives are ultimately the politics of value, that is a politics to establish what value, connecting individuals and wholes, is. (ibid)

Which brings us to Marx. My claim is that most Marxian critiques of capitalism are to a large degree about the politics of valuation. Value is after all one of the key concepts of Capital, one that aims to explain the exploitation of workers as well as the need for the expansion of capitalism. As David Harvey writes: "to unlock the secrets of the commodity is to unravel the intricate secrets of capitalism itself" (2006, 1). And the commodity is a material embodiment of use value, exchange value and value: "These are the concepts that are absolutely fundamental to everything that follows" (ibid).

In today's setting, where the standard economic view of value is a marginalist one, proposing that the value of a good arises from the average socially necessary labour time needed to produce that good, means to juxtapose two views of what we do when we exchange. One which claims that prices are the expressions of our desires and another which claims that prices are expressions of the value of our labours (with value increasing as the amount of necessary labour time does). Is resolving such a dilemma a simple matter of truth seeking or are there other things at stake?

David Harvey can give some useful pointers:

> The exchange of commodities for money is real enough, yet it conceals our social relationships with others behind a mere thing - the money form itself. The act of exchange tells us nothing about the conditions of labour of the producers, for example, and keeps us in a state of ignorance concerning our social relations as these are mediated by the market system. We respond solely to the prices of quantities of use values. But this also suggests that, when we exchange things, “we imply the existence of value. . . without being aware of it.” The existence of money - the form of value - conceals the social meaning of value itself. (Harvey 2006, 17)

It makes sense that views on value differ:

> Marx was not particularly interested incoming up with a model that would predict price fluctuations, understand pricing mechanisms, and so on. Almost all other economists have been, since they are ultimately trying to write something that would be of use to those operating within a market system. Marx was writing something that would be of use for those trying to overthrow such a system. (Graeber in De Angelis 2005, 24)

They differ because they have different concerns in mind, they differ because while economists, entrepreneurs and investors are interested in profit, Marx was interested in “problematizing work as the terrain of class struggle” (De Angelis 2005, 70).

“An expected profit (the desire or plan of the investor) [..] corresponds to this expected sell price, profit calculated from the difference between expected sale price and purchase price of the inputs of production.” (ibid, 74) Practitioners of capitalism thus need to be able to see how much people want their product, how much they are willing to pay for it and compare that to the prices of all the commodities they need to acquire in order to make it (available). They are not interested in the relative importances of different labours. Marx is. He is on the side of the wage-labourer - and he wants to propose a different definition of what it means to be one, so that we might get rid of it. In order to stand there firmly, to move anything, he needs to decide what’s valuable from that perspective - and that’s the labourer’s time and capacity for work (labour-power). Some flavour of this capacity is what we rely on in any setting, really, to reproduce our existence. He must have been thinking - perhaps there are better ways to employ those, than the current one. He sees that the unique way in which capitalism is set up, gives him an insight into what is happening with our time and our capacities, and offers a powerful incentive to reclaim them.

> What makes capitalism unique, he argued, is that it is the only system in which labor - a human being’s capacity to transform the world, their powers of physical and mental creativity - can itself be bought and sold. [..] Hence, in a wage-labor economy, in which most people have to sell their capacity to work in this way, one can make calculations that would be impossible in a non-capitalist society: that is, one look at the amount of labor invested in a given object as a specific proportion of the total amount of labor in the system as a whole. (Graeber in De Angelis 2005, 24)

What Marx finds is that exploitation is a necessary part of capitalism - that labourers must be given a wage lower than the value of what they produce in order for profits to exist (Prychitko 2016) and thus for capitalism to reproduce itself:

> Since capitalists purchase a certain length of time during which they maintain the rights to the use of labour power, they can organize the production process (its intensity, technology, etc.) to ensure that the workers produce greater value during that time span than they receive. The use value of labour power to the capitalist is not simply that it can be put to work to produce commodities, but that it has the special capacity to produce greater value than it itself has - it can, in short, produce surplus value. Marx’s analysis is

> founded on the idea that “the value of labour power, and the value which that labour power creates in the labour process, are two entirely different magnitudes” (Capital, vol. 1, p.193). The excess of the value that labourers embody in commodities relative to the value they require for their own reproduction measures the exploitation of labour in production. (Harvey 2006, 22-23)

So Marx points to exploitation. To the fact that a part of what we measure is alienated from the producers. For this he needs a different view of value and he needs to adopt the perspective of the labourer, which excludes nature and machinery (he sees this as accumulated past labour) - though as Kjossen argues “something non-human that possesses labour-power could labour” (Kjosen 2011). [10]

The controversy between Marx and modern economics is not so much about how we should be doing things but rather about how we really do them – is capitalism really an apparatus for fulfilling desires or an apparatus of exploitation? It therefore makes sense that Marx does not spend much time proposing ways in which we should evaluate labour after capitalism. Which means that there isn’t much to be found in his work to help us design and define a different type of value pursuit, one which would help us reproduce a different type of society.

That is, of course, a tall order. And necessarily a collective task. What I focus on in the context of this thesis is trying to show that there are many types of valuation and modes of existence with plenty of relationships between them. As I have argued in the methods section, learning to navigate this multiplicity might be crucial for tackling such big tasks as “value after capitalism”. In this spirit I wanted to place the economic approaches to value on the same footing with other value pursuits, so we can become

10 This statement could already be seen as a first step in a political struggle for the inclusion of others into the category of the proletariat. Which would be an interesting step if we wanted to return some of the fruits of planetary labour to non-human producers.

more attentive to the ways in which these types of valuation interact. This, again, should help us be better parasites, gradualists, constructors, deconstructors as well as utopian dreamers. Perhaps in this way more things can be done more often.

To conclude this chapter, I want to show how grey media can play a role in valuation. I transition towards citations as important grey media for the evaluation of academic labour by analysing the evaluative role of its cousin, the hyperlink.

3.8 Linking to software

Having thus covered a number of things at stake in doing and researching valuation I can turn to thinking through the possibilities of doing politics of valuation by way of computer programming. I want to look into and try to make changes to a particular grey media, possibly one that has strong valuing functions, possibly one that is important for the institutions and collectives I am already part of.

If one wants to do politics of value. If one wants to focus on grey and logistical media and their role in scaling up. If one is interested in pursuing a practice-based project. If one wants to go from politics of mobilization to politics of direct action. If one wants to engage with a type of practice relatively distant from the hands of social scientists and humanists - computer programming - then studying (hyper)links as a possible point of intervention is a good place to start.

To illustrate the connections between valuation and the hyperlink, to argue that it is a grey, logistical medium, involved in practices of valuation, I turn to the work of Anne Helmond and Juliette De Maeyer.

De Maeyer wrote a helpful review article (2013) about the way links have been studied in social sciences. She claims that, despite the variety of roles that have been attributed to links thus far - indicators of authority, monitoring academic performance, reflecting political affiliations, signs of political homophily, tracing public debates, connections between blogs and international flows of information - “beyond the apparent diversity and ad hoc methodologies that the reviewed studies propose, a unified framework exists” (ibid, 737). All the methods employed share the - in fundament - same definition of the link, “so while a link might be an expression of friendship or just a link to an article that is relevant in the debate, the idea that what is linked to gains importance remains the same (ibid)”.

Before discussing this further she makes some preliminary observations. Firstly, she distinguishes two axes of research in hyperlinks, one (closer to network sciences) trying to describe networks and their properties, the other trying to “interpret links as indicators of other phenomena (ibid, 738)”. Secondly, she relativizes linking by claiming that it is not entirely tied to the history of the internet. Listing research by De Rose (examined hypertextuality and books) and Grafton (history of the footnote) she claims that the web is not the first system affording hypertextuality. Thirdly, drawing on studies of networks, she presents some characteristics of link based online networks - such as the fact that “one webpage is on average 19 clicks away from another” (ibid, 738).

The rest of the article covers studies interested in interpreting links as indicators of people’s intentions. According to De Maeyer two underlying assumptions make this kind of activity possible (ibid, 379) - that links are created for a reason and that (when aggregated) links are able to reflect social and cultural structures.

She then goes through all the roles attributed to links listed above in greater detail, starting with links as indicators of authority, initiated online by Google, a company that borrowed the lessons previously learned in academic citation analysis to make the web searchable: “It treated the link as an authority measure, based on the academic citation index, by calculating a ranking for each link based on the weight of sites linking to it” (Helmond 2013).

Helmond, rather than focusing on past research on hyperlinks, decides to research its history and future in times of social media platforms. She tells a story about how “social media platforms have advanced the hyperlink from a navigational device into a data-rich analytical device” (Helmond 2013). In other words, how the hyperlink has become one of the “currencies of the web”. It of course continues to have other roles such as “a unit of navigation, a relationship marker [and] a reputation indicator (ibid)”. The specific contribution of the study is the analysis of the role which software has played in automating the production processing and circulation of links (ibid).

According to Helmond the hyperlink was envisioned by Tim Berners-Lee as a purely technical reference without any meaning. But as the web grew, so grew the need to be able to find things reliably. Search engines started to take links up as indicators of relations between pages. This in turn changed the relationship between users, search engines and platforms. Website owners started to pursue a particular value - a high ranking in search engines. But this was just the first step. Helmond traces “the reconfiguration of the hyperlink in relation to the rise of devices on the web, first through the industrialization of the hyperlink by search engines, second through the automation of the hyperlink by (blog) software and finally through the algorithmization of the hyperlink by social media platforms” (ibid). At this final stage, to describe navigation online, talking about the hyperlink is hardly enough - it became only one of the many fields within the databases tracking connections, it became less of a link pointing to an address, and more a query into the database, capable of assembling customized content (ibid).

The industrialization stage is described by Helmond as mainly an achievement by Google: “Google created an economy of links and within what has been termed ‘link economy’ turned the link into the currency of the web. Search engines such as Google now regulate the value of links within this economy and have contributed to the ‘industrialization of the link’ through their automatic indexing, processing and value determination of links.” (ibid)

The automation stage is tied to the appearance of blogging software and/or content management systems, which were endowed with the capacity to automatically create reciprocal links (via either of the four methods) and also afforded users to add links to pages via comments. This quickly (with the help of spamming) lead to another large increase in the quantity of linking online and prompted search engines to devise new ways of determining or demarcating which links matter/count and which don’t, such as the no-follow attribute:

> nofollow is a value that can be assigned to the rel attribute of an HTML a element to instruct some search engines that the hyperlink should not influence the ranking of the link’s target in the search engine’s index. It is intended to reduce the effectiveness of certain types of internet advertising because their search algorithm depends heavily on the number of links to a website when determining which websites should be listed in what order in their search results for any given term. (Wikipedia 2016)

Finally, the progression of the automation of the hyperlink reached another stage with the rise of social media: “hyperlinks in Web 2.0 are increasingly produced by software as tailored recommendations for videos or items of interest, suggested friends, etc.” (Helmond 2013). Helmond describes this trend on the example of Digg and the innovation called “External Story Submission Process”, with which Digg “put forward a new type of linking practice - pre-configured linking, where the link is automatically configured for platform submission when clicking the button” (ibid). Soon platforms started incorporating shortened URLs “as an automated device for information harvesting [..] including the number of clicks on the link, the date and time the link was clicked, the country the link was clicked from and where the link was shared from, e.g., Twitter, Facebook, Google+, email etc” (ibid). Developments like these allowed gathering more information about the popularity and spread of web content. According to Helmond this represents a different kind of linking, since “social buttons do not create a link between two websites or blogs, but rather, between websites and platforms” (ibid), which is a way of harvesting links for the use within a platform.

> This stands in sharp contrast with search engines, where links have different values, even within the same site, and can also be deprived of their value, as in the case of the comment space. However, links shared on platforms do not have equal value in terms of visibility, as some links may only be visible from within the platform itself and to different platform populations. (ibid)

Based on these two accounts it would seem that linking is tied to valuation in many ways. It is interesting for both strands of valuation studies differentiated in this chapter. It has played a crucial role in the constitution of value online and has helped change the dynamics of the online world. And the way platforms work today, it has also become a way of extracting value from users. As De Meyers notes, many approaches to understanding links, base their validity on the presumption that links are created with intentions. That people’s interactions have a certain meaning. Does the increasing automation of the production of hyperlinks and their increasing flexibility present a crisis for this kind of research? Or can we simply speak of an increased capacity in the social factory? Have the owners of platforms endowed us with new machines with the help of which we are able to be more productive at giving away data about ourselves? Which values does this encourage us to pursue? And which values does it help to pursue the platform owners? Such are the politics of valuation.

3.9 Summary

In this chapter I have established important links between my methodological framework and the topics of politics, grey media and valuation. The overarching claim I made was that grey and logistical media are important for challenging capitalist hegemony on a larger scale.

I have approached politics as well as valuation through the lens of multiplicity, arguing for the importance of both pluralist political tactics as well as regimes of valuation.

In the parts dealing with valuation more directly (3.7, 3.8) I have presented a number of ways in which authors have established the connection between politics and valuation. Most of them are good examples of why valuation can be thought of as one of the more central concepts for those interested in social change.

A keen eye might have noticed that the authors (Graeber, DeAngelis, Harvey, Marx) I cited tend to establish connections between the values that circulate in a society and the *“nature”* of that society. I have discussed how such statements are overwhelming and underwhelming at the same time in the second chapter (methods). The solution I propose is that we should appreciate the overwhelming quality of these statements, because it can be a strong mobilizing force (as show in relation to Mouffe’s work), while remaining pragmatic about its underwhelming side (see page 37). That is by multiplying the number of things we can reasonably do to make meaningful changes to types of value pursuit.

An important operation, which helps us with that, is the deconstruction of the opposition between (economic) value and (social) values, to which I subsequently devoted quite a couple of pages of this chapter. It helps us sidestep the question whether we should be making changes to the economic or the ethical side of things. We see that practices of valuation often require diverse elements – economic, moral, technical etc. – which means that changes to the overarching logic usually require changes to all of them.

I trace the connection between economic value and grey media more concretely on the example of the hyperlink. Since the story of the hyperlink becoming a currency of the web is tied to some of the lessons learned in academic citation analysis, it is of no surprise that citations themselves play a similar role in academia. That and my engagement with it is the topic of the next chapter.

4 Linking, research evaluation, programming

The goal of this chapter is to present the three programming projects which lie at the core of this thesis – *Radovan*, *Linqr* and *Libra*. A case needs to be made as to how exactly they are put in position to perform political tasks in the context of the evaluation of academic labour.

I describe how and why I went about researching and intervening in the practices of evaluating academic labour. I begin by providing a justification for my choice of the terrain of citation practices, academia, academic labour and the neoliberal university as the one best suited - in my case - for practising the politics of valuation. The main reasons are the pragmatics of trying to effect change within your own domain (academia) and the centrality of knowledge for the current economy.

I situate the push to evaluate academic labour via citations in relation to this centrality, claiming that as the perceived value of knowledge for our economies increased so did the need to manage its production.

The exact ways in which this is managed, differs across Europe (which is my focus here), and I present a typology of the ways in which research evaluation is performed, created by Ochsner et. al. (2018). This typology makes explicit the different degrees to which citation metrics are relevant for the reproduction of academic labourers. It serves as an entry point into my programmed attempts at intervening in this setup and highlights their relative relevance for different groups of researchers.

The first programmed attempt I cover is Radovan. Radovan is a search aggregator of open source article/book repositories as well as shadow libraries. It is the most refined project of the three as it serves as the core technology on which the other two rely. I perform a reading of Radovan’s development based on multiplicity by situating it in three ways, explaining how the code arose at the intersection of three modes of existence. Overall though, the project’s contribution to the politics of valuation is in the way it uses aggregation to improve the access to texts distributed according to peer-to-peer, gift-based principles. The idea is that this strengthens the commons in relation to the market.

The second programming project is called Linqr. Linqr helps the user analyse texts containing academic references (Chicago or APA) and enrich them in several ways: by increasing the linguistic diversity of cited works, by improving the accessibility of sources (inserting links to unpaywalled content), by increasing the precision of links and by adding two-directionality to them. Just like Radovan, these convenient features are supposed to strengthen the commons in relation to the market, employing contradictory means to make that happen.

The third project is called Libra. It was designed as a way of countering the Matthew effect in academia – the trend by which previously acquired visibility or privilege accumulates further and intensifies the rift between the rich and the poor. Those with higher levels of recognition tend to receive even more of it over time. It is generally unlikely for someone from a university in the lower regions of league tables to get many citations. As part of the endeavour to counter this trend, I have studied the possibility of writing a computer program which makes the political implications of the act of citation more explicit. This gives the user the opportunity to replace more cited authors with those less visible, if appropriate. Due to various issues, described in the pages below, I have left Libra at the stage of a feasibility study, outlining areas of interest for further research.

I conclude the chapter by restating the relationships between these projects and the politics of valuation as well as reflecting on my experience of reflexively coding - did it get me any further than others, less flexible, definitions of political activity?

4.1 Choosing the terrain

> Universities have undergone profound changes in the last decades. A shift towards more accountability and to “new public management” practices in the administration of universities took place and led to an increase of the share of project funds in some countries and to the introduction of performance-based funding systems (PRFSs) in others. In all countries, research evaluation’s importance increases. (Ochsner, Kulczycki, and Gedutis 2018, 2)

Radovan, Linqr and Libra are academics, so to speak. They automate and take on certain tasks that workers in the academia normally do manually or with the help of other software - like searching for literature, aggregating sources, citing and linking. To a certain degree the choice to practice the politics of valuation in an academic setting, in relation to the University, is subject to a number of coincidences (such as where I ended up doing this PhD) and personal factors (such as the state of my programming skills). But while these might be prominent in causing the existence of this software (as the section on Radovan below illustrates), it is not what makes them worthwhile. There are bigger reasons why it makes sense to question the way value and values circulate in the University.

4.1.1 Intervene where you are

The first one is a pragmatic one. Assuming a critical attitude towards hegemonic social forces is a lot of work and so it makes sense to do the utmost to increase the possibility of impact. Quite often we are best suited for intervening in our own setting/ place of work - the one we know best, are involved in, know the people and understand how things work.

This led me to explore the ways in which value and valuation can be acted upon in the context of higher education. It turns out that the problem of how to value what the universities contribute to the society is a concern for many parties. For example, a notable rift exists between those who see university education as private investment and those who see in it a public service:

> [Academics] will thus be involved mainly in producing the type of unthreatening, lower-level, vocational ‘workers’ that are needed by post-welfare capitalism (and which the current push on the part of many governments toward an ‘employability agenda’ for much of higher education seems determined to generate) rather than the kind of educated public citizens or creative critical thinkers who are capable of maintaining some control over their own work and futures (and who therefore might not be quite so focused on the maximization of production and profit). (Hall 2015, np)

University management and large publishers are well equipped, technologically (ibid), to aid their effort to organize the institutions around chosen values (such as return on investment), and to make it in everybody’s interest to chase a particular set of goals: “research measurement is often seen as promoting a ‘publish or perish’ culture, distorting science, and leading to gross goal displacement” (Sugimoto and Larivière 2018, 2).

> [I]t is all too easy to imagine fewer and fewer academics being prepared to take a chance on teaching the kind of critically inclined arts and humanities courses that run the risk of being rated as difficult, complex, or otherwise economically unproductive and unviable: say, because they are challenging the status quo (rather than merely servicing it) by exploring alternative social, political, and economic visions of the future that are indeed about more than work, consumption, and the generation of large profits for someone else to own privately. (Hall 2015, np)

While one could discuss this further, the point for now is that *measurement and consequently (e)valuation play a large role in stimulating research and allocating resources* (Sugimoto and Larivière 2018, 4-5) ordering people's priorities, shaping their working conditions and ultimately steering an institution in the direction of one general purpose or the other.

4.1.2 The knowledge economy

The rise of a bundle of ideas termed the knowledge economy has put higher education at the centre of many a country's economic policies (Krašovec 2012) and has thus created an increased pressure to monitor the performance and actual contribution of "knowledge factories" to national outputs.

Whereas the classic Keyneseyan economic model saw knowledge merely as an externality, a black box, running parallel to the economy that is to be left to its own devices, the new theories of growth arising during the period of low growth and the stagnation of economic productivity in the 80s and 90s (Krašovec 2012, 213-214) become increasingly interested in understanding knowledge production:

> a constant influx of 'knowledge externalia' becomes (in economic theory as well as politically) insufficient. This marks the opening of the black box of knowledge and technological innovation and the intensification of research into the field of science and education from the perspective of economic science [..] When innovation becomes a political priority for ensuring growth and development, economic science suddenly becomes interested in the production and workings of knowledge (ibid, 215)

Kraševec writes that this spells the beginning of a certain reduction of knowledge from the side of economic science to only those "dimensions, useful for the economy (ibid)". Everything else seems unproductive and costly and needs to be either done away with or “turned into something economy friendly” (ibid).

4.2 The role of citations in the evaluation of academic labour

The European research evaluation systems are diverse. In a very informative study Ochsner et al. (2018) provide an overview by identifying five different types, according to the way in which research evaluation is performed (using quantified metrics or not) and how much of an impact it has on researchers (whether it is tied to funding or not).

1. The first type, **‘non-metric, non-SSH’** stands for national evaluation systems that do not have a national publication database, are not based on metrics, are not linked to funding and do not have SSH-specific procedures. Countries in that type include Cyprus (CY), France (FR), Iceland (IS), Macedonia (MK), Malta (MT), Montenegro (ME), Portugal (PT) and Spain (ES). The most representative country of this type is Iceland. (ibid)
2. The second type, **‘non-metric, SSH-specific’** consists of evaluation systems that do not have a national database, do not use metrics as a primary evaluation method, do not incentivise publications in English but do have dedicated funding programs for SSH research. Countries in that type are Austria (AT), Germany (DE), Ireland (IE), the Netherlands (NL), Serbia (RS) and Switzerland (CH). (ibid)
3. The third type, **‘funding, non-metric’** consists of evaluation systems using a national publication database, linking funding to evaluation results but the primary method of evaluation is peer review and the evaluation procedures are SSH-specific. Countries associated with this type are Lithuania (LT), Norway (NO) and South Africa (ZA). (ibid)
4. The fourth type **‘funding, metric’** is characterized by using a national publication database, using metrics as a primary

method for evaluation and linking evaluation results to funding while allowing for SSH-specific evaluation procedures and not incentivising publications in English. Countries in this type include Croatia (HR), Czech Republic (CZ), Denmark (DK), Finland (FI) and Poland (PL). (ibid)

5. The fifth cluster, ‘metric, English’, stands for evaluation systems that have a national database in place, use metrics as a primary method of evaluation, link funding to evaluation results, do not allow for SSH-specific adaptations and incentivise English publications. Countries associated with this type include Bosnia Herzegovina (BA), Estonia (EE), Hungary (HU), Slovenia (SI) and Slovakia (SK). (ibid)

This compressed overview should provide a useful impression about how relevant the software projects described below could potentially be for researchers in different countries. The more heavily a country relies on citation-based metrics and the more tightly the results are tied to future funding of research, the bigger the stakes are.

4.3 The three lives of Radovan from planet Meta

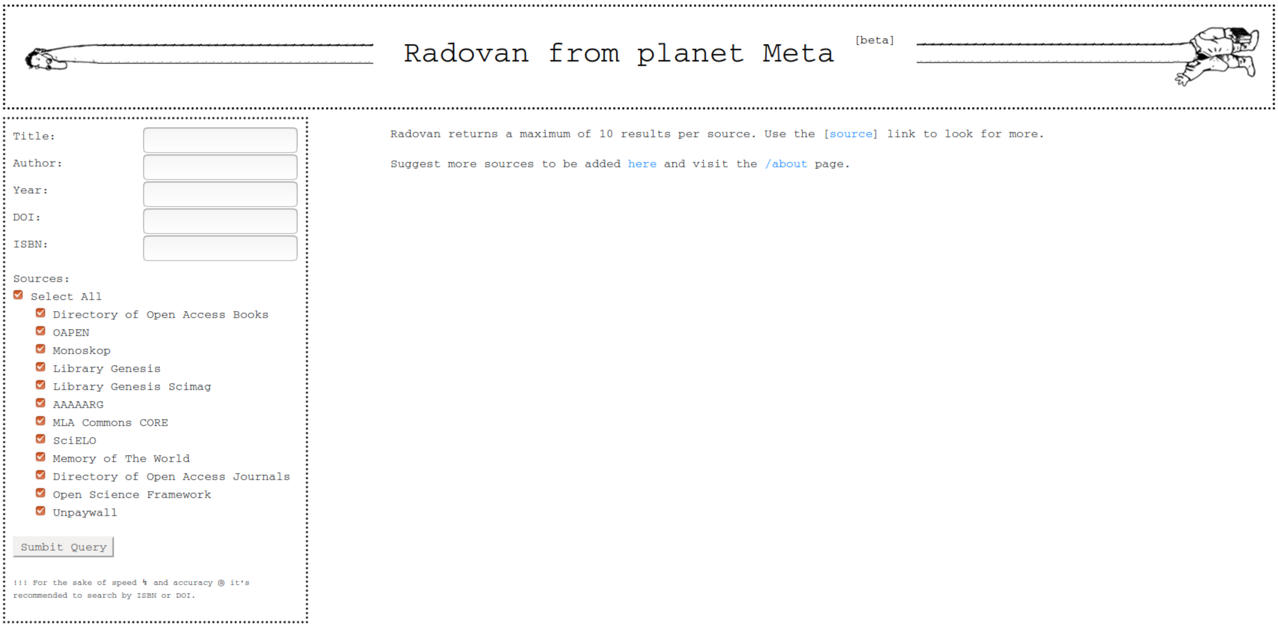

Image: Screenshot of the landing page.

> kata-agorein is first of all “how to talk about or against something or someone in public” [..] Discovering the right category, speaking in the right tonality, choosing the right interpretative key, understanding properly what we are going to say, all this is to prepare ourselves to speak well about something to those concerned by that thing in front of everyone, before a plenary assembly, and not in a single key. Life would not be complicated if all we had to do were to avoid a single type of mistake and discriminate between speaking well and speaking badly in a single well-defined mode, or if it were enough to do this on our own, in the privacy of our own homes. The question of categories, what they are, how many there are, is thus at the outset a question of eloquence (how to speak well?), of metaphysics (how many ways of speaking are there?), and also of politics, or, better yet, of diplomacy (how are those to whom we are speaking going to react?). (Latour 2013, 59)

I chose to describe Radovan, a meta search engine for open access texts and shadow libraries, in a very specific way to illustrate the concept of qualification. It is what Thévenot calls the wide array of procedures which we employ to qualify and disqualify beings from certain types of existence. The means we use to “subjectify” and “objectify” things. Valuation is one of the means with which we assign worth to beings and things - and thus endow them with capabilities and responsibilities. Below is an attempt to “requalify”, to lift, Radovan from a situation where its whole claim to existence depends on my personal whims/issues, towards a more public existence where I try to entangle it with more and more beings (technical ones at first and political ones later), whom I convince that they should recognize Radovan’s worth and keep him in existence.

I understand that the language is rather exotic. There is no other way. It takes a bit of experimentation to illustrate the many existences that beings and things live - and how they are all real in different senses.

I also wish to highlight the amount (and diversity) of work needed to make a different being out of Radovan (let us not forget all the matter, the energy either) in order to stress that a world of multiple truths is not a post-truth world. Switching modes of existence is not as easy as changing one’s mind about something. It is as hard as politics of valuation.

4.3.1 The intimate life

Dear Sir or Madam,

I’d like to say this.

There I was. Very well suited for work at the University. But really just looking for a job. An income. Doing a PhD seemed easiest. I did get an offer. So there I am.

I was demotivated. Maybe this is a mistake. I must not feel down. I must trick myself. Otherwise Mr. Brain Le Bag du Douche will play tricks on me. Sing songs of disillusionment. Of low confidence. Let’s not let him. We need to turn this around. Trick ourselves, trick ourselves now. Trick mr. Brain. I’ll show him. What else could a PhD be good for? I know. It is basically studying. So I could potentially study something new. Reinvent myself a bit. Take a couple of steps away from the things I am bored of. Afraid of? Tired of?

I’ll get better at computer programming. I can do that. I heard that gives one options. Options are nice. I want more options. Yes, give options, please.

And now. I’ve written this.

Now that I had my mind set on getting good at something else, now that I had something that gave me at a reason for going through with it … I had to look around. There are others I need to make happy. Others I need to relate to. I am not at the Department of Computer Science. I am at the Faculty of Arts. I am surrounded by certain topics and questions. Digital humanities a.k.a. “what should we do with computers in humanities and social sciences”? Sounds like something I relate to. What about my more immediate surroundings? What do my mentors care about? What do my colleagues do? What does the research centre aspire towards? What could I program that would make my work interesting to them? What am I well-equipped to do in this setting?

As you can imagine it took a while, but being surrounded by pirates, being surrounded by radical open access, by rethinking the conditions of academic labour … It adds up.

It added up. There was a bundle bundling. Things accumulated. Invented words. I don’t know.

These are the particularities of the situation. I have my own motivation. I have what matters to others around me. What I am well-equipped to do. What I am bored of. Three coding projects? Why three? Three sounds like a nice number? It is not too much. I had more. Some went beyond. Leave them.

So, you see, that is what Radovan is in one of the realest senses possible.

We didn’t plan Radovan. Conceived in a fit of frustration he was. Like why is it so difficult to get articles and books. It always seems that I have to visit 10 different pages which then redirect you 10 times more and then in the end you figure out that you have no access anyway and well it is frustrating. Sci-hub helps but it is not for books. So I collected some of the sources I frequently use and there it was … a prototype.

Is this even true? I may have misunderstood myself. It could be that Radovan was conceived in a fit of procrastination. Looking for literature is usually not the difficult part. Writing things order in a sensible down what is is aesthetically intelligent and pleasing usually.

At no point did I think it was going to be part of my PhD.

But now it is! We are way past that, actually.

Code code code. Prototype.

I understand that this is not enough but would these lines of code exist without it? I doubt it.

You see … I have nothing to hide.

So why pretend that the political reasons and measures of academic excellence that I took into account later are more important? Well, surely, we should pretend that. Mostly talking about each other’s suffering would get in the way of Science. We need to ensure collaboration. Progress. Focus. But we should not pretend that this makes the intimate life of our research any less real or important for the existence of outcomes.

I think we could benefit from more realism.

Yours intimately, Jurij

4.3.2 The technical life

Access info

Working version
https://yurisearch.coventry.ac.uk/radovan/

The code
https://github.com/uree/radovan

Radovan is a search aggregator. It is a web application written in python, leaning heavily on a framework called flask, especially popular for creating APIs. As of early 2020 it includes the following sources all of which contain openly accessible texts. Some keep books, others keep articles, and a number of them offer both. 0 means no, 1 means yes.

[{‘full_name’: ‘Directory of Open Access Books’, ‘url’: ‘https://www.doabooks.org/’, ‘books’: 1, ‘articles’: 0, ‘api’: 0, ‘description’: ‘DOAB is a project of the OAPEN Foundation, “an international initiative dedicated to Open Access monograph publishing, based at the National Library in The Hague”. Their aim is to increase discoverability of Open Access books.’},

{‘full_name’: ‘OAPEN Online Library and Publication Platform’, ‘url’: ‘http://www.oapen.org/home’, ‘books’: 1, ‘articles’: 0, ‘api’: 0, ‘description’: ‘This is another project by the OAPEN Foundation. While DOAB is meant as a discovery service for OA (peer reviewed) books, OAPEN serves as the central repository, hosting the content.’},

{‘full_name’: ‘Monoskop’, ‘url’: ‘https://monoskop.org/Monoskop’, ‘books’: 1, ‘articles’: 1, ‘api’: 0, ‘description’: ‘Monoskop is a wiki for collaborative studies of the arts, media and humanities.

It features a rich curated collection of works in various formats from books, to magazines, sounds, music, videos as well as resources covering software projects or city specific scenes (who is who where).’},

{‘full_name’: ‘Library Genesis’, ‘url’: ‘http://libgen.io/’, ‘books’: 1, ‘articles’: 0, ‘api’: 1, ‘description’: ‘A giant library providing access to over 2 million files: comics. magazines, scientific articles, fiction, professional books and even standards (iso). It serves as a repository for articles already unpaywalled via sci-hub.’},

{‘full_name’: ‘Library Genesis Scimag’, ‘url’: ‘http://libgen.io/scimag/index.php’, ‘books’: 0, ‘articles’: 1, ‘api’: 1, ‘description’: ‘The scientific articles section of Library Genesis.’},

{‘full_name’: ‘AAAAARG’, ‘url’: ‘http://aaaaarg.fail’, ‘books’: 1, ‘articles’: 1, ‘api’: 0, ‘description’: ‘AAAAARG. An online text repository. Over time it “has grown into a community of researchers and enthusiasts from contemporary art, critical theory, philosophy, and related fields who maintain, catalog, annotate and run discussions relevant to their research interests.”’},

{‘full_name’: ‘MLA Commons CORE’, ‘url’: ‘https://mla.hcommons.org/deposits/’, ‘books’: 1, ‘articles’: 1, ‘api’: 0, ‘description’: ‘Core is a is a “full-text, interdisciplinary, non-profit social repository designed to increase the impact of work in the Humanities” run by MLA (Modern Language Association). Members are encouraged to upload a diverse content, beyond books and articles: course materials, white papers, conference papers, code, digital projects. “CORE provides MLA Commons members with a permanent, open access storage facility for their scholarly output, facilitating maximum discoverability and encouraging peer feedback (http://mla.hcommons.org/core/what-is-core/).”’},

{‘full_name’: ‘SciELO - Scientific Electronic Library Online’, ‘url’: ‘http://www.scielo.org/’, ‘books’: 0, ‘articles’: 1, ‘api’: 0, ‘description’: ‘“SciELO (Scientific Electronic Library Online) is a bibliographic database, digital library, and cooperative electronic publishing model of open access journals. SciELO was created to meet the scientific communication needs of developing countries and provides an efficient way to increase visibility and access to scientific literature Originally established in Brazil in 1997, today there are 14 countries in the SciELO network and its journal collections: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Mexico, Peru, Portugal, South Africa, Spain, Uruguay, and Venezuela. Paraguay is developing a journal collection (https://en.wikipedia.org/wiki/SciELO)."’},

{‘full_name’: ‘Memory of The World’, ‘url’: ‘http://library.memoryoftheworld.org/’, ‘books’: 1, ‘articles’: 0, ‘api’: 0, ‘description’: ‘A peer to peer public library connecting Calibre users and beyond in the name of universal access.’},

{‘full_name’: ‘Directory of Open Access Journals’, ‘url’: ‘https://doaj.org/’, ‘books’: 0, ‘articles’: 1, ‘api’: 1, ‘description’: ‘“DOAJ is an online directory that indexes and provides access to quality open access, peer-reviewed journals (DOAJ 2018)(https://hyp.is/lNjtlJCfEeiy8YcrKRMhLA/doaj.org/).” “The Directory aims to be comprehensive and cover all open access academic journals that use an appropriate quality control system (see below for definitions) and is not limited to particular languages, geographical region, or subject areas. The Directory aims to increase the visibility and facilitate the use of open access academic journals — regardless of size and country of origin—thereby promoting their visibility, usage and impact. (https://doaj.org/faq)”’},

{‘full_name’: ‘Open Science Framework’, ‘url’: ‘https://osf.io/search/’, ‘books’: 0, ‘articles’: 1, ‘api’: 1, ‘description’: ‘Run by the Centre for Open Science based in

Charlottesville (USA), OSF aims to improve how researchers research and collaborate by providing a number of tools. It is a “scholarly commons to connect the entire research cycle”. Part of this mission to improve access to text to which end they created a 2M strong repository of preprints.’},

{‘full_name’: ‘Unpaywall’, ‘url’: ‘https://unpaywall.org/data"’, ‘books’: 0, ‘articles’: 1, ‘api’: 1, ‘description’: ‘“Unpaywall is a project of Impactstory, a nonprofit building tools to help make scholarly research more open, accessible, and reusable. Impactstory is Heather Piwowar and Jason Priem.” They source texts and metadata directly from over 50k journals as well as aggregators such as PubMed Central, the DOAJ, Crossref, and DataCite.’}]

All these sources differ in terms of avenues of communication they are accessible by. Some are connected via dirt … avenues, some offer well lit, smooth, smart motorways. In the case of dirt roads (such as Aaaaarg), the retrieval of data relies on scraping the contents of webpages, which are accessed by programmatically, simulating browsing behaviour. This is necessary because one needs to log into aaaaarg (for instance) to access useful information. A tier up from that are pages/sources, which do not require any browsing simulation, but still need to be scraped (Monoskop) and/or retrieved from metadata files (MLA Commons CORE). There is no need for any of that if a source has an API (Directory of Open Access Journals). In that case, a well written query returns structured data. This means marked differences in the speed of information retrieval. Simulating browsing as well as scraping can take seconds upon seconds!

A query of all the sources now normally takes around 5 seconds. This is down from around a minute (first prototype).

The diversity of sources brings with it a diversity of data formats one works with. A lot of coding work has gone into translating between them. Some sites use RIS (scielo), some use bibtex, custom json or bibjson. Some sites don't provide structured metadata at all and it needs to be inferred from the html output. I settled on bibjson as the base format to which I translated all others in order to be able to display uniform results.

Bibjson (http://okfnlabs.org/bibjson/), a format developed by okfnlabs, has a number of characteristics which make it a good choice for this project:

- It very similar to bibtex, which it can easily be converted to using Zotero or similar software and subsequently used for generating bibliographies or simply citing.
- At the same time it is structured like .json, a very widely used and supported format on the web: "it makes it easy to share and use bibliographic metadata online" (ibid).
- It is a bit more flexible than bibtex, which has a major deficiency when it comes to storing urls. While it is possible (though discouraged) to save multiple comma separated links, it is impossible to keep any additional information about these links – like whether they lead directly to a text or merely a landing page, which format the text is in etc. Since one of the purposes of the meta search engine is to minimize the number of steps one needs to take to find an item, displaying this kind of information was important.

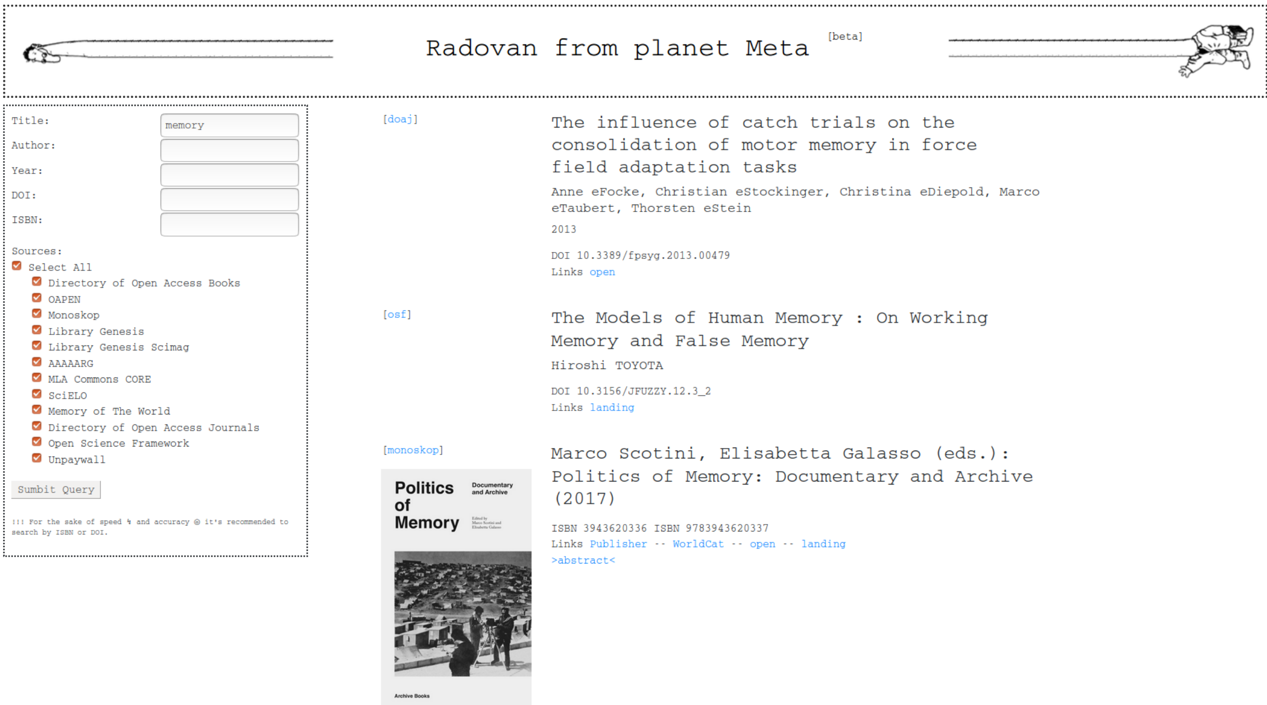

Image: Screenshot of the interface with some results displayed.

Radovan is accessible through a web interface which returns html and a quasi API (it is not RESTful), which returns bibjson. It can thus be used by people as well as other applications.

the api can be found at https://yurisearch.coventry.ac.uk/radovan_api/

The API generally returns more information than the web interface. What the latter displays is limited to information which is reliably returned by all the search engines included (author, title, year of publication, identifier and links). For more information users can access the query as it was executed on each search engine separately (by following the link provided).

The results are ranked in a simple way – they keep the position they had on the source page. Consequently all the number one results from all search engines are displayed first, followed by all number twos and so on … For the sake of speed the number of results retrieved per search engine is limited to 10, but the setting can be easily changed.

4.3.3 The political life

The main way in which Radovan performs political tasks is through the choice of sources it aggregates. It excludes those providers which use paywalls and includes those which either operate according to the principles of open access or do the parasitic work of circumventing paywalls (shadow libraries like Library Genesis, Aaaaarg and MemoryOfTheWorld). Making all such repositories available through one webpage is supposed to strengthen the position of content distributed on a peer-to-peer basis vis-a-vis those models of distribution which rely on the market and the commodity form.

This is the main way in which Radovan performs the politics of valuation. It establishes a relationship between the industrial values (see p. 51 for the discussion of the industrial order of worth) of efficiency and user friendliness with a gift based regime of valuation and distribution. It establishes commerce or a temporary compromise between them. The idea behind it is that because this way of accessing content is more agreeable to the users, because they can always find content which they can immediately access in full, they will end up searching, reading and citing open access content more often.

Radovan’s potential for impact is bolstered by the fact that it serves as a sort of base infrastructure for the other two programming projects. They rely on its functionality to accomplish additional tasks understood as politics of valuation.

4.4 Linqr – commonify your links

<u>Access info</u>

Working prototype:
https://yurisearch.coventry.ac.uk/linqr/

The code
https://github.com/uree/linqr

Image: Screenshot of the landing page

Linqr is a prototype of a web service that currently works as a standalone python script and a web application (via flask and vue.js). It helps the user analyse texts containing academic references (Chicago or APA) and enrich them in several ways: *by increasing the linguistic diversity of cited works, by improving the accessibility of sources (inserting links to unpaywalled content), by increasing the precision of links and by adding two-directionality to them*. I will address these in greater detail right after a more detailed description of the workings of this software.

The program expects the user to submit a written document in plain text, pdf or any of the MS Word/OpenOffice formats. Upon submission Linqr scans the document and finds any in-text citations as well as the bottom dwelling list of references[11]. Based on that, it queries Radovan, for any and all versions of the referenced texts. With all these new links gathered, the user has a couple of options.

One can simply choose to print newfound sources in the form of a reference list or a bibtex/bibjson file.

Alternatively the program sets out to create an updated version of the uploaded document and asks the user how they want to treat each reference:

- Would you like to leave it as it is?
- Would you like to append a new link pointing to the cited text as a whole?
- Would you like to append a new link pointing to a particular page in the cited text?
- Would you like to append a new link pointing to a particular section of the text? If so - would you like to link back to your text from that particular section?

11 At the point of writing this only worked well enough with the APA citation style, though the code is set up to easily accommodate the support for other styles.

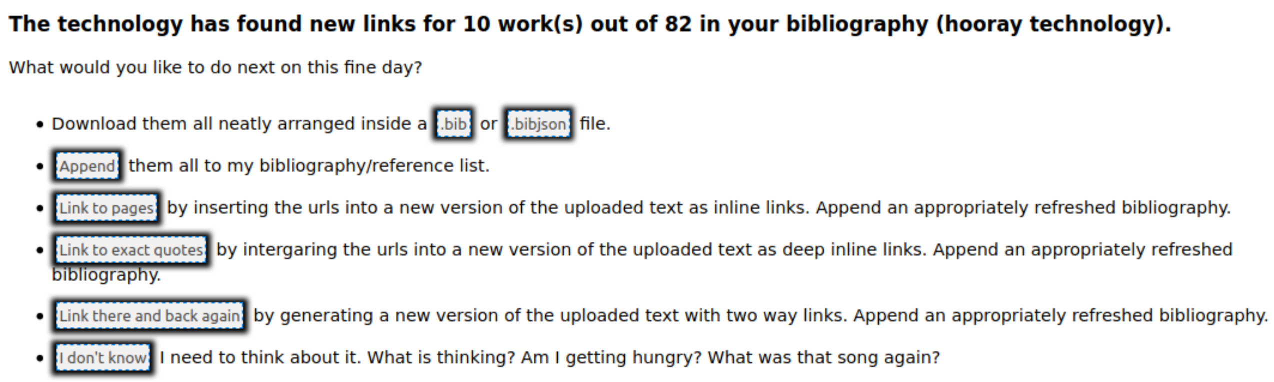

Image: Linqr, user choices.

After processing all the answers, the program returns an updated version of the text. The format of the output can be chosen but the link back option makes less sense if the user does not intend to publish the text on the web.

Linking to exact quotes (and back) extracted from the supplied text is accomplished with the help of hypothes.is, a web annotation tool. Through its API it is possible to search for exact matches in texts. Hypothes.is highlights and annotates that match and returns a link to this annotation, which can then be inserted into the uploaded text.

In any case, the user is expected to vet the returned results, remove any false or unwanted links, correct badly qualified links depending on whether it links to a landing page or to directly to the text and adjust page numbers if linking to pages.

Image: Linqr, preview and link vetting.

This is a basic picture of what Linqr does. And now that we know how it works it is time to ask what it achieves. Each aforementioned type of enrichment of links corresponds to one or more issues that should matter to many. So, if one is so inclined, one can use Linqr to intervene in these issues by benefiting from its affordances.

1. The possibility of *increasing the diversity of languages* addresses the dominance of English in academic publishing. It should also benefit those seeking to compare translations which is an illuminating practice in certain disciplines.

2. The possibility of *improving the accessibility of sources* addresses the ratio between openly accessible knowledge and commodified knowledge. Due to the selection of sources included in the meta search engine, it affords the possibility of increasing the number of links to the former, thereby also increasing the value and ranking of those sources. In this sense it echoes and amplifies the work of Radovan.

3. The possibility of *increasing the precision of links* is a “nice feature”. One can imagine that it might lead to less time lost when looking for the source of a citation, speed up

the reading and understanding of the text and provide for a smooth user experience in general. In the grand scheme of things I see “nice features” in the context of parasitism, as elaborated in the first chapter. Just like in the case of Radovan it is a way of strengthening one mode of existence by connecting it to another one.

4. The possibility of adding *two-directional links to references* is also foremost a “nice feature”, catering to the effective and comfortable reader looking to follow references. From the perspective of the author or the publisher, this feature also increases the visibility of the text - a person reading the cited text will notice that it has been discussed elsewhere. This could be seen as a way to encourage interaction in the context of communicative capitalism (Dean 2005), but there are good reasons to remain sceptical. Dean describes communicative capitalism as being characterized by authors only interested in contributing to the circulating mass of academic publications (for the sake of reproducing their standing) - rather than actively discussing their work and such. Based on this, lowering the amount of effort needed for letting someone know that you cared about what they said, could increase the number of conversations. Or - conversely - it would just mean more drops into the sea of notifications and the ocean of spam.

I’d like to make Linqr’s connections to multiplicity and politics of valuation more explicit. Through my reflexive engagement with the code I have come to the conclusion that Linqr enacts three of the elements arrived at in the discussion of methodology – parasitism, using contradictory modes of existence side by side and working with grey media.

Rather than trying to dissect this further on an abstract terrain, let’s look at how it relates to Linqr. I am writing about parasitism, because it would be very hard to build something like

Linqr without relying on the market economy to a very large extent. I am writing about contradictory modes of existence because Linqr (just like Radovan) employs automation, efficiency, optimization and user-friendliness to increase the number of links to non-paywalled content in various languages. It uses procedures with strong ties to industrial and market based contexts to funnel users into networks that can be considered their other - those of p2p gift economies, for example. I am mentioning grey media, because Linqr works with a seemingly small and insignificant technical object or medium - the reference/hyperlink. Doing politics with a large P is important but so is paying attention to the affordances and effects of mundane and seemingly insignificant objects. The assemblages we surround these “grey media” with, the rationalities we make them part of, can have great impact on our lives.

4.5 Libra

Libra is an idea for a computer program designed to help users make more informed decisions about how they cite and how they are conditioned to cite. By more informed I mean decisions that have the potential to counter the “rich get richer effect” (Sugimoto 2018, 12) – also referred to as the Matthew effect. Citations clearly matter for the private and professional lives of academics in many ways. So while it makes a lot of sense, to, in the first place, fight for the diversity and quantity of regimes of valuation used for determining the worth of research, researchers and their labour, it also makes sense to see if we can help them perform each particular regime of valuation better. If administrations around the world like to look at citation numbers, then let’s try and make the numbers work in favour of those that should be favoured (while also working to convince these adminstrations that they should not solely be looking at the numbers).

Sugimoto (2018, 11-13) summarizes a number of studies showing that cumulative advantage processes are at work in referencing:

> Researchers who are affiliated with prestigious institutions are more likely to receive citations (even when controlling for author and document characteristics), articles in journals of high reputation receive more citations than those in lower regarded journals (controlling again for confounding factors), and researchers who have more citations (as well as publications) are more likely to gain additional citations in a nonlinear manner compared with those who have fewer citations. (ibid)

As Sugimoto notes, this includes lower levels of recognition which women receive for their work (see also Lariviere et al. 2013). The same can be said in relation to race and ethnicity (Bertolero 2020).

These trends are hard to reverse and, considering the impact citations can have on the funding of researchers, they represent a big detriment to the opportunities for impact available to a large portion of academics whose work is likely to be less visible and less funded through no fault of their own. This is one of the ways in which existing disparities in academia get reinforced.

The idea behind Libra is that we can address this by intervening in the way people cite, namely, by offering and highlighting information which allows users to consider and act upon the political consequences of their referencing. This is to be achieved through the affordances of the interface (design): by deciding what is more or less visible on the screen, ranked higher or lower.

While there are no comprehensive studies as to why exactly those with more resources are cited more, we can assume relatively safely that it has – at least to some degree – to do with visibility. And while there are many reasons why an academic article gets exposure, the prestige of the authors’ university and publishing journal are two of the most important ones (Gingras 2016, 32).

To approach the task of making the less visible more visible Libra needed to accomplish two things at the same time – establish a measure of equality between texts and a establish measure of difference between authors. Both of these operations turned out to be practically, technically and ethically extremely challenging. The main outcome of the third project is therefore a report on the main issues which arose in the early stages of designing the software. It represents a valuable resource for future attempts at addressing inequalities based on the visibility of people’s personal data.

4.5.1 The plan

Libra is planned as a citation assistant built on top of Radovan and Linqr. The basic functionality envisioned is to offer a user other authors to be cited, either in place of, or in addition to, those already present in a text. If there is an option to support a claim by referencing someone who is less visible than the already cited author(s), Libra will provide that option.

As mentioned previously, this means that there are two main prerequisites for the software to function. First, a way has to be found to ascertain which texts make similar claims to those cited. Second, criteria have to be developed by which to rank the authors of these similar texts.

To establish similarity I looked into similarity detection software. There are a number of options available which detect similar texts, authors and topics.

To establish ranking criteria I have relied on the evidence about the Matthew effect and tried to find data sources related to the criteria of unequal distribution described. As a result, I have found useful data about:

- where the authors are based (in article/book metadata);
- which academic title they hold (in article metadata and on university websites);
- their gender (by using services for determining gender based on names);
  - sex machine (https://pypi.org/project/SexMachine/), prognosis (http://www.prognosis.se/GE/Denmark)
- the eminence of the university they come from (in university rankings);

- universities world wide (https://univ.cc/), university directory worldwide (https://www.university-directory.eu/) or world universities search engine (https://www.4icu.org/).

- how well funded the university is (in data about endowments for private universities and national public records about university budgets for public universities).
  - UK example: https://en.wikipedia.org/wiki/List_of_UK_universities_by_endowment

If all this is well executed the user may expect the following experience:

- They upload a text they are working on.
- The program recognizes all the citations used in the text and collects the metadata associated with it (functionality already implemented in Linqr).
- Employing some measure of similarity it finds similar texts (via Radovan) and collects metadata on (authors of) those texts.
- It ranks these newfound texts/authors based on a composite of the criteria of unequal distribution listed above. It prioritizes those authors who are less visible according to research – academics with lesser titles from poorer universities based in the global South, especially those who are not male.
- A list of these appropriately ranked new-found texts appears next to each citation in the uploaded text and the user can now choose to add any compatible ones to their citations.
- The software re-renders the uploaded text with the new citations included and offers it for download.

In this respect Libra is feasible. The metadata required is openly available online and in published texts. There is open-source similarity detection software out there, ready to be used. Nevertheless, I have decided to hold back on the development of the software. This is because through my research into establishing equality and difference I have detected a number of issues with “the plan” which may make it ethically, politically and technically difficult to implement.

4.5.2 The issues

What about queer Africa?

The first thing to problematise is the possibility of establishing gender accurately based on names.

Neither of the projects I found for doing so (Sex Machine and prognosis.se) have enough coverage to be able to address the issue globally. Prognosis.se only works with Nordic names (Danish, Swedish, Norwegian and Finnish), while SexMachine works with approximately 40000 names from Europe, China, India, Japan and the USA. By using these tools I would therefore miss out on being able to incorporate the rest of the world, which includes the largest share of less visible universities.

While SexMachine and Prognosis seem to be quite accurate with those names they do work with (Prognosis claims to be right 95% of the time), and while they pay special attention to gender neutral names, they still operate within the confines of binary gender. For people who do not define their gender in this way this sort of analysis would therefore be highly problematic, as the code would try to force them into boxes determined by statistical norms.[12]

12 The authors of Prognosis write: “With highly detailed official name statistics from the countries we monitor. If a name is used by more than 95 % men/women it's classified to that gender. If it's less, we don't count it (see http://www.prognosis.se/GE/Denmark/).”

Even if it could be argued that one could at least address the balance between men and women with these tools, there is a distinct possibility that more harm than good would come of it, especially considering the partial (geographical) coverage of names.

Sourcing author affiliations and academic titles from published texts inevitably creates a lag

The second issue to address is the feasibility of accurately tracking people's affiliations based on article metadata, data on university websites or research profiles on services like Researchgate, academia.edu and Google Scholar. The older the text analysed, the greater the chance that the person in question has changed jobs and/or relocated. It would be hard to keep track of all the affiliations throughout a person's career and somehow calculate the degree of privilege they enjoyed because of that.

The "promotional trees" of academic workers are hard to compare internationally

The third issue has to do with the difficulty of comparing the different titles academics hold in their respective countries. The diversity of approaches on national levels is significant,[13] and an attempt at any type of common ranking would likely be futile or prohibitively reductive.

What is similarity?

13 See the Academic Careers Observatory of the European University Institute, for examples: https://www.eui.eu/ProgrammesAndFellowships/AcademicCareersObservatory/AcademicCareersbyCountry

The last issue I want to raise concerns the challenge of deciding what constitutes a similar text. I have analysed a number of tools that could be used in this regard.

The first piece of software I came across was Jane – Journal Author/Name Estimator (http://jane.biosemantics.org), which employs two parsers (QueryParser and MoreLikeThis) built into the open-source search engine Lucene to find journals, authors or articles similar to the abstract you provide.

The second program, hosted on Jstor (http://www.jstor.org/analyze/), mostly uses methods from natural language processing, in particular topic modelling:

> In a topic model, a topic is composed of many individual terms that suggest the topic is being discussed. The higher the density of those terms in the document, the more likely that a particular topic is being discussed. For example: if the terms "carrots," "seed," "harvest," and "backyard" are used a lot, the topic model might suggest that the topic being discussed is "Gardening," even if the term itself is never used.[14]

The third program is called CitationGecko.[15] Its functionalities are based on co-citation analysis:

> The user specifies several 'seed' papers which define the specific area of the scientific landscape they are interested in. The tool then searches several databases to find the papers that cite or are cited by the seed papers. (ibid)

All these examples exhibit good functionality. However, more research is needed into whether co-citation analysis reproduces any issues that Libra tries to intervene in simply because it employs citation counts. And while Lucene parsers (the results are based on the frequency matching words) and co-citation analysis are language independent, Jstor uses dedicated parsers for

14 See https://www.jstor.org/analyze/about
15 Webpage: https://citationgecko.com/, Code repository: https://github.com/CitationGecko/gecko-react

different languages. It is unclear how good their coverage is and how much it would allow me to address the global nature of the “rich get richer” effect.

4.5.3 Moving on

The most realistic path for future development of a political citation assistant is to start with a simplification, both on the side of establishing similarity among texts and the difference between authors. To pick one measure of visibility (such as university rank) and one measure of similarity, make a prototype, and go from there.

That would be a good starting point, especially because it would allow one to organize a collective process of questioning and defining similarity and difference. Looking back at my experience with Libra as well as the other projects, a collective approach might be crucial for the success and relevance of such attempts at politics of valuation.

4.6 Summary

In this chapter I have focused on the practical part of my thesis – the three programming projects, and the ways in which they perform the politics of valuation. Libra had the most potential to intervene in citation based evaluation of academic labour proper, yet its contribution remained at the discursive level for reasons discussed. To see this as a failure would be to miss the spirit of reflexive coding as well as ontological multiplicity. There is no reason to see discursive contributions as lesser. Both the argument as to why something like Libra would be useful to the academic community as well as the identification of research which still needs to be done to make it a more realistic option are worthy outcomes.

Libra was also important in another way. As the project which was imagined as the endgame from the start of working on this thesis, it inspired and fueled the creation of Radovan and Linqr. These were seen as prerequisites, functions, which Libra would have to rely on in order to function. Yet they perform worthy tasks in the context of the politics of valuation in their own right.

Their main contribution in this sense is the way in which they establish commerce between two different modes of existence - a relationship between the industrial values, user friendliness and a gift based regime of valuation and distribution. The bet is that they increase the use of open access texts by enabling better and easier access to them.

5 Conclusion

In this concluding chapter I will discuss the outcomes of this thesis. I will address the advantages and limits of my approach and highlight possible starting points for further research.

I have set out to design and employ a better framework for understanding and achieving (social) change via tech development. I was especially interested in whether an entanglement of theory and code can give rise to something which would allow us to challenge capitalist modes of existence more productively. Especially in the context of citation metrics and academic labour.

The way I cut up the desired outcomes in the introduction, frames how I will go about assessing them. I address the experimental, observational, interventional and performative components. The questions which need to be answered are:

- What have I **observed** about the experience of doing software development with a raised philosophical awareness?
- Has the **experiment** worked? How beneficial, useful or worthwhile are the outcomes?
- In what ways have I made or facilitated political **interventions** to valuation, particularly in the context of citation metrics and academic labour?
- In what ways has the thesis **performed** its creed in writing or in code?

The thesis has responded to all of these challenges to some degree. I am most impressed by the intricacies of keeping theory and software in a productive tension. The conceptual turn that modes of existence represent is extremely difficult to wrap one’s head around. Particularly in everyday practice. It was, on the other hand, very generative for all areas of my activity. That’s the reason why I begin concluding with this topic.

5.1 Observations

— *What have I* ***observed*** *about the experience of doing software development with a raised philosophical awareness?*

Throughout this thesis I have argued that the introduction of multiplicity and world making represents a way of appreciating a greater variety of activities and rationalities as legitimate and useful for political activism. I have collected a number of rationalities and relationships between them as conceptualized by Latour, Foucault and Boltanski and Thévenot. The argument was that this collection would be helpful for performing tasks of parasitism, gradual change and allow us to see past the contradictions between construction and deconstruction as well as temporary solutions and utopian demands.

For the purposes of my own practice I have mostly relied on the logic behind parasitism, temporary solutions and gradual change. Both Radovan and Linqr are involved in parasitising on value created in the market and directing it towards the commons. They represent temporary solutions and are seen as stepping stones towards a more permanent reconfiguration of the evaluation of academic labour – be it in the form of pushing more national frameworks away from metrics or by relying on the development of tools like Libra. Due to the theoretical framework I was able to describe Radovan and Linqr, not as inherently lacking in their potential to challenge capitalist hegemony, but as valuable contributions despite their inability to effect tectonic change.

Similarly, even though the focus here was on temporary solutions, I could still argue - in parallel - that impossible demands and an interest in actually replacing hegemonic social logics on a large scale are worthwhile pursuits.

Aside from parasitism, I have been able to make use of another type of relationship between modes of existence as described by

Latour (and Foucault to some degree) – that of commerce. By combining industrial values of efficiency and user friendliness with a selection of commons based open access texts I was able to combine both of them into something with a stronger existence. I saw no contradiction between a gift based economy, quantification and automation.

From the outset the theoretical framework has encouraged me not to make too many cuts in advance. That is not to presume that one sphere of my activity was going to contribute to the politics of valuation decisively. Or that assessing the outcomes merely means looking at the way the software has followed the theoretical and political postulates.

No, the theoretical framework was supposed to intensify the reflexive relationship between writing code and writing theory to the point where the two practices became inseparable in terms of their political effects. This means two things.

Firstly, the code and the narrative are crucial for each other's existence. It would be nearly impossible to promote the use of my software without some sort of message about its importance. And conversely, a message without working prototypes would reach a much smaller circle of people. Engagement with the written thesis requires a different type of expertise (the text is cryptic for those not trained in social sciences and humanities), which is much less common than the digital literacy required to use the software.

Secondly, when talking about the outcomes, it makes most sense to describe the combined contribution of code-theory in relation to the politics of valuation. Without separating them. That means that the above statement about my predominant reliance on parasitism, temporary solutions and gradual change is not completely accurate, because of the constructive and deconstructive contributions of the written component – the way I tended to affirm and question contradictory ways of world making.

Nevertheless, looking at a day in life of someone reflexively coding, programming and writing text are still separate tasks, ruled by their own routines. This is a cut that was made for me in advance, by the software I used to write code and by the ways in which I was trained to write code and text. This is a cut I could have challenged[16] but have chosen not to, due to the specifics of my software and the degrees of difficulty I was already facing. When coding, I mostly had to focus on making the code work and when writing theory I mostly had to focus on making the text make sense. Situated like this, the ways in which the two activities kept each other in check, were quite banal and expected. Either things that seemed worthwhile theoretically and politically were impossible to code, or things which were easy to code were politically insignificant or dubious. I have discussed this at length in relation to Libra.

In sum this means that code and theory have had multiple existences for me throughout the process of getting this thesis done. My efforts to treat them as one were mostly discursive, but have nevertheless allowed me to detect, describe and appreciate a number of novel ways in which the work invested in this thesis has performed the politics of valuation.

5.2 Interventions

- *In what ways have I made or facilitated political* ***interventions*** *to valuation, particularly in the context of citation metrics and academic labour?*

Throughout the thesis I have highlighted two broad problem areas, which I was interested in addressing via interventions, that is

16 For example by writing code in something like jupyter notebooks, which allow one to intertwine code with writing.

activities which would mitigate some of the negative effects related to these problems.

The first issue was the entanglement of capitalist modes of existence with the evaluation of academic labour. I have presented this as part of the broader issue of capitalist hegemony. The fact that the majority of our activities are in some way synchronized with the movement of the capital, to the detriment of many. One of the more prominent and effective ways these attempts at synchronization happen in academia is through management techniques, such as the assessment of labour based on citation metrics. I have discussed this in the context of the knowledge economy.

The second issue was the way people tend to go about challenging such arrangements, especially when technology is involved. Considering current trends and lessons from the past I have argued for a better, more flexible, understanding of these activities and have proposed an approach which is helpful in that regard. It arrived in the form of an onto-epistemological framework based on multiplicity. I have applied its principles to politics, valuation, and grey media i.e., technology.

I have described this framework and given examples of how it can be applied and how it can help when doing politics. I see this as an intervention in the way things are done in circles interested in post-capitalism. While I have already presented parts of the argument, this intervention will truly materialize as the thesis is completed, published and the prototypes circulate further. Whether it will move anyone remains to be seen and the magnitude of the impact is part of the experiment.

On the other hand Radovan and Linqr are already at work intervening in relation to the capitalist hegemony and the evaluation of academic labour. The users are already exposed to a selection of texts, produced and disseminated according to principles beyond the capitalist mode of production.

The collection of texts, or better the selection of repositories Radovan is aggregating, is open ended. I have been curating a to-do list of sources to be included[17] in the future, which, once completed, will increase the linguistic and geographical diversity of sources even more. Linqr will benefit from these additions too.

In relation to citation metrics proper the intervention came in the form of research and development for Libra. I see the ethical and political lessons learned and documented in the last chapter as a valuable intervention in the ways in which we might go about similar projects. I have learned that more research needs to be done into how to deal with complex issues like gender, how to compose indicators of privilege/visibility from publicly available metadata (affiliations, academic titles) and how to define similarity. The bet here is that since these findings are now available, they can influence people who choose to build on them. Including me.

5.3 Performativity

- *In what ways has the thesis* ***performed*** *its creed in writing or in code?*

While performativity as a concept has a long tradition and various meanings (see for example Sedgwick 2003, Loxley 2007), I use it to describe the activity of integrating the ethos expressed at the level of meaning into the more practical aspects of the thesis. To describe the ways in which I went about writing certain parts of the thesis differently because of the theoretical framework. To describe the way in which I planned to analyse and improve my own citation practice with Libra. To describe how I have relied on Radovan to find texts relevant for my thesis and include them in the bibliography.

17 https://pad.riseup.net/p/radovan_sources-keep

These are the three concrete incarnations of performativity in the context of this work, points at which I decided to perform the lessons I uncovered into my own activity.

While I was wrestling with the difficult task of writing in a multiplicitous manner throughout the thesis, the three lives of Radovan are the best expression of that effort, as they demonstrate quite clearly the different existences of what we would usually consider a single object or being. I have tried to stress the relatively equal contributions of three apparatuses (the personal, the political and the technical) to Radovan’s existence and perseverance as an entity.

Writing the code for Radovan was also one of the first tasks I have finished, which meant that its functions were available to me for most of the duration of my writing. Therefore the extent to which Radovan promotes openly available content to a person who is not paying attention to that at all times is reflected in the sources I ended up citing in this thesis.

The endgame of course, was always to perform the politics of valuation with Libra. To cite less Latours and Foucaults and more less visible authors, had I managed to find them. It should be noted that this is possible to do without employing automation, through an increased effort at the time of researching and writing, by simply paying attention to the inequalities, which I highlighted in this thesis. Perhaps my research will inspire potential readers to do the same in their work. This would then count as another way in which I have intervened in the way we use citations.

While this analogue approach was not something I was focusing on, I see it as very interesting for further inquiry. I believe a thorough engagement with one’s citation practice could uncover a greater number of political choices at hand and could in guide and improve any further attempts at automation. Similar approaches have been inspiring in relation to studying data visualization (see http://www.dear-data.com/theproject).

5.4 Experiment

– *Has the **experiment** worked? How beneficial, useful or worthwhile are the outcomes?*

I have used the term experiment to point to the fact that to some degree, the successes of the work done in context of this thesis will remain an unknown. There is an open-endedness to the assessment of this. This means that at this time it is relatively hard to answer the question how helpful the prototypes are *for others* in performing political tasks.

Due to ethical concerns and the politics around tracking user data, I have chosen not to measure the amount of people actively using Radovan and Linqr. Based on the activity on mailing lists, social media and the feedback I personally received, I can say that some are. The number is most likely not very large.

Yet the extent to which this will remain the same, depends on my future activity. Especially any effort put into maintaining the code or promoting the software with the narrative around valuation and academic labour developed in this thesis.

5.5 Summa summarum

```
all_in_all = []


for summary in thesis:
    all_in_all.append(summary)


print(all_in_all)
```

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