Univerzita Karlova
Filozofická fakulta

DISERTAČNÍ PRÁCE

On the Incorporation of Technological Tools
Vtělenost ve vztahu k novým technologiím

Praha 2018 Ivan Gutierrez, M.A.

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V ……..... dne ……..... Podpis autora ……

Many thanks to my supervisor, Petr Kouba, for patiently keeping me on track, and to my loving family, who cleared the way for my progress.

Abstrakt

Tato práce je empiricky citlivým filozofickým průzkumem vtělenosti technologických nástrojů v rámci struktur zkušeností stanovených v rané fenomenologické tradici a v analýze jednání čerpající z analytické tradice.

Technologické nástroje jsou v našem životě tak hluboce včleněny, že fungují jako součást nás, přeměňují to, co si myslíme, že jsme schopní činit, a to, kdo jsme. Přestože byly otevřeny nové prostory pro samosprávné jednání, jelikož vnitřní fungování technologických nástrojů může zůstat neviditelné, riskujeme zakrnění našich schopnosti jednat.

Vzhledem k tomu, že jsme zásadně zakotveni ve světě, nemůžeme se sami chápat bez odkazu na svět a svět nemůžeme pochopit bez ohledu na to, jací jsme. Jedinečnost související s lidským využíváním technologických nástrojů vyvstává z prvotní jedinečnosti, která umožňuje toto využití technologických nástrojů a odlišuje nás od našich nejbližších evolučních příbuzných.

Několik zvířat rozšiřuje své fyzické působení na životní prostředí pomocí nástrojů. My lidé však používáme nástroje rovněž k rozšíření našich kognitivních schopností. senzomotorické tak na kognitivní účely, považujeme počítač za prototyp technologického nástroje.

Náš popis struktur zkušenosti se řídí transcendentálním přístupem, který zkoumá podmínky, jež umožňují zkušenost. Pro Heideggera se rozsah transcendentální otázky neomezuje pouze na podmínky kognitivní zkušenosti nebo intencionality. Spíše se to týká naší otevřenosti k Bytí. Abychom doplnili Heideggerovu existenciální analytiku, obrátíme se na Merleau-Pontyův tělesně zaměřený popis bytosti a Sartrovu interpretaci druhého.

Postupujeme z podmínek možnosti k strukturám zkušeností, které se bezprostředně podílejí na intencionalitě. Ukazujeme nejprve, jak stavíme na základních strukturách zkušeností a tím stále rozšiřujeme souhvězdí zkušeností a za druhé, jak jsou tyto zkušenostní možnosti omezovány jednáním.

Obrátíme se pak na zdroje analytické filosofie, abychom sestavili popis jednání použitelného pro analýzu používání nástrojů, přičemž důkladně zvážíme John Searleovu intencionalitu.

Po zavedení analytického rámce pro fenomenologickou integraci nástrojů v rámci popisu jednání aplikujeme tento rámec na používání počítačových nástrojů.

Po stanovení autonomie jako klíčového hodnotícího kritéria zkoumáme, jak se náš analytický rámec může uplatnit na dva konkrétní aspekty dnešního dne - technologicky zprostředkované soukromí a technologicky zprostředkované jednání - s cílem posoudit, do jaké míry může být autonomie podpořena či omezována.

Závěrem uvažujeme o možných směrech budoucího výzkumu, který by využil filosofický rámec rozvíjený v disertaci, k zjištění, jakými způsoby vtělenost počítačem řízených technologických nástrojů může ovlivnit směry, jak jsou struktury zkušenosti modulovány.

Klíčová slova: technologie, technologické nástroje, fenomenologie, struktury zkušeností, jednání, komplexita, nástroje, Internet, počítač, Martin Heidegger, Maurice Merleau-Ponty, John Searle, Jean-Paul Sartre, soukromí, autonomie, kauzalita

Abstract

This dissertation is an empirically responsive philosophical exploration into the incorporation of technological tools within a framework comprising the structures of experience laid out in the early phenomenological tradition and an analysis of agency drawing from the analytical tradition.

Technological tools have become so deeply integrated in our lives that they function like a part of us, transforming what we feel we can do and even who we are. Although new spaces of autonomous agency have been opened up, since the inner workings of technological tools can remain invisible, we risk diminishing our own capacities.

Since we are fundamentally embedded in the world, we cannot understand ourselves without reference to the world and we cannot understand the world without reference to the way we are. The uniqueness involved in our use of technological tools grows out of a more primordial uniqueness that makes technological tool use possible and sets us apart from our closest evolutionary relatives.

Several animals extend their physical influence on the environment by means of tools. We humans, however, use tools to extend our cognitive abilities as well. And since the computer is the most universal human tool, which can be put to sensorimotor and cognitive purposes alike, we take the computer to be the prototypical technological tool.

Our picture of the structures of experience is inscribed in a transcendental approach which asks about the conditions that make experience possible. For Heidegger the scope of the transcendental question is not restricted to the conditions of cognitive experience or even intentionality. Rather, it is concerned with our very openness to Being. To complement Heidegger's existential analytic, we consider Merleau-Ponty's account of a specifically corporeal being-in-the-world and Sartre's interpretation of the other.

We proceed from conditions of possibility to the structures of experience more immediately involved in intentionality by showing first how we build on the basic structures of experience to make ever-expanding constellations of experience possible and second how these experiential possibilities are constrained by agency.

Turning to the resources of analytic philosophy, we put together an account of agency applicable to tool-use, taking a close look at John Searle's account of intentionality.

Having established an analytical framework for the phenomenological integration of tools within an account of agency, we apply the framework to computer-driven tool use.

We then posit autonomy as our pivotal evaluative criterion and examine how our analytical framework might be applied to two concrete aspects of our subject today – technologically mediated privacy and technologically mediated agency – with the aim of assessing how autonomy might be fostered or diminished.

To conclude, we consider possible directions of future research, considering an investigation, using the tools laid out in the dissertation, into how the incorporation of computer-driven technological tools might distort the fabric of the Lifeworld along phenomenological vectors of constitution.

Keywords: technology, technological tools, phenomenology, structures of experience, agency, basic actions, intentions in action, complexity, tools, Internet, computer, Martin Heidegger, Maurice Merleau-Ponty, John Searle, Jean-Paul Sartre, reversibility, incorporation, embodiment, habit, deviant causation, wayward causation, deviance, waywardness, privacy, the other, autonomy

Contents

1. FOREWORD

> "The invention of a tool doesn't create change; it has to have been around long enough that most of society is using it. It's when a technology becomes normal, then ubiquitous, and finally so pervasive as to be invisible, that the really profound changes happen..."[1]
>
> – *Clay Shirky, professor in the Interactive Telecommunications Program at NYU who writes on the effects of Internet technologies*

1.1. Thesis

This dissertation is an empirically responsive philosophical exploration into the incorporation of technological tools within a framework comprising the structures of experience laid out in the early phenomenological tradition by Heidegger, Merleau-Ponty and Sartre on the one hand, and an analysis of agency that draws from the analytical tradition – particularly from the work of John Searle – on the other.

It is a reflection on the whirlwind of technological innovation we are caught up in that is transforming our experience of life. Things like the personal computer, the Internet and the mobile telephones that seem to blend into of our body and brain have become so pervasive in everyday life as to become quite transparent in experience. The extent to which we take our personal computers and mobile phones for granted becomes most strikingly apparent when for whatever reason – most often catastrophic – we find ourselves denuded of them and stranded on the shores of a reality that seems as uncanny as a deserted island, cut off from our Lifeworld and in a profound state of anxiety. And yet within my own lifetime I remember a time when the Internet and the devices which connect me to it not only did not pervade my life through and through, but simply did not exist. Life without them was just the way things were – and had been ever since the immemorial past of our species. What happened?

Technological tools have become so well integrated in our lives that they function like a part of us, transforming what we feel we are capable of, what kinds of problems we can

[1] Clay Shirky, *Here Comes Everybody* (London: Allen Lane, 2008), p. 105.

tackle and even who we are. So, the extent to which the ways we conceive of and design such tools end up also being forms of self-conception and self-design. The bio-technological intermingling of self, body and world has implications with regard to the wider contexts – scientific, moral, educational, legal, political, etc. – within which we formulate our life projects and deal with the problems that arise in life. Trying to get some insight into this intermingling is a pressing task indeed.

1.2. Autonomy and growth or subjugation and stunting?

> "We are torn, it seems, between two ways of viewing our own relations to the technologies we create and which surround us. One way fears retreat and diminishment, as our scope for choice and control is progressively eroded. The other anticipates expansion and growth, as we find our capacities to achieve our goals and projects amplified and enhanced in new and unexpected ways. Which vision will prove most accurate depends, to some extent, on the technologies themselves, but it depends also – and crucially – upon a sensitive appreciation of our own nature."2

Some of those implications justify optimism: as we open ourselves up to new spaces of embodiment, perception and cognition, we will be freed up to engage with our life projects in new, autonomously defined ways.

However, since the inner workings of technological tools can also remain invisible to us, we risk limiting and perhaps stunting our own capacities for interpreting our past, fruitfully engaging with the world, creatively taking up our projects and, more broadly, defining who we are.

As John Naughton put it, "technology giveth and technology taketh away."[3] But when does it do which? Our hope is that a conceptual framework that enables us to speak with clarity and precision about the ways we incorporate technological tools into our lives will help us tackle this question.

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[2] Andy Clark, *Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence* (Oxford: Oxford University Press, 2003), p. 175. (Schumpeter 2003)

[3] John Naughton, *From Gutenberg to Zuckerberg: Disruptive Innovation in the Age of the Internet* (New York: Quercus, 2014), p. 238.

1.3. The goal

By putting together a fitting analytical apparatus, we hope to be able to describe and provide an interpretation for the particularly salient human experience we have described and, in doing so, to avoid philosophical traps that might distort understanding. If we are successful, we will the have provided a framework within which a clear and fruitful discussion of the implications of the incorporation of technological tools can take place.

What more conspicuous place than philosophy to go to for answers – or at least some clarifying questions? And what more conspicuous area of philosophy than phenomenology – which deals with the structures of experience – if our question involves our changing experience? If our guiding question is how the incorporation of technological tools is transforming, for better or worse, our experience of our Lifeworld, then a consideration of the structures of experience – which tool use participates in – as laid out by the phenomenological school will give us a sense of where to look for answers.

The phenomenological approach suggests that technological tool use not only transforms our actions in the world, it co-constitutes the world and in so doing co-constitutes our own selves. It is our hope that clarifying these co-constituting aspects of human experience through the prism of agency as seen from an analytical perspective will then be of service when the time comes to contemplate the benefits and drawbacks of the incorporation of technological tools. Just as having a clear conception of how we are constituted anatomically and physiologically helps us to decide what is good or bad for us, the hope is that gaining some clarity regarding how we are constituted phenomenologically will help us figure out what the possible benefits and drawbacks we are interested in might be.

2. INTRODUCTION

2.1. The extension of our subject: what we will not consider

Before setting out on our exploration it would be a good idea to get a sense of the lay of the land we are going to explore. Doing so will entail a preliminary consideration of some of the terms and analytical tools we will use to demarcate our subject. But before we do that, we shall consider some of the approaches to our subject that would seem to be closely related and will nonetheless remain outside the scope of our exploration. This in itself will give us a first sense of the extension of our subject and of the terms and analytical tools we will be using to explore it.

2.1.1. The Extended Mind Hypothesis

There has been much discussion in recent years surrounding what has come to be known as the Extended Mind (EM) hypothesis, based on "The Extended Mind," a seminal 1998 paper by Andy Clark and David Chalmers. Since the paper and the discussions surrounding it deal with many of my own concerns in this work, it would seem seem natural for us to take up this discussion. However, we will not do so, in small part because, in the interest of parsimony, we want to avoid the clutter that would result from using some of the terminology and concerns of the discussion is couched in to put together my account. More importantly, though, I think the very terms of the discussion reveal prior philosophical commitments that are problematic. According to EM, many of our cognitive processes span the divide between the biological and the non-biological. Thus, under certain conditions, the mind can thus spread from body and brain into the physical and social environment. Regarding the issue of where the mind ends and the rest of the world begins, Chalmers and Clark propose a "vehicle" form of externalism (which holds that the mind depends not only on what is going on inside brain, but also on what happens outside) as distinguished from traditional semantic or content externalism (based on work by Hilary Putnam and Tyler Burge involving the famous Twin Earth thought experiment) which concern the "active role of the environment in driving cognition."[4] Clark and Chalmers argue that "beliefs can be constituted partly by features

[4] Richard Menary, *The Extended Mind* (Cambridge: The MIT Press, 2010), p. 27.

of the environment, when those features play the right sort of role in driving cognitive processes. If so, the mind extends into the world.[5] My objection to the Extended Mind discussion, which is rooted in the phenomenological tradition, is based on the claim that the very container metaphor and the resulting forced choice between internalism and externalism is itself flawed. Although some[6] have argued that phenomenologists like Heidegger and Merleau-Ponty could be said to have externalist commitments as they emphasized the importance of world-involving and bodily forms of intentionality, broadly speaking the phenomenological project could be interpreted as an attempt to undermine the facile divide between mind and world. Heidegger, for example, explicitly denies that the relationship between the "being" and the "world" in being-in-the-world – his expression, hyphenated to emphasize the essential interconnectedness of the terms, for the peculiarly human experience of being – can be understood by means of concepts like "inner" and "outer":

> "In directing itself toward ... and in grasping something, Dasein does not first go outside of the inner sphere in which it is initially encapsulated, but, rather, in its primary kind of being, it is always already 'outside' together with some being encountered in the world already discovered. Nor is any inner sphere abandoned when Dasein dwells together with a being to be known and determines its character. Rather, even in this "being outside" together with its object, Dasein is 'inside' correctly understood; that is, it itself exists as the Being-in-the-World which knows. Again, the perception of what is known does not take place as a return with one's booty to the 'cabinet' of consciousness after one has gone out and grasped it. Rather, in perceiving, preserving, and retaining, the Dasein that knows remains outside as Dasein."[7]

Terms like "inner" and "outer" derive from the Cartesian divide between subject and object that Maurice Merleau-Ponty rejects in *Phenomenology of Perception*:

> "The world is inseparable from the subject, but from a subject which is nothing but a project of the world, and the subject is inseparable from the world, but from a world which the subject itself projects. The subject is a being-in-the-world and the world

[5] Menary *The Extended Mind*, p. 27.

[6] See Hubert L. Dreyfus, *Being in the World* (Cambridge: The MIT Press, 1991); Pierre Keller, *Husserl and Heidegger on Human Experience* (Cambridge: Cambridge University Press,1999); and Mark Rowlands, *Externalism: Putting Mind and World Back Together Again* (Montreal: McGill–Queen's University Press, 2003).

[7] Martin Heidegger, *Being and Time*, trans. John Macquarrie and Edward Robinson (Oxford: Blackwell Publishers, 2001), p. 58.

> remains "subjective" since its texture and articulations are traced out by the subject's movement of transcendence."[8]

For present-day philosophers such as Shaun Gallagher and Dan Zahavi, whose work is firmly rooted in the phenomenological tradition and yet engage with philosophers grounded in the Anglo-American analytical tradition, the way to deal with the philosophical issues engendered by the inner-outer divide is not to reconcile internalism and externalism, but to reject the very distinction. In answer to the question regarding whether intentionality is determined by factors inside or outside the mind, they respond,

> "... this apparently straightforward way of presenting the available options is, on closer inspection, quite inadequate, for whereas internalism typically postulates a gap between mind and world, externalism argues precisely that the world is not external to the mind. But the moment externalism is seen as arguing that mind and world are inseparable, it could also quite easily be defined as a position that takes intentionality to be determined by factors internal to this whole."[9]

Clark is certainly not unaware of the phenomenological tradition and explicitly acknowledges the influence of Heidegger and Merleau-Ponty on his work.[10] Indeed, instead of pitting phenomenology against analytical philosophy of mind, recent work in philosophy – such as that of Clark, Gallagher and Zahavi – provides evidence of the good that can come of communication between the two traditions, which have until relatively recently approached each other with, at best, disregard and, at worst, outright hostility. But Clark spends much time and energy participating in discussions that take the internal-external distinction for granted. For this reason, I will steer clear of the Extended Mind debate.

2.1.2. Heidegger's The Question Concerning Technology

At first glance, it would seem that *The Question Concerning Technology* should be particularly relevant to our concerns. However, a few remarks will indicate why we have chosen to bracket *The Question* and exclude it from our investigation.

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[8] Maurice Merleau-Ponty, *Phenomenology of Perception*, trans. Colin Smith (London: Routledge Classics, 2002), pp. 499–500.

[9] Shaun Gallagher and Dan Zahavi, *The Phenomenological Mind* (London: Routledge, 2008), p. 124.

[10] See, for example, Clark, *Natural-Born Cyborgs*, p. 7.

First, the philosophical scope of *The Question* is far broader than our phenomenological concerns. Heidegger's critical questioning certainly remains insightful regarding the complex interrelations between science and technology and between science and the broader historical context in which it is embedded – interrelations that would later be explored in Thomas S. Kuhn's *The Structure of Scientific Revolutions*, whose well-known view of framework relativity as a prerequisite for approaching the historical dynamics of science-technology is closely related to the view Heidegger expresses in *The Question*. Heidegger was among the first philosophers to consider science as a social institution whose development essentially involves activities that incorporate technological and other extra-scientific goals, thus prefiguring the social-constructivist view about scientific practices.

However, our focus on the incorporation of technological tools into experiential structures makes it more fruitful to focus on *Being and Time*, where Heidegger was concerned with coming to a preliminary understanding of our particularly human way of being before moving on to his more overarching concern, which was Being more broadly speaking. Indeed, *Being and Time* and its construal of how practical knowledge operates in context of use will provide us with a rich conceptual framework for our exploration of technologies in use.

Second, certain aspects of *The Question* are problematic. Since a detailed examination of these problems would take us far afield and our considerations at this point are preliminary, let a few comments suffice here.

To begin with, Heidegger's distinctions in *The Question* between modern technologies and his romanticized vision of traditional ones is often arbitrary. American philosopher of science and technology Don Ihde presents a forceful case[11] to this effect, for example.

Furthermore, there is no good reason to suppose, as does *The Question*, that the destiny of technoscience is necessarily determined by commitments instrumental rationalism and scientism. We see no reason jump to the conclusion that instrumental rationalism, scientism and technological enframing in Heidegger's sense represent the

[11] In Don Ihde, *Heidegger's Technologies: Postphenomenological Perspectives* (New York: Fordham University Press, 2010), for example.

only possible destiny for modern technology and exhaust the range of possibilities within which technology may fruitfully be developed. Indeed, considering other possibilities would seem to be a strategy consonant with Heidegger's philosophical concerns.

These are some of the reasons why we will be thinking with the Heidegger of *Being and Time* but parting ways with the Heidegger of *The Question*.

2.1.3. Postphenomenology

The approach I will take in this thesis will be in many respects consonant with the approaches taken by a group of philosophers who have gathered under the umbrella (the umbrella being held by American philosopher Don Ihde) term "postphenomenology." Though it is not my intention to conform to any set of philosophical principles or situate myself under the umbrella, I too draw from a similar philosophical tradition and share their philosophical interests. For this reason, a closer look at postphenomenology is in order.

What is postphenomenology?

Postphenomenology takes up phenomenology's claim to regain access to an original world that is richer in meaning than the world of science and technology in order to build upon and expand the study of human-world relations major phenomenological thinkers like Husserl, Merleau-Ponty and Heidegger were engaged in.

However, it calls itself "post" to distance itself from what it considers classical phenomenology's romanticism and its antagonism towards science and technology. Instead, it aims to integrate science and technology in its analysis of the relations between human beings and their world. Against the idea that technology alienates humans from the world and from themselves, it claims technologies help shape both human subjectivity and the objectivity of the world.

According to postphenomenology, there is no pre-given subject in a pre-given world of objects with mediating entities between them. Instead, the mediation is the source of the specific shape that human subjectivity and the objectivity of the world can take in the specific situation. Subject and object are constituted in their mediated relation. Thus, for example, telescopes constitute users as 'observers' and the sky as 'observable.'

Because of its concern with this mediation, postphenomenology combines philosophical analysis arising out of a critical dialogue with the phenomenological tradition and empirical investigation aiming to investigate the various dimensions of the relations between humans and technology. Postphenomenology is the practical study of the relations between humans and technologies from which both human subjectivities and meaningful worlds emerge and the impact of such relations on human practices and experience.[12]

Ihde's analyses

Postphenomenology owes much of its lineage to the work of Don Ihde, and central to his analyses of instruments in science and technology is Heidegger's analysis of tool use within his account of "Being-in-the-world." Since Heidegger's analysis will be central in our analytical framework, it would be a good idea to acknowledge how Ihde's analyses relate to our own.

Ihde posits an I-technology-world structure[13] within which he specifies the different forms that human-technology relations can take. That structure forms the bedrock for postphenomenological analysis. He makes clear that the forms he specifies should not be taken as an exhaustive enumeration. However, they do help articulate many of the ways users develop bodily-perceptual relationships with the devices they use.

The terms involved in the general user-world relationship as mediated by technology are:

Human – Technology – World

and he considers several types of relation that arise out of this scheme. Ihde's framework will help us begin demarcating our own field of exploration.

[12] For an overview of postphenomenology, see the introduction to eds. Robert Rosenberg and Peter-Paul Verbeek, *Postphenomenological Investigations: Essays on Human-Technology Relations* (Lanham: Lexington Books, 2015), pp. 1–6.

[13] Primarily in chapter 5 of Don Ihde, *Technology and the Lifeworld: From Garden to Earth* (Bloomington: Indiana University Press, 1990).

1) Embodiment relations

He designates the first type of relations, embodiment relations, as follows:

(I – Technology) – World

In this relation, the human incorporates the technology so that it becomes transparent. This type of relation is represented by Heidegger's account of tools as "ready-to-hand" in use and Merleau-Ponty's well-known account of the blind man using his cane.

According to Ihde, embodiment relations share a magnification-reduction structure: they "simultaneously magnify or amplify and reduce or place aside what is experienced through them."[14] Most of our thesis will consider this type of human-technology relation, though the magnification-reduction structure is only one part of the account we will present. Ihde's focus on the magnification-reduction structure at the expense of other aspects of tool incorporation is likely a result of his concern with technoscience and the central epistemological role played therein by scientific instrumentation. His analyses in *Technics and Praxis*[15] and *Technology and the Lifeworld* are praxis oriented, true, but the praxes revolve around those of technoscience.

In addition, embodiment relations take place within two dimensions of experience he calls "microperception" – which involves the individual embodied experience articulated in work of figures like Husserl and Merleau-Ponty, for example – and "macroperception" which involves the historical and anthropological aspects of experience explored by figures like Heidegger and Foucault. The relation between the two is one of figure-ground, according to Ihde. Our thesis will take place within the dimension of microperception, on this account. Nonetheless, having noting this circumstance, the distinction will do little work in the analytical framework we wish to establish.

[14] Ihde, *Technology and the Lifeworld*, p. 76.
[15] Don Ihde, *Technics and Praxis: A Philosophy of Technology* (Dordrecht: D. Reidel, 1979).

2) Hermeneutic relations

He refers to the second type of human-technology relations as "hermeneutic" relations and designates them as follows:

I – (Technology – World)

Rather than experiencing the world through a device, as in an embodiment relation, the user experiences a transformed encounter with the world through the perception and interpretation of the device's readout. We look at the results of a mass spectrometer and interpret the results, inferring in a non-embodied way what the results tell us about features of the world. Though this relation involves instruments, since our concern is with embodied instruments, this type of relation falls outside the scope of our exploration.

3) Alterity relations

Ihde designates the next type of relation, the alterity relation, as follows:

I – Technology – (– World)

In this relation, users relate to devices in a manner similar to how we interact with other human beings. They mimic shape of person-to-person interaction. We must interrelate with the devices as something like quasi-Others.

Examples Ihde gives are computer interfaces that pose direct questions to users in dialog boxes, interactive customer service phone calls, and GPS devices that read driving directions out loud. Siri, Google Now and Cortana would be more up-to-date examples. Again, since the relation between users and instruments here is not embodied, alterity relations fall outside the scope of our exploration.

4) Background relations

The last type of relation, background relations, involve technologies that make up a user's environment. They may not be directly used but the user interacts with them nonetheless as they shape experiential surroundings. An example of this type of technology might be central air conditioning or heating. Yet again, since our concern will

be with embodied instruments, this type of relation falls outside the scope of our exploration.

Our analysis will not conflict in important ways with Ihde's, but apart from noting the ways our exploration could be situated within his framework in the context of embodiment relations and microperception, and thereby acknowledging a body of work that deals with closely related themes using conceptual resources from the same philosophical tradition, since these concepts do little analytical work in our thesis, we shall salute Ihde, acknowledge the valuable company of postphenomenologist philosophers, and go on our way.

In keeping with our aim of taking account of what will fall outside the scope of our exploration, let us note that there is a type of visceral embodiment involving the incorporation of pacemakers or insulin pumps, for example – that we will not consider. This is because even though such technological devices certainly have an indirect impact on experience – and even a direct impact when they malfunction – they are embodied beneath the "intentional arc which subtends the life of consciousness, projecting outward from the body towards lived goals and bringing "about the unity of the senses, of intelligence, of sensibility and motility."[16] And this intentional arc is at the center of the general framework in which we will consider the incorporation of technological tools in uses.

2.1.4. A word on method

In spite of the longstanding divide between Anglo-American philosophy and what it terms "Continental" philosophy, certain philosophers have shown an encouraging willingness to acknowledge work done on both sides of the divide – witness, for example, Shaun Gallagher engaging in the discussion on the Extended Mind hypothesis and Andy Clark explicitly giving credit to figures like Heidegger and Merleau-Ponty where credit is due.

The task we have proposed for ourselves is the conceptual analysis of an aspect of life today in order to, hopefully, come to a greater understanding of it. Although we will be grounding our analyses within the early phenomenological tradition, making use of some

[16] Merleau-Ponty, *Phenomenology of Perception*, p. 136.

of the conceptual tools bequeathed to us by the likes of Heidegger, Merleau-Ponty and Sartre, ours is not an exegetical project. Our concern will not be mainly to interpret or explain their writings. Since our principal concern will be to develop a greater understanding of the incorporation of technological tools, we will bring to bear other conceptual tools if they come in handy as well – even if they come from across the divide – that is, from the Anglo-American tradition.

On one hand, this is rooted in the vicissitudes of this author's philosophical education – which involved studying the likes of Heidegger, Sartre and Merleau-Ponty in philosophy departments in the United States – but also in the conviction that pursuing philosophy does not require making a choice analogous to that between choosing between the Mac or Windows operating systems. John Searle's work on intentionality is a monument to conceptual clarity and profundity and although Edmund Husserl's work is no less monumental, this author's education has made the connections between Searle's work and the subject of this dissertation particularly resonant.

Searle's cavalier dismissal of "those philosophers whose name begin with H" – referring to Husserl and Heidegger among others – has involved ignoring the work of others before him who were interested in many of the same problems. We will, pace Searle (and Heidegger as well), make use of conceptual tools from both sides of the analytical-Continental divide if those tools will enable us to deal with our subject with clarity and precision on the one hand and a sensitivity to the human experience on the other.

Another aspect of this dissertation's methodological approach to its subject is its empirical responsiveness, which we will touch upon in section 3.1.1. below.

2.2. Preliminary clarification of terms

Now that we have given an account for why we have decided to make do without some conspicuous approaches related to our exploration, let us proceed with the preliminary demarcation of the lay of the land we are going to explore. We will do so by clarifying some of the terms and analytical equipment we shall use, thereby indicating the salient features of our subject and outlining the framework that will govern our approach.

This should illuminate the motivation for the exploration of our subject on the basis of the phenomenological project as conceived in *Being and Time*.

2.2.1. Incorporation

To begin with, let us clarify what we mean by "incorporation." Recalling that phenomenology is our touchstone, we shall understand incorporation as the process by which tools – particularly technological tools with well-fitted, reliable and fast interfaces – become so well integrated into our bodily, perceptual and cognitive schemas when we use them, that they become transparent – that is, they blend into the background of our experience, thereby informing and transforming what is foregrounded in it.

Because of our phenomenological concern with the lived body, we prefer "incorporation" over "extension." Although we might consider a tool as an extension if we consider the body from a third-person perspective, as a *Körper*, when we consider the overall context in which tools that function like parts of our bodies shape our experience of the world and ourselves in it, "incorporation" seems more appropriate.

2.2.2. Tool

The intimate relationship between our bodies and the tools we use is suggested by the use of the word *organon* in Greek to refer to both a bodily organ and a tool, hence our particular concern with incorporation or embodiment.[17]

To begin to approach the concept of a tool, let us say that a tool is any thing adapted to us on one side and the world on the other that can be used to achieve a goal that the body by itself could not. But according to this definition, tool-use is not limited to humans. An otter using a randomly picked rock to break open a shell is using a tool.

Perhaps one might specify the type of tool use typical of humans (and draw nearer to the idea of a technological tool referenced in our thesis) by drawing on the distinction Aristotle makes in *Physics* II.1 between natural things such as animals, plants and the four elements that change, move and reproduce in response to the inner purposes of nature, and artifacts, which are produced by external causes (those of animals, like humans), cannot reproduce themselves, and revert back to nature without intervention.

[17] Drew Leder draws attention to this fact in his *The Absent Body* (Chicago: Chicago University Press, 1990), p. 33.

Accordingly, one might say that only humans use artifacts as tools. Thus, using a hammer – an artefact – to hit a nail – another artefact – would be a specifically human type of tool use, whereas using an unworked stone to open a shell would not. One might be tempted to say, then, that only humans use artifacts as tools and – to begin to approach the concept of technology – the skills and the knowledge that go into the production of the hammer and the nail constitute a form of technology.

But isn't a chimpanzee sharpening a stick to use as a weapon or removing twigs and leaves from a branch to fish for termites manufacturing an artifact which it then uses as a tool? Would the goal-oriented knowledge involved in sharpening the stick or stripping a branch qualify as technology?

Perhaps it is not by sharpening our definition of a tool that we are to arrive at our conception of a specifically human technological tool, but by sharpening our definition of the holistic context of skills, knowledge and purposes that constitute the specifically human Lifeworld in which the specifically human toolkit arises. That is, maybe we need sharpen our definition of technology. But how?

2.2.3. Technology

Pinning down a definition of technology is difficult. A survey of philosophical thinking on what technology is will give us an idea of the wide variety of definitions that have been proposed:

> *"Systematic application of scientific or other organized knowledge to practical tasks (J. K. Galbraith)*
> *Rational efficient action (Ellul 1954)*
> *The pursuit of technical efficiency (Skolimowski 1966)*
> *A means for molding the environment (Jaspers 1949)*
> *Control of the environment to meet human needs (Carpenter 1974)*
> *Means for socially set purposes (Jarvie)*
> *Pursuit of power (Mumford 1967)*
> *"Knowledge techniques" (Nathan Rosenberg)*
> *Any supernatural self-conception (Ortega)*
> *Invention and the material realization of transcendent forms (Dessauer 1927 and 1956)*
> *A "provoking, setting-up disclosure of nature" (Heidegger 1954)*[18]

[18] This sampling is taken from Carl Mitcham, *Thinking through Technology: The Path between Engineering and Philosophy* (Chicago: University of Chicago Press, 1994), p. 153.

2.3. The constitution of the technological Lifeworld

The disparity of these definitions indicate that perhaps instead of an all-inclusive definition, a Wittgensteinian family-resemblance that takes into account what has to be supposed as already understood when we try to define anything would be most useful for our purposes.

Heidegger makes use of the notion of our pre-understanding of the world when he writes that regarding a tool as a thing with particular properties that make it a piece of technology, however we might define technology, is an abstraction of how it already functions within a context of use. This means that before defining technology, we should consider how technological tool use participates in the human Lifeworld.

A person using a technological tool is not simply a person plus a technological tool but a totality consisting of the person, a skill set previously cultivated by practice, some degree of knowledge, the field of action which the tool makes possible, any related equipment, the task at hand and the more far-ranging network of knowledge, resources and purposes, both individual and social, in which the task is embedded. All of these aspects are interconnected in various ways in the complex technological ecosystem we are embedded in. By constituting the range and types of actions we can perform in the world, technological tool use constitutes the world the actions are performed in and thereby co-constitutes our own selves.

Grasping the extension of technology is therefore a hermeneutical undertaking that is, in turn, grounded in the more general existential hermeneutical circle described by Heidegger in *Being and Time*, where he argues that since we are fundamentally embedded in the world, we cannot understand ourselves without reference to the world and we cannot understand the world without reference to the way we are.

3. OUR COMPLEX TECHNOLOGICAL LIFEWORLD

3.1. Human uniqueness: conditions for the possibility of human technology

3.1.1. Discovering our uniqueness: empirically responsive philosophy

On what basis shall we arrive at plausible, sound judgments about the way we are? In exploring the issues surrounding the incorporation of technological tools, this dissertation will consider thinking based both on incisive philosophical analysis and empirically responsive reasoning. This concern with empirical responsiveness will lead us to consider what palaeoanthropology has to say about behaviorally modern humans, what the history of technology has to say about the state of our technological world and how we got here, and what neurology has to say about the bodily schemas that come into play when we incorporate tools, for example.

Aristotle took this empirically responsive approach when considering the highest good for human beings: determining that greatest good entailed figuring out what differentiates humans from other living beings. For Aristotle, that meant noting that human lives comprise not only nutrition and growth – like plants – or sentience – like animals – but in addition the active use of reason.[19] We will perhaps not arrive at the same conclusions as Aristotle, but our thinking on the incorporation of technological tools is also guided by a conception of what makes us human. And arriving at such a conception involves thinking, in an empirically responsive way, about what makes humans – the species that came up with tools such as mobile phones, among other extraordinary achievements – different from other animals on earth. Thus, an exploration into the experiential structures of the human Lifeworld will lead us to what palaeoanthropology and thinkers who have concerned themselves with the field from a philosophical perspective have to say on of the uniqueness of homo sapiens. This in turn should give us a sense of the uniqueness of the world of human technology.

[19] Aristotle, *Nicomachean Ethics*, trans. and ed. Roger Crisp (Cambridge: Cambridge University Press, 2004), p. 12 (1098a).

3.1.2. Conditions for the possibility of human uniqueness

The uniqueness involved in our use of technological tools like smartphones is embedded in and grows out of a more primordial uniqueness that makes technological tool use possible and sets us apart from our closest evolutionary relatives. There is much speculation surrounding the origins of the suite of behavioral and cognitive traits that distinguish behaviorally modern humans from anatomically modern humans, hominins (comprising the genus Homo and the related species that appeared after the break with the last common ancestor with the chimpanzees) and primates.

Although some paleoanthropologists argue that there was a revolution marking the change from archaic to modern humans involving perhaps a neurological or genetic transformation, others argue for a gradual accumulation of traits resulting from thousands of years of cultural adaptation reaching deeper into our evolutionary ancestry. There does, however, seem to be consensus around the idea that although anatomically modern humans appeared on the evolutionary stage about 200,000 years ago,[20] the traits marking the uniqueness of homo sapiens were not present as a full, consistently expressed package before about 50,000 years ago. And it is this package of traits particular to the only member of the homo clade to have survived that we shall concern ourselves with.

Another controversial topic concerns the traits that define behavioral modernity. Nevertheless, there does seem to be some agreement about certain features that those traits rest upon – namely, extensive social cooperation, cumulative cultural adaptation, and developmental plasticity.

3.1.3. Cooperation

Although chimpanzees, humanity's closest living relative,[21] exhibit limited forms of cooperation, the human type of cooperation could not have developed, as Kim Sterelny points out, within a social hierarchy in which high-ranking individuals intimidate others and property is not respected. "Once the fruits of work or exchange become safe from

[20] "New Clues Add 40,000 Years to Age of Human Species," National Science Foundation, last modified February 16, 2005, https://www.nsf.gov/news/news_summ.jsp?cntn_id=102968.

[21] Mark Pagel, "What Is the Latest Theory of Why Humans Lost Their Body Hair? Why Are We the Only Hairless Primate?" *Scientific American*, last modified June 4, 2007, https://www.scientificamerican.com/article/latest-theory-human-body-hair/.

dispossession by the stronger, other forms of specialization based on exchange also move into the arena of the possible," writes Sterelny.[22]

Cooperation made it possible for erectus to descend from the trees. Anthropologist C. O. Lovejoy[23] argued that bipedalism could not have emerged without a complete change in the social structure and survival strategies of australopithecines; the risks of bipedalism were simply too great.

3.1.4. Breaking away from episodic culture

Neuroanthropologist Merlin Donald has proposed an insightful way of thinking about the differences between humans and other hominids involving cognitive considerations. The individuals making up any given species share a system of knowledge and behaviors reflecting that species' cognitive abilities. Donald refers to such a system as a "culture." According to Donald, one aspect of human cognitive culture that distinguishes it from that of other animals is in its new systems of representation in memory. The development of such new systems are, he argues, what distinguishes the cultural evolution of humans from that of the apes. Whereas the cognitive culture of apes and other mammals is situation-bound or episodic – their behaviors are immediate, perceptually cued reactions at specific times and places to what is happening in their environment, as are their memories – human experience is not fettered in such a way to directly experienced events. Behaviors already evident in homo erectus – tool manufacture and the procedures involved along with the social skills needed to transmit such procedures – demanded an ability to plan in the absence of materials already present in the immediate environment, at times and places at a remove from where the tools would eventually be used. According to Donald, this implies a different memory system, characteristic of humans, that is able to represent experience in ways that are not episode-bound: a semantic memory system. Even though apes have been trained to use signs and therefore might be thought to have the semantic abilities of humans, Donald points to research supporting the claim that ape experience is episode-bound, "restricted to situations in which the eliciting stimulus, and the reward, are clearly specified and

[22] Sterelny, *Thought in a Hostile World: The Evolution of Human Cognition* (Oxford: Blackwell Publishing, 2003), pp. 136–137.

[23] C. O. Lovejoy, "Hominid Origins: The Role of Bipedalism." *American Journal of Physical Anthropology*, 52 (1980): 250.

present, or at least very close to the ape at the time of signing."[24] He argues that since the tool sets made by homo erectus did not change significantly for a million years, they probably did not yet have the symbolic language that made the rapid cultural evolution of homo sapiens possible. "Nevertheless," he says, "erectus seems to have broken free of some of the constraints of episodic culture and moved a major cognitive step forward."[25]

Imagining alternate worlds

The capacity for greater planning depth would seem to imply an ability to imagine scenarios untethered from their immediate surroundings would have been an advantageous innovation. As evolutionary biologist Richard Dawkins has pointed out, organisms with the ability to set up model spaces in the imagination where possible events might be played out in a sort of virtual trial and error would have an advantage over organisms who can only learn based on simple trial and error – trial and error takes time and energy and error is often fatal. Simulation, Dawkins argues, is both faster and safer.[26] This modeling ability could have originated in the evolution of perceptual systems used by all higher mammals that model the world in their dealings with it.[27]

3.1.5. Variable environments and behavioral plasticity

Another aspect of our human uniqueness, in which the unique human traits of cooperation and efficient communication likely played synergistic roles, is that unlike other animals, we did not evolve in a specific set of environmental conditions, but in response to the fact that our selective environments were variable. We responded to differing habitats through adaptive innovations like shelters, clothes, weapons and tools that enabled us to buffer ourselves from environmental challenges. Such innovations then became part of our adaptive environments. The philosopher Peter Godfrey-Smith defends the idea that environmental complexity selects for behavioral plasticity.[28]

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[24] Merlin Donald, *Origins of the Modern Mind: Three Stages in the Evolution of Culture and Cognition* (Cambridge: Harvard University Press, 1991), p. 152.

[25] Ibid., p. 164.

[26] Richard Dawkins, *The Selfish Gene*, 30th anniversary ed. (Oxford: Oxford University Press, 2006), p. 59

[27] Donald, *Origins of the Modern Mind,* p. 231.

[28] In Peter Godfrey-Smith, *Complexity and the Function of Mind in Nature* (Cambridge: Cambridge University Press, 1996).

3.1.6. Developmental plasticity

Another significant aspect of human uniqueness – also likely related to the variability of human selective environments – is developmental plasticity. Generally speaking, developmental plasticity refers to the ability of an organism not only to adapt its behavior to the circumstances of its particular environment, but to develop a set of behavioral resources in one environment and a different set in another. Sterelny illustrates: "A tuatara egg can develop into either a male or a female, depending on the temperature of the next … They are not behaviourally flexible with respect to their sex, in contrast to a few species of fish, which can switch from male to female and back."[29]

There is controversy over why our evolutionary ancestor's brain grew so fast in evolutionary terms, but the process was completed in the brain of Homo sapiens, which was a brain of exceptional plasticity. This plasticity was developmental: the chimpanzee brain undergoes most of its growth before birth, while most of the human brain's growth happens after birth.

The human brain is developmentally plastic in this way: through the dying away of unreinforced neural connections and the multiplication of those that are reinforced, the brain develops patterns of use that eventually become resources cued to the environment in which it develops.[30] Language is one such resource. The brain of any infant can be configured to master any of the world's languages. This plasticity, and the fact that the maturation of the human brain is delayed in comparison with that of our closest evolutionary relatives, suggests that the plasticity supporting the learning of skills is an evolutionary adaptation. That is, we have evolved in such a way that makes possible an extended period during which environmentally-cued skills are developed.

3.1.7. Cumulative cultural adaptation: Tomasello's ratchet

These environments were characterized by a cumulative cycle of transmission and improvement – lacking in rudimentary chimpanzee material culture, for example – often referred to as Tomasello's ratchet. Once an innovation – an advantageous "mutation" – is introduced, it can be transmitted to others (not only the genetic descendants of the individual who introduced the innovation) and thus preserved, constituting a notch up in

[29] " Sterelny, *Thought in a Hostile World*, pp. 162–163.
[30] Donald, *Origins of the Modern Mind*, p. 14.

the ratchet. Language could have resulted from such a ratcheting effect. Selective pressure for the efficient group communication provided the evolutionary momentum and Tomasello's ratchet the mechansim by which language eventually developed.[31] Daniel Dennett argues that the brain of Homo sapiens had reached its final size and complexity long before the emergence of language and thus could not have been a response to the cognitive complexity that language made possible. He argues that the innate brain structures hypothesized by Noam Chomsky would have been the result of genetic adaptations accelerated by a mechanism for the selection of learning ability known as the Baldwin effect, according to which an organism's ability to learn new behaviors will influence its reproductive success through natural selection.[32]

3.1.8. Communication

Since, as Sterelny argues,[33] groups that share information are fitter than those that do not, group selection will favor more efficient forms of communication, like imitation (as Merlin Donald contends in *The Origins of the Human Mind*) and eventually language. Thus, social cooperation and efficient communication go hand in hand.

3.1.9. High-fidelity information transfer

Interestingly, the fidelity with which innovations are transmitted seems to be the key condition for the ratcheting effect.[34] As we shall see, this fidelity will play an important role in the development of the types of technological tools we will be considering.

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[31] Sterelny, *Thought in a Hostile World*, p. 160.

[32] Daniel Dennett, *Consciousness Explained* (New York: Back Bay Books/Little, Brown and Company, 1991), pp. 190–200. Historian of science Robert J. Richards offers the following explanation of the Baldwin effect: "If animals entered a new environment—or their old environment rapidly changed—those that could flexibly respond by learning new behaviors or by ontogenetically adapting would be naturally preserved. This saved remnant would, over several generations, have the opportunity to exhibit spontaneously congenital variations similar to their acquired traits and have these variations naturally selected. It would look as though the acquired traits had sunk into the hereditary substance in a Lamarckian fashion, but the process would really be neo-Darwinian." Robert J. Richards, *Darwin and the Emergence of Evolutionary Theories of Mind and Behavior* (Chicago: The University of Chicago Press, 1987), p. 399.

[33] Sterelny, *Thought in a Hostile World*, p. 142.

[34] See Hannah Lewis and Kevin N. Laland, "Transmission Fidelity Is the Key to the Build-Up of Cumulative Culture," *Philosophical Transactions: Biological Sciences* 367, no. 1599 (2012): 2171–2180, and Wataru Nakahashi "Evolution of Improvement and Cumulative Culture," *Theoretical Population Biology* 83 (2013): 30–38.

3.2. The Upper Paleolithic Revolution

To summarize, several aspects, which cannot be teased apart and organized into a clear-cut causal chain, of our uniqueness as humans reveal themselves to be significant if we want to understand the world in which we are embedded as technological tool users: the developmental plasticity we evolved to deal with variable habitats is the background for the integration of tools (whether physical, perceptual or cognitive) deep into our neurological resources. The uniquely human social cooperation boosted by efficient, high-fidelity communication, when combined with Tomasello's ratchet, ensured that innovations would be preserved, along with any improvements to them, making possible the accelerated paleoanthropological change that began around 50,000 years ago.

These aspects of human uniqueness constitute the world we are embedded in, which in turn constitutes who we are. Since the world of technological tool use is embedded in that world, it also participates in a world defined by cooperation, the high-fidelity communication of innovations, the ratcheting of such innovations and the developmental plasticity which makes possible the incorporation of innovations deep into the evolving toolkit with which we face the challenges of ever-changing environments.

Now that we have considered some of the universal aspects of our unique human Lifeworld, let us explore the world constituted by some of the significant ratcheted innovations.

Up until now, the aspects of human uniqueness we have been considering exist within a genetic evolutionary framework, subject either to a slow-moving Darwinian effect or an accelerated Baldwin effect. But it is in the context of a ratcheted cultural evolution, probably accelerated in the crucibles of increased population density made possible by farming, that the human Lifeworld (including tool technology) became revolutionized. Innovations such as fired ceramics, lunar records, the domestication of animals, the cultivation of grains, fruits and vegetables, irrigation, sailing ships, the mining of metal ores, art, myth, agriculture, cooking – in short, civilization – appeared. And such behaviors were passed on not through slow Darwinian genetic descent or even an accelerated Baldwin effect, but from individuals to others who need not have been not related genetically at all. Adaptive behavior during the Upper Paleolithic involved more

than the knowledge and skills of just one individual; it included the knowledge and skill base of an entire human culture. Culture became a repository and a medium for the transmission of innovation, a new medium of evolution in which variation is generated, variants tested and the successful variants regenerated.

3.3. Complexity

A salient aspect of the environment in which the surge of innovations that characterized the Paleolithic took place is its complexity, in the specific sense used by the field of complex systems, and this complexity has characterized the world in which technological change has taken place ever since.

For this reason, the field of complex systems can provide an analytical framework that we believe will help guide our investigation into the uniqueness of the human technological world.

Even though there is usually great mystery surrounding the mechanisms by which emergence is produced and in fact the very idea of emergence may be construed as a conceptual black box whose inner workings are unfathomable, our concern will not be with emergence per se in the Lifeworld taken as a complex system or the mechanisms by which such emergence might come about. Rather, using complexity as a framework will give prominence to certain features of the technological world as it and we have co-evolved from the times of stone tools to our present age of smartphones and the resulting picture will then serve as a background for our examination of the phenomenological structures involved in the incorporation of technological tools.

Although there is no precise, agreed-upon definition of a complex systems, a good approximation might be that they are systems composed of many interacting components whose properties in the aggregate are not derivable in any straightforward way from the features and behaviors of the individual components. The properties in the aggregate are sometimes seen as emergent, and so complex systems may be characterized as systems that display emergent properties – that is, properties of the system that are irreducible to the properties of the components. Examples of complex systems include markets, insect colonies, cities, the human brain, and the Internet.

For interactions among many components to take place in a complex system, the components must be similar enough in nature to be able to interact. Thus markets consist of buyers and sellers of goods or services, ant colonies consist of ants, cities consist of individuals and groups, the brain consists of neurons and the Internet consists of computers.

Another condition for the components to be able to interact is that there must be a medium, suited to the interaction capabilities of the components, that can facilitate exchanges of energy, matter or information. Such mediums make it possible for order to emerge at higher levels. Currencies facilitate economic transactions; pheromone trails organize the behaviors of the ant colony; communication, transportation and legal systems make it possible for city dwellers to interact; synapses permit the transfer of chemical or electrical signals; and the TCP/IP protocol suite enables computers to communicate over the Internet.

A complex system involving large aggregates of interacting components may be thought of as a network whose complexity will depend on factors like the number of nodes in the network and the number and types of links between them. Changing any of the factors will have system-wide effects.

The networks we are concerned with consist of people interacting with one another. As we have seen, during the Upper Paleolithic Revolution, networks (towns) consisting of large numbers of nodes (people) began to appear thanks to increased population density made possible by agriculture. Now that the first feature of this complex network is in place – a large number of nodes – we can go on to consider the interactions between the nodes. Since the medium of communication plays such a fundamental role in enabling people to interact, any changes in the ways people communicate will have a great impact on the complexity of the social network. And as we shall see, significant changes in the way people communicate have produced significant system-wide cultural effects.

One reason for this is that whenever larger numbers of people apply themselves to the problems they face in common – protecting themselves from danger, procuring food, etc. – they are more likely to come up with solutions to those problems. Such solutions – the innovations like tools we discussed above in an evolutionary context – can spread to their

contemporaries and even to future generations thanks to improved forms of communication. Then, thanks to Tomasello's ratchet, they can be refined in a continuous, cumulative and iterative process.

Important factors that influence the process of refinement are:

- The number and types of interactions
- The fidelity of the information transfer

Another interesting system-wide effect is that the nodes themselves are influenced by these factors – that is, people are influenced by number and types of interactions and are shaped by the mediums they use to interact. To rephrase Shirky, it's when there are significant changes in the number and types of interactions, the mediums the network components use to interact and the fidelity of information transfer that the really profound changes happen.

Let us proceed then, keeping in mind the features of complex networks we have been discussing as we consider some significant moments in the history of the human technological Lifeworld.

3.4. Language

It is likely that the Upper Paleolithic Revolution in human culture was made possible by an innovation that fundamentally transformed the ways people interact: language.

According to Donald, before language the behaviors and skills involved in the making of shelters, clothes, weapons and tools were transmitted through non-linguistic means involving something like apprenticeship, which represents the world in terms of action patterns. Once language comes into play, however, even societies with primitive technologies can represent the world at multiple levels of abstraction, making it possible to create linguistic cultures of exquisite complexity. Whereas a culture without language hovers close to the concrete episodes, language enables the transmission of memories stored in other individuals and comparisons across episodes. This in turn makes it possible to make thematic connections, extract principles and integrate episodes in sophisticated causal, temporal and narrative frameworks like those of religion and mythology. Cultures shaped by such frameworks, Donald argues, tended to integrate

knowledge. Then, "Once the mechanism was in place for developing and rehearsing narrative commentaries on events, an expansion of semantic and propositional memory was inevitable and would have formed an integral part of the same iterative process of evolutionary change."[35]

3.4.1. Language as a technological tool

If we take a tool to be an artifact that enables us to transform our capacities, then we might consider language to be a tool that exhibits, much like other tools do, a double fit, both to the tool user and to the task. Just as the shape of a mouse, for example, is fitted to the human hand, it confers upon a computer user the ability to perform actions which humans do not possess naturally, like the ability to click on screen items, move them around, and trigger the universe of actions possible on a computer.

Language too has developed in such a way as to exploit the limitations and biases of our natural powers of learning and memory unaided by external storage besides other individuals, enabling use to reshape tasks into formats better suited to our natural capacities. For this reason, for example, "Oral memory works effectively with 'heavy' characters, persons whose deeds are monumental, memorable and commonly public. Thus the noetic economy of its nature generates outsize figures, that is, heroic figures, not for romantic reasons or reflectively didactic reasons but for much more basic reasons: to organize experience in some sort of permanently memorable form."[36]

Language also helps us coordinate actions and extend their scope. If I am a member of a culture endowed with language, I am no longer limited to acting within my immediate environment based either on what I myself can do or what I can get someone else to do based on, for example, gestural cues tied into aspects of the immediate environment. With language, I can represent an action and communicate it to another individual who can then, retaining it in memory, go on to carry out the action at a different place and time.

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[35] See Donald, *Origins of the Modern Mind*, p. 268.
[36] Walter Ong, *Orality and Literacy*, 30th anniversary ed. (Abingdon: Routledge 2002), p. 69.

As Andy Clark points out,

> "the creation of explicit plans may play a special role in reducing the on-line cognitive load on resource-limited agents like ourselves. The idea here is that our plans have a kind of stability that pays dividends by reducing the amount of on-line deliberation in which we engage as we go about much of our daily business. Of course, new information can, and often does, cause us to revise our plans. But we do not let every slight change prompt a reassessment of our plans ... Such stability ... plays the role of blocking a wasteful process of continual reassessment and choice. ... Linguistic exchange and formulation thus plays a key role in coordinating activities (at both inter-personal and intra-personal levels) *and* in reducing the amount of daily on-line deliberation in which we engage."[37]

If we take language as a system of skills that serve to accomplish the ends of our culture, we might consider language to be a technology that plays a co-constituting role, shaping our experience of both our world and ourselves.

At any rate, it is clear that language fundamentally transformed the ways people interacted and was probably a decisive factor in the Upper Paleolithic revolution.

3.5. Writing

The very first graphic symbols would first connect the biological individual with a source of memory outside the individual and would lay the foundation for the next technological innovation based on language: writing.

3.5.1. The fit between writing and orality

Writing systems derived from symbols – whether markings that acted primarily as reminders or pictographs representing objects or concepts – that were probably devoid of linguistic content developed through different stages to true writing systems in which the contents of linguistic utterances are encoded with grammatical and phonetic markers and syntactic structure that provide a high degree of fidelity (and thus make up for the lack of contexts provided by oral communication that help determine meaning) so that a reader can decode them.

[37] Andy Clark, Andy, *Being There: Putting Brain, Body, and World Together Again* (Cambridge: The MIT Press, 1998), p. 202.

As writing became increasingly fitted to the contours of language, reflecting the content and structure of language and thus the cognitive profile of the embodied minds that used it, writing was poised to become a new way of constituting human experience.

Writing unburdened thought of the need to retain information in memory and thus freed it up for flights of grammatical complexity and analytical depth. Trains of thought could be organized into articulated chunks like chapters and volumes, enabling the mind to take in ever greater swathes of mental landscapes, which could themselves be mapped out in greater detail. The distance and disengagement writing established between knower and known made "objectivity" possible.

3.5.2. High fidelity information transfer

Another result of the increasing well-fittedness of writing to language was that writing became increasingly able to transmit sophisticated forms of knowledge from one individual to another who also possessed the code and could be at a remove in both space and time – unlike speakers and listeners, who had to be present to one another.

As the cultural acquis accumulates in an external memory system, it becomes much more robust and precise. Ideas that accumulate over centuries in writing can be revised and refined in different places, at different times – by contrast with the ideas stored in religious rituals, oral literary traditions, art, etc. Thus, thinking is subjected to a process of ratcheted improvement that does not operate in purely oral cultures whose acquis is stored in less systematic forms and prone to "lossy" information transfer.

3.6. The truth-preserving innovation of logic

By the time of classical Greece, when ideas on all sorts of subjects had been put into writing, considered and refined by generations of readers and writers, thinking had become a collective process. As arguments were examined debated and flaws in argumentation ironed out, thinking began to think about itself.

In the Middle Ages, the training of scholars emphasized generalized skills such as rhetoric and grammar that could be applied in more specialized fields such as music and astronomy. "Logica," Donald writes, "eventually emerged … as the controlling subject of the Trivium, pushing grammar and rhetoric into the background in the High Middle

Ages, the age of the Scholastic philosophers. Logic was the ruling skill that employed grammar and rhetoric to its ends."[38]

Whereas the rhetoric of the sophists in Athens was intended for oral-auditory application, by the High Middle Ages, disputationes were written down. Thinking began to improve itself in an iterative process that called into being an institution – the university – that could cultivate and improve the tools of argumentation by which the edifice of knowledge might be secured with a solid foundation. "In much the same way that the second half of the twentieth century has been obsessed with the properties of computational devices," Donald writes, "medieval scholar were entranced with their logic-machine; it promised to reveal the secrets of the universe."[39] The institutionalization of thinking built on a foundation of logic – a highly sophisticated method for conserving truth – was as important an innovation in human culture as writing itself had been.

However, a syllogism based on false premises conserves the falsehood contained in them. The grist going into the logical mill, though less lossy than oral culture, was still quite lossy. When the handwritten Alexandrian library burned down worlds of information were lost. But even much of what was not lost, such as the Aristotelian based on terrestrial and celestial spheres and the four classical elements, continued to be ground and to produce much vitiated knowledge in the scholastic mills.

3.7. Printing

3.7.1. A communications transformation

Curiously, Donald's account doesn't consider the role of the printing press in the cultural evolution of humankind, presumably because it represents a mere inflection of a representational system, not a new one in the human repertoire.

Far from being a mere inflection in the way information was stored and transferred, however, the transformation in communication brought on by the printing press constituted a far-reaching social transformation as well. Francis Bacon captured this idea

[38] See Donald, *Origins of the Modern Mind*, pp. 349–350.
[39] Donald, *Origins of the Modern Mind*, pp. 351–352.

in his *Novum Organum*, when he said that printing had "changed the face and condition of things all over the globe."[40]

Our interest will be in the ways the technology of print came to constitute the Lifeworld – how it transformed the culture in which innovations were passed on from generation to generation.

3.7.2. Facilitated access to more information

One aspect of the communications transformation wrought by printing was the facilitation of access to information. Clearly, the relative speed and ease with which multiple copies of a book could be produced by a printing press compared with the time-consuming, eye-ruining process by which a scribe produced one handwritten book meant that there would be many more printed books to go around. If scribes sowed books in individual libraries, printing presses broadcast them in many.

Before the printing press, scholars had to travel if they wanted to consult a wide range of books. When print emerged, they could access greater numbers of books in the libraries in their own monasteries or universities, saving themselves the time and trouble represented by traveling and investing that time and energy into cross-referencing and cross-pollinating information instead.

But the printing press not only expanded the volume of information available in principle to larger numbers of people, it transformed the ways that bodies of information were articulated, which made people actually able to access what they were interested in. The intensified cross-pollination of ideas created the conditions for a new *esprit de système* which would transform not only the ways collections of books were catalogued and indexed in libraries, but the ways individual books were formatted and the information in them organized.

Consider the title page, one of the features of the printed book whose importance became was highlighted and propelled by the commercial trade in printed books. Though filing systems enabling access to books existed to differing degrees in medieval monasteries and universities, they were saddled by scribal culture. In *The Day the Universe*

[40] Francis Bacon, *The New Organon*, ed. Lisa Jardine and Michael Silverthorne (Cambridge: Cambridge University Press, 2000), p. 100.

Changed, science historian James Burke illustrates the significance of the title page in enabling – or preventing – access. "The problem," he writes, with scribal books,

> "whose creation involved immense, time-consuming acts of worship, was that not only were they filled with errors, but very often the entire texts were irretrievably lost because there was no way of finding them once they had been written and placed in the monastery or church. There was no filing system. First of all it was very hard to tell what the name of the author might be, or indeed what the subject of the work was. For example, a manuscript entitled *Sermones Bonaventurae* could be any one of the following:
>
> Sermons composed by St Bonaventure of Fidenza
> Sermons composed by somebody called Bonaventure
> Sermons copied by a Bonaventure
> Sermons copied by somebody from a church of St Bonaventure
> Sermons preached by a Bonaventure
> Sermons that belonged to a Bonaventure
> Sermons that belonged to a church of St Bonaventure
> Sermons by various people of whom the first or most important was somebody called Bonaventure.
>
> Where would such a book be filed? ... Even if it were known in which church or monastery a text was, retrieval might involve a long and risky journey, which might even then end in failure because the book was lost within the library through lack of cataloguing."[41]

Before printing, librarians had little incentive to organize their collections according to clear cataloguing principles or to tie them into those of other librarians. After printing, the sales catalogues of printers and booksellers, whose customers included readers outside the walls of libraries in monasteries and universities, incentivized more systematic cataloguing.

In addition to new forms of cataloguing inspired by the printing trade, new features of the printed book format, such as punctuation marks, section breaks, headings, indices and the use of numbered pages "probably helped reorganize the thinking of readers. ... Basic changes in book format might well lead to changes in thought-patterns."[42]

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[41] James Burke, *The Day the Universe Changed* (New York: Back Bay Books / Little, Brown and Company, 1995), p. 107.

[42] Elizabeth Eisenstein, *The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early-Modern Europe*, 11th printing (Cambridge: Cambridge University Press, 2005), pp. 88–89.

Concordances of the type enabling inquirers to find passages in the Bible containing particular words were included in books other than the Bible. Consulting an index and jumping to a page in a book was a far cry from clicking on a link embedded in a web page, but it was a form of interaction nonetheless.

As readers became more and more familiar with book formatting conventions and began to have more consistent and reliable access to a wide variety of books, the *esprit de système* extended beyond the formatting and cataloguing of books to the organization of compilations of texts and even entire fields of knowledge. As Elizabeth Eisenstein points out, following a century of printing, the information contained in scattered texts, maps, chronologies, illustrations, etc., was sorted through and a more coherent body of knowledge began to coalesce around a spatio-temporal frame of reference shared by an ever larger group of scholars.[43]

This body of knowledge comprised not only the consolidation of information culled from the cultural acquis within an accessible, searchable framework, but also the discarding of what had previously passed for knowledge – such as Aristotelian physics and the notion of a divine right of kings – clearing the way for the scientific and political revolutions of the 16th–18th centuries.

Printing also made it possible to learn outside previous scholarly contexts. Formal schooling and handwritten correspondence among learned individuals was supplemented by treatises containing not laboriously hand-copied tables and maps but printed ones and addressed and disseminated to dispersed readers. Thus Newton was able to seclude himself to his home in Woolsthorpe when Cambridge University was shut down as a precaution against the Great Plague in 1665 and carry out his work on the calculus and the law of gravitation based on published works by Descartes, Galileo and Kepler.

But the effects of increasing access to all sorts of information thanks to the more efficient transfer of information enabled by printing were not limited to scholars. Whereas the Alexandrian library, as Erasmus wrote, "was contained within the walls of its own house," printers like Aldus Manutius were "building up a library which has no other

[43] Ibid., p. 193.

limits than the world itself'."[44] The markets the church and universities alone could provide became small for the growing printing industry. The 16th century saw an "'avalanche' of treatises which were issued to explain, by a variety of 'easy steps,' (often supplemented by sharp-edged diagrams) just 'how to' draw a picture, compose a madrigal, mix paints, bake clay, keep accounts, survey a field, handle all manner of tools and instruments, work mines, assay metals, move armies or obelisks, design buildings, bridges and machines.'"[45]

Although the transmission of such knowledge in printed form may have resulted in the actual acquisition of skills that were then put into action, it seems likely that the traditional means of transferring skills – hands-on apprenticeship – would have remained the predominant means for transferring practical know-how. Nonetheless, allowing for the gap between knowledge and know-how that would have translated into a gap between intention and action, the great expansion in the knowledge base accessible to ever greater numbers of people doubtless accelerated the process by which abstract, theoretical knowledge was absorbed into more action-oriented, practical fields like technology and industry.

The new ways that sound, reliable information was being organized, distributed and retrieved thanks to printing (in addition to other factors, such as the growth of postal systems and improvements in transport), expanded the scope of activities a wider range of people were able to engage in, which resulted in a network effect. This in turn was amplified by the ratcheting effect that the fidelity of information transfer printing made possible. As Eisenstein writes, "Given drifting texts, migrating manuscripts, localized chronologies, multiform maps, there could be no systematic forward movement, no accumulation of stepping-stones enabling a new generation to begin where the prior one had left off."[46]

[44] See Desiderius Erasmus and Margaret Mann Phillips, *The 'Adages' of Erasmus: A Study with Translations* (Cambridge University Press, 1964), p. 181.
[45] Eisenstein, *The Printing Press,* p. 243.
[46] Eisenstein, *The Printing Press,* p. 124.

3.8. A global network

3.8.1. The evolving media ecosystem

The media ecosystem shaped by the printing press was characterized by a relatively small number of creators and publishers communicating content to readerships by means of mechanical presses that required large investments to passive readerships spread over ever larger areas.

The improvements in communication represented by mail services, the telegraph, the telephone, mass-circulation newspapers, radio, television, film and the computer increased the complexity of the media ecosystem by further collapsing distances and accelerating the rate at which information circulated around it. But postal systems, telegraph cable networks, steam-powered rotary presses, radio and television transmitters, film studios and mainframe computers also required ever-larger outlays of capital. Moreover, the media ecosystem was dominated by mass media, with limited numbers of creators communicating content one-way to consumers of information who were, for the most part, passive and isolated. This changed with the arrival of the personal computer.

3.8.2. Critical innovations: the personal computer and the Internet

The personal computer

The personal computer along with the software that ran on it transformed the media ecosystem from a one-way, read-only, mass-media dominated system to a read-write system in which content was not only consumed but created – with relatively small capital outlays – as well.

This transformation was made possible thanks to the exponential rate at which the capacity of information technologies has grown ever since the beginning of computing. Moore's law, which predicted that the number of transistors in integrated circuits – and therefore their processing power – would double every two years, is popularly identified with this exponential growth, but before transistors the same dimension shrinkage coupled with growth in processing power could be seen in the technologies that drove electro-mechanical calculators, relay-based computers and vacuum tube computers. Every time one technology ran out of steam, another was found to continue the exponential growth.

And even though some argue that the end of Moore's law will come when the features of transistors will be a few atoms in width and it won't be possible to shrink them anymore, it is likely that research and economic pressures will produce new technologies to pick up where Moore's law leaves off. It is this exponential growth that has shrunk room-sized mainframe computers into the smartphones we carry around in our pockets.

Another important thing that has happened along the way is that the way we interact with computers has been transformed. Interfaces have become more intuitive. We no longer have to translate instructions into physical punch cards and wait often days for read-outs or type MS-DOS commands and navigate file structures; we use mice and touch-screen gestures to control graphical user interfaces. They have become better fitted to our natural physical, perceptual and cognitive abilities.

Faster processing has made it possible for computers to translate commands and navigate file structures sight unseen, much as the deep body ensures that the neurological processes underpinning my sensorimotor capacities are deployed properly every time I perform a mental calculation or step onto a tram, for example. And using a computer no longer entails sitting in front of a stationary PC. iPhones and Android devices come equipped with sophisticated operating systems enabling us to access the processing power of computers while on the move. All of this has made it possible to integrate computers ever more transparently into the real-time actions we perform in our lives by reducing the delay between the expression of our intentions and their fulfillment. And having computers in our pockets also means we have the Internet in our pockets.

The Internet

The second innovation that helped transform the read-only ecosystem dominated by the mass media was the Internet.

Before computers became a pervasive presence in homes and eventually in pockets all over the world, they existed only on the premises of big institutions with big needs in areas like government, business and research. It was in the area of high-tech research that the Internet was conceived.

Getting computers to communicate

Caught off guard by the Soviet launching of Sputnik I, Dwight Eisenhower established the Advanced Research Projects Agency in 1958 with the mission of developing emerging technologies for use by the military. To further this mission, ARPA provided funding for university computer departments across the US enabling them to purchase mainframe computers. The result was dozens of ARPA-funded mainframes using different operating systems and interfaces – all of which were incompatible with one another. That meant that research being done at one institution could not be shared with researchers at another without a great deal of inconvenience and cost involving the learning of new procedures, operating systems and programming languages – not to mention travel and phone bills. To enable the mainframes to communicate, the ARPAnet project was launched in 1969. Eventually, machines at a handful of universities across the US as well as one in Norway and another in London were joined by a network of small computers called Interface Message Processors that would act as gateways between the network and the mainframes.

The next challenge was to integrate other networks run by other institutions across the world – like the Cyclades network sponsored by the French Government, the Mark I NPL network at the UK National Physical Laboratory – in addition to other networks in the US. The challenge was met by the Internet Protocol Suite, which resolved the differences between the protocols used by each network with a common internetwork protocol consisting of a Transmission Control Protocol (TCP), which ensured that data traffic proceeded in an orderly fashion, and the Internet Protocol (IP), which specified the format of the data to be delivered and the address scheme making it possible to deliver data from source to destination.

In the 1980s, as the TCP/IP suite was becoming the standard for all computer networking, more and more physical media content (text on paper, vinyl LPs, VHS tapes, etc.) was being digitized. That is, it was being turned increasingly into bitstreams – sequences of ones and zeros. This was significant for two reasons. First, bitstreams could be replicated exactly. Digital copies suffered none of the loss involved in the "lossy" or degenerative process of analog copying. Every single copy made of a digital file – even a copy of the thousandth copy – would be a perfect copy of the original. And if that

bitstream is transferred, the fidelity of the information transfer is perfect. Second, bitstreams could be produced on personal computers and then transferred over the nascent Internet with unprecedented ease and at very low cost.

The WWW

However, at first the Internet was composed largely of infrastructural components – the protocols and the hardware that enabled computer networks to communicate. As more and more people began to use the Internet, demand grew for a user-friendly front end to access the infrastructural back end. Enter the World Wide Web.

The WWW is an information-sharing space invented by English computer scientist Tim Berners-Lee at CERN in 1989, consisting of "pages" where different types of content – graphics, audio, video, text and hyperlinks – can be stored and an address system that makes it possible to locate them (with a URL, a Uniform Resource Locator). Hyperlinks make it possible to jump from any public web resource to another by interacting with the page – clicking with a mouse or tapping a finger. Our experience with information is no longer the passive, non-interactive experience of reading a newspaper, listening to radio or watching TV or film. Stories like that of a toddler trying to zoom in to a detail seen through a window by touching the glass and spreading two fingers indicate just how deeply ingrained in our everyday experience the expectation that information is something to be interacted with has become.

As the WWW facilitated access for even more people, the network effects of the Internet began to spread beyond the realm of the digital and out into the analog world. The Internet began to provide a vast choice of digital media and easy access to it. And it provided catalogues for just about everything – not just digital media – without requiring printing or mailing. Many of the traditional barriers to unlimited selection and distribution bottlenecks – shelves, brick-and-mortar shop floors, warehouses, fleets of trucks, staff, working hours – began to fall. The ARPAnet was decommissioned in 1990 and the Internet eventually aligned itself with market forces, which drove the steady expansion of Berners-Lee's invention to facilitate an ever-expanding range of transactions.

3.8.3. Driving technological experience down the long tail

Power laws

By looking through the lens of complexity, we have been focusing in on developments in the history of technology that entailed increases in the numbers of interacting components and the number and types of links between them.

Another feature of complex networks like the ones we have been describing is the ubiquity of power-law distributions. They have been identified in all sorts of natural and human systems, from "the size of cities, people's incomes, earthquakes, variability in heart rate, forest fires, and stock-market volatility, to name just a few phenomena."[47] While there is little agreement regarding the mechanisms causing the power law distributions (and some claim that too many phenomena are being described this way – in the words of physicist and network scientist Cosma Shalizi, "Our tendency to hallucinate power laws is a disgrace"[48]), many people who study complexity think they indicate a transition from disorder to order – they signal emergence.[49]

And since the bitstream network of computers linked by the Internet that has so greatly impacted the Lifeworld generally exhibits power law distributions in so many forms, it would be of interest for our purpose to consider some of those phenomena, if only to highlight their significance with regard to the incorporation of technological tools.

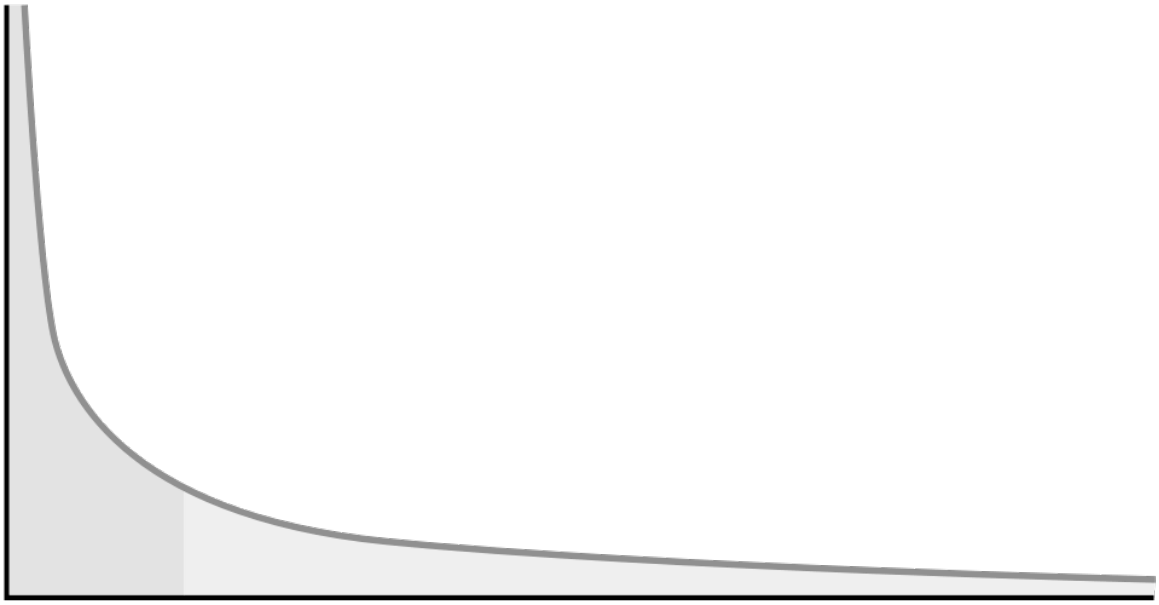
So what is a power law? A power law describes a set in which the items in the set are ranked according to some criterion, the nth position having 1/nth of the first position's rank. The "long tail" of the distribution is the portion with a large number of occurrences far from the "head."

Long tails

If we graph the distributions of a wide range of Internet phenomena – the distributions can involve things like the number of edits made by contributors to

[47] See Melanie Mitchell, *Complexity: A Guided Tour* (Oxford: Oxford University Press, 2009), p. 269.
[48] Ibid., p. 254.
[49] See Albert-László Barabási, *Linked: The New Science of Networks* (Cambridge: Perseus Publishing, 2002), p. 72.

Wikipedia articles, the number of links connecting to a blog, or sales rankings on Amazon or iTunes – when a behavior or item is ranked by frequency of occurrence, we get a power law graph known as a "long-tail" distribution



An example of a power law graph[50]

A handful of contributors make a great number of Wikipedia edits, while a great many make just a few or just one. A few high-profile blogs have legions of links connecting to them, while multitudes have very few links to them. A smattering of bestselling authors or artists sell millions of books or albums, while a vast majority sell in the single digits over the same period. In each case, the aggregated items in the long tail of the curve may account for just as much as – or even more of – the curve than those items gathered in the head.

Thanks to the loosening or disappearance of pre-Internet, pre-digital constraints – shelf space, distribution bottlenecks, a scarcity of information – that cut off the long tail in the past, attention has shifted from the few items gathered at the head of many distributions to the great quantities aggregated in the long tail. As a result, many things – products, services, projects – that elicit small interest or demand have become as attractive in various ways in the aggregate as the mainstream offerings in the head of many long tails. Google, for example, aggregates the long tail of advertising, Amazon the

[50] Wikipedia contributors, "Long tail," *Wikipedia, The F* (Anderson 2006) (contributors 2018)*ree Encyclopedia*, last modified March 23, 2018, https://en.wikipedia.org/wiki/Long_tail#/media/File:Long_tail.svg.

long tail of books, Netflix aggregates the long tail of films, and iTunes and Spotify aggregate the long tail of music.

Of course, vast selections need not drive interest down the long tail. In fact, an abundance of choice can cause paralysis unless the selection is ordered in ways that fit an individual's tastes, values and interests. That is why the offerings in long tails are sorted according to criteria such as price, ratings and genre. Instead of filtering out what is not expected to sell due to shelf constraints, long tail aggregations let everything in and stimulate interest for what is already there by making it possible to filter out what does not fit individual tastes, values and interests. Thus, items are revealed that are better fitted to the individual than the lowest common denominator that appeals to crowds.

Tech writer Chris Anderson used an image that illustrates the long tail phenomenon well:

> "One way to think of the difference between yesterday's limited choice and today's abundance is as if our culture were an ocean and the only features above the surface were islands of this. There's a music island composed of hit albums, a movie island of blockbusters, an archipelago of popular TV shows, and so on.
>
> Think of the waterline as being the economic threshold for that category, the amount of sales necessary to satisfy the distribution channels. The islands represent the products that are popular enough to be above that line, and thus profitable enough to be offered through distribution channels with scarce capacity, which is to say the shelf space demands of most major retailers. Scan the cultural horizon and what stands out are these peaks of popularity rising above the waves.
>
> However, the islands are, of course, just the tips of vast undersea mountains."[51]

Emerging action landscapes

The long tail phenomenon is so pervasive in the culture that has been transformed by personal computers, smartphones and the Internet that some have labeled it a long tail culture, a culture in which larger selections, broader reach and convenient ways of interacting – whether that be ordering products and services or communicating or organizing activities both individual and social – made possible by the digitally connected

[51] Chris Anderson, *The Long Tail: Why the Future of Business Is Selling Less of More*, (New York: Hyperion Books, 2006), p. 25.

ecosystem have greatly enlarged the range of human action. Communicating with people, getting places, keeping up to date, learning new skills, making things and moving them from one place to another have all been transformed by the new ecosystem.

The 16th-century "avalanche" of how-to treatises mentioned above may have inspired some people to undertake new projects, but the multitude of difficulties involved in defraying expenses, obtaining supplies and equipment, getting advice, and covering the cost of failure along the way would have prevented all but the most tenacious projects embedded in a network of concerns that would give their projects momentum from reaching fruition. Even at the apogee of the broadcast mass media culture in the 20th century, with its vastly improved communications and transportation networks, the information people could access was read-only and not yet hyperlinked. When the digitally connected culture of the Internet arrived, people became able to interact with information and one another in a read-write, hyperlinked culture.

If we think of the long tail culture as a problem landscape where large numbers of people are trying all sorts of new things – even if in an uncoordinated way – that were previously unfeasible because they required too much time, money, energy, etc., then it becomes clear that all that effort, all that distributed exploration of the problem landscape is bound to yield innovative solutions to problems both old and new. The Lifeworld waterline has fallen, revealing a landscape of previously untapped action. This becomes particularly evident if we consider agents in the aggregate.

The long tail of social action.

Social action requires organization to manage limited resources: time, attention, money. Managing those resources in order to achieve a goal involves transaction costs.

Transaction costs

Every transaction involved in running an organization (meeting, telephone call, contract drawn up, etc.) requires resource expenditure and the costs of those transactions are a basic constraint shaping organizations. Because organizations require structure to remain coherent and maintaining that structure requires resources, there are many potentially valuable actions that no organization can afford to pursue. The resources

pursuing them would require would cost more than the outcome. This means there are many actions that are not tried in an organized way because their potential success is not assured. When cost of organization is high, unmanaged, unorganized groups are limited to modest efforts – a weekend camping in the mountains, a picnic at the park, a potluck dinner Now that large-scale coordination is possible, serious, complex work can be undertaken without organizational management. Loosely coordinated groups can carry out activities previously impossible for any organization.

The digitally connected ecosystem has made many transaction costs drop dramatically, enabling larger and more distributed groups of people with related goals to find and collaborate in ways that had previously been too expensive and time consuming – too resource heavy to undertake. The collaborative open-source software development model inspired by work on Linux, the family of open-source operating systems, is an impressive example of this type of distributed exploration of a problem space. In this model, when programming code is made widely available for testing, inspection and experimentation, fixes for "bugs" are found quickly.

But there are other, more ominous examples of the ways the digitally connected ecosystem has made it easier for dispersed individuals with related goals to collaborate. Whereas previously social approval made group forming easy and social disapproval made it hard, now there are groups that do not need social support to form and collaborate, such as terrorist cells and Pro-Ana groups that promote anorexia and bulimia by sharing tips on hiding weight loss from parents and doctors and using laxatives and emetics, for example.

3.9. The universal technological tool

3.9.1. The computing tool

Perhaps this would be a good point to reconsider our definition of a tool in the light of what we have said about the human technological Lifeworld in which tools are produced. What, then, of tools in this picture of a uniquely human culture in which innovations such as tools are passed on from generation to generation in a world that is transformed by those tools and comes to constitute the experience of the tool users?

If we take a tool as a means for furthering the intentions of the organism using it, then we can now see that what determines the tool use of a chimpanzee using a twig it has found in its immediate environment and denuded of its leaves to fish for termites is that the types of intentions the tool can be made to serve in the case of a chimpanzee are episodic in nature. Although claims have been made for the transmission of cultural innovations among chimpanzees (and other animals, such as New Caledonian crows), the evidence for cumulative culture among such populations is highly contested and at any rate, as we have seen, if the capacity for cumulative culture is not unique to humans, then it is hugely amplified by the preservation of innovations thanks to high-fidelity transmission and refinement by means of Tomasello's ratchet in human culture.

There is another feature of human tool use that makes it unique, however. Animals may extend their physical influence on the environment by means of tools. But we humans extend our perceptual and cognitive abilities as well. We use perceptual tools in Ihde's embodied user-world relationship when we use telescopes and microscopes to see things the naked eye cannot and microphones to detect sounds that fall below the threshold of our hearing. We use perceptual tools in his hermeneutical sense when we use optical, radio or x-ray spectroscopy to derive the properties of distant astronomical phenomena.

As we have seen above, if we conceive of a tool at a certain level of abstraction, we might consider language to be an informational tool. Equipped with language, we can access and transfer information stored in other individuals or in songs and myths. We use cognitive "devices" to extend our powers of memory (e.g., memory palaces), calculation, and deductive inference (for the more complete exploitation of resources like evidence and ways of representing problem spaces). We simulate possible worlds or strategies to experiment, with an enhanced tolerance for error, and find solutions to problems. We use metaphor to bring the abstract into more tractable cognitive spaces.

But we use quite physical tools for cognitive purposes as well. In analogy to perceptual tools, we use computers to visualize information that is abstract or non-visual. We use many mechanical tools, such as abacuses, planispheres and astrolabes, to facilitate calculation and measurement for use in fields like accounting, astronomy and navigation.

And if tools which extend our perceptual and cognitive capabilities are most unique to humans, perhaps the most universal of human tools, which can be put to motor, perceptual and cognitive purposes alike, is the universal Turing machine that is the computer. Thus it makes sense to think of the computer, fitted as it may be to our native motor, perceptual and cognitive schemas –that is, incorporated – by means of a wide variety of interfaces and enabling us to further our purposes in every conceivable way, as the prototypical technological tool. In digital information technology, all of the capacities that make intentionality possible – motility, perception and cognition – are translated into a uniform field of ones and zeroes. This is why information technology is so well poised to help humans achieve their objectives and has had such a pervasive impact on the human Lifeworld, involving everything from everyday practices to the frontiers of what humans are capable of.

3.9.2. The human – technological tool – digital network fit

We have noted some emergent properties that have arisen as a result of language, writing, printing and the digitally connected world of today and there is surely much more emergence to come. However, our concern is not with emergence and our weak grasp of the mechanisms of emergence precludes our being able to say anything of interest with an eye to the future anyway. Our concern is with the technological Lifeworld as we live it.

And from the perspective of technological emergence, the importance of the interface is clear: when the tools (equipment, devices and processes) fit the human body and its perceptual and cognitive abilities, human agency can be projected through those tools. And when technological tool users are aggregated in large-scale networks, transactions among those users are enabled, fundamentally changing the technological ecosystem.

We saw that as writing progressed from cuneiform boxes to a grammatically structured system, it became more well-fitted to our cognitive abilities. Similarly, a parallel can be drawn between, on the on hand, the establishment of conventions in cataloguing and formatting that made it possible for books to circulate and people to assimilate contents and, on the other, the graphic user interfaces that enabled people to use their

computers more effectively and the network protocols like TCP/IP that enabled computers to communicate and interact.

Lastly, technological tools became more closely fitted to our human capabilities when they became mobile, going from the stationary desktop to mobile smartphones, with their touch-screen interfaces, powerful processors and browsers that allowed people to connect to the Internet anywhere, anytime.

In short, it is when technological tools become pervasive that emergence happens and technological tools become pervasive when they become particularly well suited to human use. Ultimately, this entails being fitted to the structures of experience.

Let us turn now to our next big task: the clarification of the structures of experience that the incorporation of computer-driven technological tools participates in.

4. GROUNDING IN THE PHILOSOPHICAL TRADITION

4.1. The transcendental approach

To show how the incorporation of technological tools fits into a proper picture of human experience, we will be inscribing our picture in a transcendental approach – that is, one which asks about the conditions that make experience possible.

Although Heidegger explicitly disavowed the idea of the transcendental in his later thought,[52] the term may be used in a way that is sensitive to the possibility that it may contain significance that is not exhausted by Heidegger's usage. Heidegger follows Immanuel Kant in his concern with the 'a priori' conditions of experience – that is, conditions that do not themselves derive from experience. However, he rejects the idea that they derive from a faculty of pure reason. For Heidegger the scope of the transcendental question is not restricted to the conditions of cognitive experience or even intentionality. Rather, it is concerned with our very openness to Being.

4.2. Epistemological ontologization

In *Being and Time*, Heidegger provides an account of human experience that aims to avoid the pitfalls of approaches in the philosophical tradition that apply dualistic categories to experience, positing a mind disengaged from the world. Such approaches, with origins in the epistemological concerns of thinkers in the early days of the scientific revolution. Seventeenth century thinkers, impressed with the way our ordinary experience could mislead us, sought to formulate a trustworthy procedure that could ensure that the picture we construct of the world is a proper one, without distortions. Their procedure involved disengaging from the fallible body and breaking down ideas acquired uncritically from the environment into tractable atomistic components denuded of any potentially error-inducing "secondary qualities" they might have within the framework of our concerns. Figures like Newton and Galileo made impressive, authoritative progress buttressing the edifice of knowledge with the procedure of disengagement, which was doubtless an advance over earlier approaches in the domain of knowledge.

[52] See eds. Steven Crowell and Jeff Malpas, *Transcendental Heidegger* (Stanford: Stanford University Press, 2007), p. 1. (Crowell and Malpas 2007)

The problem came when the prestigious procedure was read into the ontological constitution of the mind. The ontologizing of the disengaged perspective took one of two major forms: Cartesian dualism, for which the mind was essentially non-corporeal and therefore free from distortions arising from embodiment; or monism of the empiricist or intellectualist varieties analysed in detail in Merleau-Ponty's *Phenomenology of Perception*. The empiricist ontology conceived of mind as reducible to a nexus of causally interconnected atomic units of sensation susceptible to mechanistic explanation. The intellectualist ontology reified the contents of the mind as representations of the world that mental faculties – judgment and attention – synthesize into experience.

Both approaches are guilty of building the conditions for the possibility of experience into the elements and processes of the mind. By treating experience as a mechanistic causal process or a cognitive judgment, both monist ontologies deny any meaningful configuration to experience as such and treat all meanings as projections. The ontologizing of the disengaged perspective fails to account for the fact that we engaged human beings have a background understanding of the world, such as the embodied skills we rely on to get around in the world, that recedes or is absent from experience and cannot be broken down into atomic bits – whether material and subject to causal dependencies or mental and subject to operations of the mind – on one side and the world on the other. That background understanding cannot be disentangled from our engagement with things, from the embodied skills we rely on to get around in the world. It involves knowing that, but it is grounded in knowing how.

Heidegger is one of the principal sources of arguments in the Continental sphere against the disengaged picture. His arguments to a large extent impress upon us the role played by the context of engagement. It is that engagement that makes our experience of space as oriented up-down, near-far, etc. understandable. The form of the engagement, the embodiment, stands to our experience as context conferring intelligibility. When an experience is intelligible, what we are aware of is the experience. The context is the background against which the experience is understood. I am not explicitly or focally

aware of that context, because what it is making intelligible is already occupying my awareness.[53]

The disengaged perspective might argue that there is no reason to think that the implicit background understanding we cannot do without cannot be articulated explicitly. But if the background is brought into awareness and articulated, does it not lose its character as horizon?

The pioneer of the kind of argument that makes clear that the background cannot fit into the confines set by the disengaged view was Kant, who clearly showed the problems inherent in the atomism advocated by the disengaged view. In essence, he argued that to see an atomic bit of information is to place it somewhere, to give it a location in a world that, while it may be in many respects unknown, cannot be completely unknown. The unity of the world is presupposed by anything that could appear as an atomic bit of information.

All views that have challenged the disengaged picture have some notion of a background. Wittgenstein, for example, makes use of such a notion when he shows what has to be supposed as already understood when we try to define something ostensively or name something. As we shall see below, John Searle also makes use of such a notion to account for the non-intentional know-how that makes intentionality possible.

Heidegger too uses the Kantian form of argument when in *Being and Time* he argues that things are disclosed first as part of a world – that is, as the correlates of concerned involvement and within a totality of such involvements. The atomism of experience is rejected and experience is reintegrated through the notion of a totality of involvements. Things are first disclosed in a world articulated by concerns, a world that matters to me.

[53] "...understanding does not grasp thematically that upon which it projects – that is to say, possibilities. Grasping it in such a manner would take away from what is projected its very character as a possibility, and reduce it to the given contents which we have in mind; whereas projection, in throwing, throws before itself the possibility as possibility, and lets it be as such. ... Dasein is constantly 'more' than it factually is ... Dasein ... is existentially that which, in its potentiality-for-Being, it is not yet." Heidegger, *Being and Time*, p. 185.

4.3. The significance of getting the ontological picture right

Avoiding the conception of experience that ontologizes epistemological procedure is not just a matter of ensuring formal ontological correctness. It is important because the flawed picture of human experience that ensues can shape the social context in which that experience is articulated in turn, shoring up the flawed picture in a mutually reinforcing feedback loop. While disengaged forms of experience are highlighted, alternative engaged forms are systematically ignored or underdeveloped.

This becomes evident if we consider how the dualist ontology motivated by epistemological concerns is derived from a particular reading of the lived experience. The normal, engaged body, as the means whereby the world is disclosed, disappears experientially. When we interact with the world – for example by pressing the "delete" key to correct a typo while typing on a laptop – the body and the world are subtended by a prethematic intentional arc that unifies different bodily abilities – in this case vision, motility and touch – without the participation of my conscious will. When we interact this way with the world, with the body running quietly in the background – as when Descartes sat by the fire in his dressing gown, meditating – it might seem as if the world were displayed before a disembodied mind. The body only becomes conspicuous in itself when it stops functioning quietly in the background – when it becomes the scene of pain, injury, disease and perceptual error – that is, when its normal engagement with the world is disrupted.

Descartes then reified and segregated aspects of experience that are usually intermingled: during moments when the body is experientially transparent as the mind goes about its epistemological business the body disappears, leaving only mind. Conversely, during moments when the body comes to the fore – when it is not subtending action but under a thematic spotlight due to some malfunction –the intentional arc subtending action is eclipsed, leaving only inert matter. Thus, an association between the body and its dysfunctional modes develops. Philosophically the body becomes conspicuous for Descartes as a source of error – and it is therefore exiled from the realm of certainty and truth.

Once this happens, aspects of experience in which the body is seen not as a medium of error or malfunction, but as a vital openness to the world that realizes a communion with it tend to be overlooked. The body is mistrusted as a source not only of epistemological but also of moral error – of sin. Contrast this with the role of bodily experience in the yogic traditions or the martial arts of Eastern cultures.

And it is perhaps not surprising that a culture shaped by a dualist ontology should lead to the alienation of assembly lines, urban ghettoes and environmental catastrophe which is the Aral Sea instead of the mindful, embodied engagement involved in meaningful work requiring skillful sensitivity, humanized cities and healthy ecosystems. Getting the ontological picture right may be more important than the non-philosopher might think.

In the following, we will see how Heidegger tried to recover an understanding of human existence as engaged, embedded in a culture, a form of life, a "world" of involvements. We will see that this engagement is fundamentally embodied.

5. CONDITIONS FOR THE POSSIBILITY OF EXPERIENCE

5.1. Heidegger's analysis of Being

In chapter 2 of *Being and Time*, Heidegger introduces the term Being-in-the-world, a term meant to overcome the subject/object distinction and to indicate that our relationship to the world is not detached or disinterested; rather, we are always already actively engaged in a meaningful context consisting of people, situations and things that we are familiar with and attuned to through a network of interests and projects. The form of our engagement is more fundamental than Husserlian intentionality. Indeed, Heidegger's concern in *Being and Time* is the ontological condition for the possibility of intentionality – the very openness to the world which is presupposed by intentionality.[54]

The generalization is not made simply in the interest of thoroughness, but in that of addressing what is most fundamental. Our familiarity with the world we live in and our familiar ways of comporting ourselves in it are not built up primarily out of observations, beliefs and knowledge. All knowing "that" is rooted in a knowing "how." And there is a background understanding of the world which is the basis for all types of knowledge. Having a cognitive grasp of the world is grounded in a more fundamental way of Being-in-the-world. Ontology precedes epistemology. That is why Heidegger is concerned with we way we are. To be human is not to be a special kind of thing inside a private sphere. We exist out in the open. In fact, we are the opening or the clearing.[55] Heidegger refers to this clearing as a field of disclosedness, an open space in which we can encounter entities.

5.2. Disclosedness

Let us, then, consider disclosedness, the most fundamental experiential structure in which the incorporation of technological tools participates.

[54] Near the end of *Being and Time* Heidegger writes, "The intentionality of 'consciousness' is grounded in the ecstatical temporality of Dasein" (Heidegger, *Being and Time,* p. 498 and in *Metaphysical Foundations of Logic* he writes, "Intentionality is indeed related to beings themselves and in this sense, is an ontic transcending comportment, but it does not primordially constitute this relating-to but is founded in a being-amidst beings. This being-amidst is, in its intrinsic possibility, in turn grounded in existence [the term Heidegger uses to describe the nature of Dasein's Being]. In this way the limitations of the earlier interpretation and function of the concept of intentionality become clear, as does its fundamental significance" (Heidegger, *The Metaphysical Foundations of Logic*, p. 134).

[55] Heidegger, *Being and Time,* p. 171.

The bedrock of the ontological structure of human existence is "that it is in such a way as to be its 'there,'"[56] hence Heidegger's term for human existence, "Dasein," or "being there." Dasein is a "clearing" – a "there" in which entities are disclosed and a self-disclosing at the same time. He takes care to point out that "'to disclose' never means anything like 'to obtain indirectly by inference.'"[57]

All of the "equiprimordially" interconnected terms and frames Heidegger uses to describe Dasein's ontological structure – such as "Being-in-the-world," which can be considered a co-term for Dasein that makes manifest certain features of its existential[58] structure like "worldhood" and "inhood" – grow out of this fundamental disclosedness. And all of this ontological structure fits, "equiprimordially" once again, into his overall temporal scheme: we are thrown from a past, which attunes us to our world, which we understand in terms of possibilities that we project on a future. Since Heidegger's account of Dasein's Being is like a hologram – any piece of it contains the entire holographic image – we can approach it from many angles. Let us begin our examination of the unified framework Heidegger presents in *Being and Time* by looking at the constitutional elements into which he breaks down Dasein's disclosedness: understanding (*Verstehen*), discourse (*Rede*) and state-of-mind (*Befindlichkeit*).[59] Doing so will require us to bring the other elements comprising Dasein's structural whole into view.

5.2.1. Constituent aspects of disclosedness

Understanding

Understanding, in Heidegger's sense, expresses the fundamental ability to be someone, to do things, to get around in the world. It is the fundamental know-how that

[56] Heidegger, *Being and Time,* p. 171.

[57] Ibid., p. 105

[58] In Heidegger's terminology, "existentiell" (*Existenziell*) applies to the range of specific possibilities open to a particular Dasein and "existential" (*Existenzial*) to Dasein's ontological structure. The distinction parallels the more general one between ontological (relating to the underlying structures of reality) and ontical (relating to specific realities), which is not restricted to Dasein.

[59] "Disclosedness is constituted by state-of-mind, understanding, and discourse, and pertains equiprimordially to the world, to Being-in and to the Self" (Heidegger, *Being and Time,* p. 263); "...disclosedness ... is constituted by state-of-mind, understanding, falling, and discourse," (ibid. p. 314).

allows us to be who we are and to comport ourselves towards entities with regard to the possible ways we and things can or cannot be.[60]

Disengaged or "theoretical" understanding is derived from this more basic understanding. Heidegger's primordial understanding does not involve grasping anything – whether concrete or abstract – but the very possibility of grasping.

Dasein "becomes disclosed to itself in its thrownness."[61] It "has been delivered over to itself"[62] as thrown possibility. It is always already thrown from a past into its "there"[63] – that is, into a set of possibilities which it is, as illustrated in the following: "Brought up in the very centre of London life, he had early entered into the spirit of the stirring times on which his Young life was cast."[64] But having been thrown, Dasein does not come to rest; it "remains in the throw,"[65] for that thrownness is part of Dasein's ontological structure.

Moreover, through disclosedness, Dasein is thrown "projection" (*geworfen Entwurf*), another element of the existential manifold. Dasein "is its possibilities, and is them in such a way that it understands itself in these possibilities and in terms of them, projecting itself upon them."[66] Thus, Dasein is that which it is not yet, projecting itself onto its possibilities, which is the same as projecting itself onto their being (Heidegger uses both expressions). Thus, the structure of disclosedness maps onto the structure of temporality: we are thrown from a past, which we understand in terms of possibilities that we project on a future.[67]

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[60] "Ontical" understanding, which grows out of ontological understanding, involves concrete ways of being who we are – that is, carrying out our different personal and social roles – and dealing with entities as they are or are not in fact.

[61] Heidegger, *Being and Time*, p. 225.

[62] Ibid., p. 183.

[63] Ibid., p. 174.

[64] Quoted in Michael Inwood, *A Heidegger Dictionary* (Oxford: Blackwell Publishers, 1999), p. 218.

[65] Heidegger, *Being and Time*, p. 223.

[66] Ibid., p. 225.

[67] Temporality is the meaning of care, the whereupon Dasein's Being as clearing and the being of entities is disclosed (ibid., p. 416), and therefore constitutes primordially its totality (Heidegger, *Being and Time*, p. 376). It is the existential-temporal condition for the possibility of the world (ibid., p. 416). He calls the phenomena of future, past and present the "ecstases" of temporality, for "Temporality is the primordial 'outside-of-itself' in and for itself" (ibid., p. 377). We see here Heidegger's explicit rejection of an ontology which countenances an inner, subjective realm and a world outside it.

Discourse

Dasein understands itself in the possibilities it is projected upon thanks to what Heidegger calls "discourse." Discourse is the articulation of the intelligibility of that which is disclosed – that is, of the possibilities that Dasein projects itself onto – into patterns of meaning. It is the joints and separations between things, thought is not language, but rather what makes language possible. Discourse comprises the distinctions that enable Dasein to distinguish and identify. They articulate what, in knowing how to comport itself towards entities, Dasein understands. For example, in skilfully – or "understandingly," as Heidegger says – using a mouse, I can distinguish whether it is properly connected to the computer, whether the wheel allows me to scroll up or down when I push it forward with my finger, etc. Understanding is the ability to project and apply these distinctions in particular situations.

State-of-mind

State-of-mind refers to the current, concrete situation I find myself in (hence the German *Befindlichkeit*). The abstract range of possibilities I have been thrown into is defined by state-of-mind. If I have a mouse in my hand, I could conceivably use it as a paperweight or an weapon, but the existential possibilities guided by state-of-mind specify which possibilities actually matter in the situation I am in. I will be responsive to the position of the mouse on my desk, which matters to the pointing I am performing on my monitor. But I will not be attentive to the pattern in the carpet on the floor or the sound of the cars driving past outside the window.

Disclosive states-of-mind show us entities in a more primordial way than disengaged statements about the world could ever do. They indicate why such statements matter to us in a particular situation. And this mattering is captured in the concept of care, which reveals Dasein in its primordial totality of Being, unifying its temporal features.[68]

5.2.2. Care

The totality of Being-in-the-world as a structural whole is care.[69] Care pertains to Dasein itself. Dasein's basic mode of being is that in its being its very being is at issue. It is

[68] Heidegger, *Being and Time*, p. 374.
[69] Ibid., p. 274.

the essential for-the-sake-of-which that underlies any and all concerns in life, whether theoretical or practical. Care, rather than the persistence and self-awareness of an I or ego, or the continuity and coherence of experiences, makes Dasein a unified, autonomous self.[70]

Care structures the clearing which is Dasein. It is the whereupon Dasein's Being as clearing and the being of entities is disclosed. It maps onto the structure of temporality as well; it is the existential-temporal condition for the possibility of the world. It is the "in-order-to" of Dasein's present involvements, which exist against the horizons of "that in the face of which it has been thrown" and that "for-the-sake-of-which" it "comes towards itself futurally."[71]

It is care that enables Heidegger to distinguish his account of Dasein from a picture of the mind in which attitudes towards the world are primarily theoretically detached and disengaged. But care is not specifically practical. It lies deeper than the distinction between theory and practice.[72]

Constitutive of care are "concern" (*Besorgen*), which pertains to Dasein's dealings with entities in the world, and "solicitude" (*Fürsorge*), which pertains to being-with others. It is "in this concern and solicitude qua care that the caring being itself is at issue."[73] Since concern involves not only conditions of possibility but Dasein's activities in the world – that is, intentionality – we will postpone our consideration of concern and more particularly of the ready-to-hand equipment that we deal with in concern until we examine in more detail the intentional arc which is made possible by the more fundamental disclosedness we have been discussing.

5.2.3. Temporality

According to Heidegger, past, present and future constitute, together, an equiprimordial horizon of my existence. Who I can possibly be in the future is not constrained by who I have been in my past – I am someone already. But my past also gets

[70] Heidegger, *Being and Time*, p. 366.
[71] Ibid., p. 416.
[72] Ibid., p. 238.
[73] "... in diesem Besorgen und Fürsorgen qua Sorge um das sorgende Sein selbst geht." Martin Heidegger, Gesamtausgabe, II. Abteilung – Vorlesungen 1923–1944, Band 21. *Logik: Die Frage Nach die Wahrheit* (Frankfurt: Vittorio Klosterman, 1976), p. 225.

its meaning for me only from the possible futures I project. Perhaps an example might help to clarify Heidegger's conception of temporality. Let's say a woman grew up, was thrown into a childhood, in violence-ridden Tijuana. This fact constitutes in part who she is to the extent that it enters into the future she projects for herself. She might entertain the possibility of being a human rights lawyer, and she may then view her past as a life of hardships that have taught her the meaning of human dignity and the rights any human being should enjoy. But she might also pursue the possibility of being a visual artist, in which case her past would then appear to her as a source for emotionally charged images to be transformed and transferred onto a canvas.

5.2.4. Disclosedness: an example

To clarify Heidegger's conception of disclosedness, let us consider how a jazz musician might open up a world of music. A scale and certain conventions of harmony, melody, rhythm and form would constitute the discourse articulating her musical world into a field of sonorous intelligibility. As a musician, she understands how sounds get put together into euphonious configurations. She understands that a second voice consisting of parallel fifths is going to sound odd. She understands that a melody containing notes that aren't in the proper scale are going to require some harmonic justification. Her state-of-mind is going to depend on her thrownness – the particular harmonic sequence she has been thrust into and is going to determine which possibilities are going to fit the situation. If she is playing against particular chord, then a particular modal scale might be called for. She will tend to get absorbed in superficial forms of understanding and discourse – those of the They: if she is going to be a conscientious improviser, she will have to take care to avoid falling into hackneyed forms of playing.

When we listen to the type of music we are used to listening to, the structures of disclosedness at play are simply taken for granted, much as gravitation is on planet earth. But if we listen to music that inhabits a different world, articulated according to a different discourse, which we don't understand – that is, structured by different conventions of harmony, melody, rhythm and form, we no longer feel "at home." Listening to the music of traditions untouched by the West can have this effect. Sonorous entities no longer arrange themselves as accessible to the ear. Their musical worlds are closed off to us.

5.3. Spatiality

We have seen how Being-in-the-world discloses its own "there," a clearing within which the being of entities is made possible. A consideration of Heidegger's description of the worldhood of Being-in-the-world will point towards a lack: Heidegger's description is missing an account of how embodiment participates in making worldhood possible. As we will see, Merleau-Ponty did much to fill in the picture.

5.3.1. Worldhood

For Heidegger, Dasein's spatiality is based on a form of disclosedness by which Dasein is its there spatially. Whereas things occupy or take up [*einnehmen*] space, Dasein has always already cleared [*eingeräumt*] a space [*Spielraum*] around it, making room for its activities. He is careful to point out that this is not a representing of space, but what makes such representing possible.

This basic *Einräumung* is the site of regions [*Gegenden*], which comprise not objects (of knowledge) with materiality and extension or representations of space as characterized by physics and Euclidean geometry, but the general whereabouts of things within meaningful practical contexts. A region is "the 'whither' for the possible belonging-somewhere of equipment which is ready-to-hand environmentally, and can be placed."[74]

The World that makes up Dasein's concernful Being-in-the-world is a complex system of regions – a Lifeworld – structured by our concerns. Within such a Lifeworld, what we consider near or far and present or absent is not necessarily that which is closest or furthest as measured along a line, but what we are concerned with and what corresponds to contexts of use. This is why the topological distance relationships on a metro map need not correspond to the real topographical features of the landscape. Two stations might be physically quite far and yet close on the map because passengers are probably more concerned with the fact of the connection and the legibility of the map than physical distances.

The degree to which entities are accessible or not constitutes my lived space, my here: "The 'here' of [Dasein's] current factical situation never signifies a position in space, but

[74] Heidegger, *Being and Time*, p. 420.

signifies father the leeway of the range of that equipmental whole with which it is most closely concerned…"[75]

To explain the role of Dasein's concerns in the spatial way equipment is discovered, Heidegger introduces the notion of *Ent-fernung* or "de-severance," which refers to the establishing and overcoming of distances – that is, the opening up of a topology in which things can be near or far. Heidegger writes,

> "That which is presumably 'closest' is by no means that which is at the smallest distance 'from us.' It lies in that which is desevered to an average extent when we reach for it, grasp it, or look at it. … When, for instance, a man wears a pair of spectacles which are so close to him distantially that they are 'sitting on his nose,' they are environmentally more remote from him than the picture on the opposite wall."[76]

5.3.2. Directionality

Spatiality is not only organized into entities that are near or far; it has directions, too – left/right, front/back and up/down – with respect to which Dasein is oriented. Dasein's capacity to cope is correlated with equipment that can be to the right or left, in front or behind, up or down. This directionality cannot be analyzed merely in terms of relations among objects:

> "Suppose I step into a room which is familiar to me but dark, and which has been rearranged during my absence so that everything which used to be at my right is not at my left. If I am to orient myself, the 'mere feeling of the difference' between my two sides will be of no help at all as long as I fail to apprehend some definite object 'whose position,' as Kant remarks casually, 'I have in mind.' But what does this signify except that whenever this happen, I necessarily orient myself both in and from my being already amidst a world which is 'familiar' …"[77]

Now, orientational notions like right/left would seem to depend on having a body. But Heidegger, perhaps due to his concern for the ontological over the ontical, defers

[75] Heidegger, *Being and Time*, p. 420.
[76] Ibid., p. 140. As we shall see below, this is reminiscent of Merleau-Ponty's treatment of optimal perceptual distance.
[77] Ibid., p. 144.

consideration of the role the body might play in spatiality, speaking of it in skeptical quotation marks and finally relegating it to a parenthetical remark. For Heidegger,

> "Circumspective concern is de-severing which gives directionality ... Both directionality and de-severance, as modes of Being-in-the-world, are guided beforehand by the circumspection of concern. ... Out of this directionality arise the fixed directions of right and left. ... Dasein's spatialization in its 'bodily nature' is likewise marked out in accordance with these directions. (This 'bodily nature' hides a whole problematic of its own, though we shall not treat it here.)"[78]

On this account, left and right must remain strangely inexplicable asymmetrical fields of practical action. Heidegger has been taken to task for his deferral of a systematic treatment of corporality in *Being and Time*. To some extent, criticism must be tempered by the fact that *Being and Time* is an unfinished manuscript and Heidegger does address issues concerning embodiment both in lecture courses from around the time his magnum opus was published[79] and, in a more sustained fashion, in the Zollikon seminars of 1959–1971.[80] But Heidegger himself admitted that he saw the interpretation of Dasein from the perspective of its embodiment as a particularly knotty problem. In a 1966–1977 seminar on Heraclitus, he referred to the nature of the body as "the most difficult problem"[81] and in 1972 he recognized that he had been unable to respond properly to criticisms of his neglect of embodiment in *Being and Time* because "the bodily [*das Leibliche*] is the most difficult problem ... and I was unable to say more at the time."[82]

To complement the picture we are trying to put together of the fundamental structures of experience so as to include the body more explicitly, let us turn now to Merleau-Ponty's *Phenomenology of Perception*, which contains an account of how our embodied spatial directionality and orientation makes it possible for us to handle equipment in the world in the first place.

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[78] Heidegger, *Being and Time*, p. 143.

[79] For instance, in a 1928 lecture course on Leibniz, Heidegger states that "Dasein is among other things in each case dispersed in a body." Heidegger, *The Metaphysical Foundations of Logic*, p. 137.

[80] In the seminars, Heidegger argues that before being a corporeal object, Dasein already exists as a situated way of being-in-the-world that he refers to as a "bodying forth" (*Leiben*). Martin Heidegger, *Zollikon Seminars: Protocols – Conversations – Letters,* ed. Medard Boss, trans. Franz Mayr and Richard Askay (Evanston: Northwestern University Pess, 2001), p. 86.

[81] Martin Heidegger and Eugen Fink, *Heraclitus Seminar*, trans. Charles H. Siebert (Evanston: Northwestern University Press, 1993), p. 146.

[82] Heidegger, *Zollikon Seminars*, p. 231.

5.4. The spatiality of the body

5.4.1. The zero-point

In their discussion of directionality, both Heidegger and Maurice Merleau-Ponty were influenced by Edmund Husserl's discussion of corporality in *Ideen II*. Heidegger received a copy of the manuscript while lecturing at Marburg in 1925[83] – that is, before the publication of *Being and Time* – and the similarities between Husserl's and Heidegger's treatment of spatial orientation in (cf. *Ideas II*, §41 and *Being and Time*, §23) are conspicuous. Merleau-Ponty also consulted the unpublished manuscript before the publication of the *Phenomenology of Perception* and took up the same discussion. Unlike Heidegger, however, for Merleau-Ponty it is the body which functions as the center of orientation and the original capacity for motility, constituting the medium whereby we have a world. It is the primordial origin of all action, perception, cognition and expression, Husserl's "zero point" [*Nullpunkt*] from which things are near/far, within/beyond reach, left/right, above/below. But whereas Husserl's constitutive phenomenology called for an examination of the experience in which objects present themselves to us and the subject as the basis for the possibility of having a world, Merleau-Ponty argued that the most primordial form of experience is that of embodied perception rather than pure consciousness. Embodied perception does not come before the world, it is a part of it. And the body is not only how we are anchored in the world, it is the means whereby we have a world.

5.4.2. Merleau-Ponty's embodied spatiality

In Merleau-Ponty's account, the world of embodied experience is oriented around a zero point which is not a particular position relative to other positions in a coordinate system, "but the laying down of the first co-ordinates."[84] So far, this is consistent with the *Einräumung* by which Dasein discloses the topology of the "here" that it is.

Also like Heidegger, Merleau-Ponty argues that the abstract spatiality of physics is derivable from a practical, engaged spatiality, a "praktognosia" that opens up a sensorimotor world and provides access to it. This praktognosia is analogous to the

[83] Kevin Aho "The Body," in *The Bloomsbury Companion to Heidegger*, ed. François Raffoul and Eric S. Nelson (London: Bloomsbury Academic, 2013), pp. 269–274, footnote 7, p. 274.
[84] Merleau-Ponty, *Phenomenology of Perception*, p. 115.

projective understanding that describes how Dasein is familiar with its practical world. But for Merleau-Ponty, tracing the derivation of abstract physical space from practical spatiality leads us to a specifically corporeal being-in-the-world.

The world as shaped by the anthropomorphic body

Orientational aspects of space like near and far, front and back, up and down, etc. must be explicitly described in terms of our embodiment – that is, in terms of the human body's physical capacities and limitations. Without the body, orientational words could not have any meaning: "...what meaning could the word 'against' have for a subject not placed by his body face to face with the world? It implies the distinction of a top and a bottom, or an 'orientated space'. ... Stripped of this anthropological association, the word on is indistinguishable from the word 'under' or the word 'beside'. ..."[85]

And we project those forms of embodied orientation onto the world, too. The body has a front and a back. We generally see things arrayed before us, move forward and interact with things that are in front of us; thus, we project fronts and backs onto things that do not intrinsically have them. What we take to be the front of a car is the part that faces the direction in which it moves most of the time. What we take to be the front of a computer is the part we normally interact with. And if we say that there is a keyboard in front of the computer, the spatial relation is not out there in the world; it only obtains in relation to our ability to project fronts onto things based on the nature of our body. As Mark Johnson and George Lakoff note in *Philosophy in the Flesh*, "If all beings on this planet were uniform stationary spheres floating in some medium and perceiving equally in all directions, they would have no concepts of front or back. But we are not like this at all. Our bodies are symmetric in some ways and not in others."[86]

Many of the ways our experience is structured are given by the types of bodies we have as humans. By having fingers capable of grasping objects, legs capable of running and eyes equipped with three types of color cones capable of absorbing and processing certain wavelengths of reflected light, we sort the sensorimotor stimuli that are the basis for our phenomenological embodiment in ways that are radically different form the ways in

[85] Merleau-Ponty, *Phenomenology of Perception*, p. 116.

[86] Mark Johnson and George Lakoff, *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought* (New York: Basic Books, 1999), p. 34.

which they are sorted by owls, for example. An essential part of being thrown into the world in Heidegger's terms entails being thrown understandingly into a particular form of embodiment that articulates the world into a field of intelligibility upon which Dasein projects its corporeal possibilities. The body comprises a fundamental set of constraints on how we understand our environment and project our possibilities onto it.

And a fundamental structure of embodied experience that is equiprimordial with Dasein's "mineness" [*Jemeinigkeit*] and is rooted in corporeality is the disappearance that enables entities to appear experientially – a sort of anonymous obverse to Dasein's mineness.

5.4.3. Disappearance – the zero-point of embodiment

Let us recall that in the context of the perceptual gestalt, Merleau-Ponty writes: "...one's own body is the third term, always tacitly understood, in the figure-background structure, and every figure stands out against the double horizon of external and bodily space."[87] It is the space of the phenomenological body as the background which is involved in the disappearance that enables entities to appear experientially within the intentional arc that makes action possible.

One way of understanding this corporeal horizonality is in terms of Husserl's zero point – that is, as the center of a Cartesian coordinate system organizing an external phenomenological space. But as Drew Leder points out in *The Absent Body*, it can also be understood as an experiential zero point – that is, as the disclosive, unexperienced center from which any bodily space is always projected.[88] Whenever I experience the world through a perceptual organ, it is necessarily absent from the perceptual field it discloses. I do not see my retina or taste my taste buds. This enabling sort of absence is a fundamental aspect of our embodiment.

5.5. The other

So far, in our discussion of the conditions for the possibility of experience, we have been considering the site– in terms of Heidegger's existential analytic and Merleau-Ponty's embodiment – of our practical engagement with the world. Yet the world is also a

[87] Merleau-Ponty, *Phenomenology of Perception.* p. 115.
[88] Leder, *The Absent Body,* p. 13.

place where we encounter other people, who, as Dasein, escape my practical sway over the world. Let us now consider the role played by the other in experience.

According to the conception of experience that ontologizes epistemological concerns, we experience our inner life in a self-enclosed, privileged, way, with clarity and distinctness, in which we can never experience the inner lives of other human beings and therefore live with a permanent gulf between ourselves and others that must be accounted for in a primarily epistemological manner. By contrast, in the phenomenological tradition our experience of others is not couched primarily in epistemological terms. Our experience of others is conceived of not as the result of inference based on my inner experience of my mind. According to the phenomenological tradition, we experience others directly and there is no radical asymmetry between our experience of ourselves and our experience of others.

5.5.1. Heidegger's solicitude

Thus, for Heidegger, the background understanding that underlies all intentionality is not a belief system about entities in the world and the beliefs of others about those entities, but a common understanding underlying ways of acting in the world into which all human beings are always already thrown. This common understanding is not a matter of private experiences, but is acquired from society. Society is the ontological source of the familiarity that makes the discovering of entities and of others possible in the first place. Being-with others is always already included in Dasein's existence.

We have seen that Dasein's disclosive "here" is the scene of its dealings with entities in the world and with other human beings as well. But whereas Dasein comports itself with concern (*Besorgen*) towards entities in its dealings with the world, it does so with solicitude (*Fürsorge*) in its being with (*Mitsein*) entities that are themselves Dasein – that is, they are in-the-world not as a shoe might be in a box, but as a being-in-the-world is always dispersed in its various dealings with the world, which have concern as their kind of being – that is, as a person might be in love. Moreover, there is an ontological commonality that allows Dasein to encounter others and to be encountered by them in turn: "... Dasein as Being-with lets the Dasein of Others be encountered in the world. ...

Only so far as one's own Dasein has the essential structure of Being-with, is it Dasein-with as encounterable for others."[89]

Indeed, for Heidegger the question of other minds, which presupposes a radical experiential asymmetry, can only arise when our primordial, everyday understanding of the ontologically shared "with-world" is "led astray and obstructed, … so that a genuine 'understanding' gets suppressed …"[90] For it is certain derived ways of being towards others – "aloofness, hiding oneself away, or putting on a disguise"[91] – originally made possible by being-with that call into question "the psychical life of others," transforming them into a "theoretical problematic of understanding."[92]

We might also say that just as there are regions of entities which are desevered for Heidegger within concrete concerns and entities are ready-to-hand in Dasein's particular *Befindlichkeit*, so too are other Daseins that are dissevered, so to speak, brought close and experienced as the particular others who I am dealing with right now. I might be traveling in the metro, for example, with dozens of others, each enclosed in his or her own private mindscape. When someone addresses me, asking me the time, that other is desevered and that other Dasein becomes a concrete being-with, engaging my understanding of being-with others according to the discourse that articulates the intelligibility of being-with. Just Dasein understandingly projects a space of possibility for entities, it does so for other human beings.

This bringing close within the framework of being-with that would characterize the immediate experience of the other, not simply as the condition of the possibility of such an experience – that is, as an ontological commonality that allows Dasein to encounter others and to be encountered by them in turn – but as the immediate experience of the profound otherness that separates me from the other, is the subject of Sartre's famous phenomenological analysis of shame in *Being and Nothingness*.

[89] Heidegger, *Being and Time,* p. 157.
[90] Ibid., p. 163.
[91] Ibid., p. 161.
[92] Idem.

5.5.2. Sartre's drain hole in the middle of being

Jean-Paul Sartre's account of our experience of others in *Being and Nothingness* also posits that it is not the result of a deduction, but a direct experience – that is, our relation to the other is not primarily epistemological, but ontological. However, for Sartre the experience is characterized by a gulf that is not the result of a primordial understanding being obstructed. He makes his case for the immediate nature of our experience of the other and its essential alterity by means of his analysis of shame.

A man looks through a keyhole, completely absorbed in the scene before his eye. He himself does not figure as part of the experience. However, when he hears a floorboard creak behind him, he becomes aware of himself "in an immediate shudder which runs through [him] from head to foot without any discursive preparation."[93] Since shame is an intentional experience – we feel ashamed of something – there must be an intentional object: himself. And yet shame is not purely a matter of reflection, for "in the field of my reflection I can never meet with anything but the consciousness which is mine."[94] Thus, there must be more to the experience of shame. In shame, according to Sartre, "the Other is the indispensable mediator between myself and me."[95]

In shame, we appear in our own experience, but as an object for the other's gaze. Shame is an example of an other-mediated form of self experience. The other provides me with an outside. For Sartre, as for Heidegger, our experience of ourselves and our experience of others is reversible – insofar as we have an outside, we are encounterable for the other.

But for Sartre our experience of others – in which an essential aspect of our experience of ourselves first comes to light – entails an essential rift in Heidegger's primordial Being-with. For Heidegger, the voyeur becomes aware of the other and of himself as object through a disruption in intersubjectivity. But for Sartre the disruption is part and parcel of the fabric of being. Sartre's description of this essential disruption is stark. The other, recognized with a shudder, is an "object … which escapes me inasmuch

[93] Jean-Paul Sartre, *Being and Nothingness*, trans. Hazel Barnes (New York: Philosophical Library, 1956), p. 246.
[94] Ibid., p. 222.
[95] Idem.

as it unfolds about itself its own distances,"[96] or a drain hole in the middle of being through which the world is continually flowing out.[97] The other's gaze need not be manifested by "the convergence of two ocular globes in my direction,"[98] but can also make its presence felt in the form of the creaking floorboard above or "a white farm-house which is outlined against the sky at the top of a little hill"[99] possibly harboring a sniper.

For Sartre, the immediacy of the experience of the other consists fundamentally of a rift. He notes that when another person is looking at us – not directing their ocular globes in our direction, but providing us with an outside, as other – we cannot find their eyes beautiful or ugly or notice their color. This is because

> "eyes as objects of my perception remain at a precise distance which unfolds from me to them ... whereas the look is upon me without distance while at the same time it holds me at a distance – that is, its immediate presence to me unfolds a distance which removes me from it. I can not therefore direct my attention on the look without at the same stroke causing my perception to decompose and pass into the background."[100]

The same is true of my body: "Either it is a thing among other things, or else it is that by which things are revealed to me,"[101] wrapped in the enabling absence we discussed above. Experientially, however, though it can be both by turns in the body's surface dimension, it cannot be both simultaneously.

This experiential asymmetry does not mean, nonetheless, that we experience ourselves from the inside with clarity and distinctness. There is an aspect of myself – the way the other sees me, which confers on me an outside – which is distinctly alien. He writes,

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[96] Ibid., p. 255.
[97] Ibid., p. 256.
[98] Sartre, *Being and Nothingness*, p. 257.
[99] Ibid., p. 258.
[100] Idem. Perhaps, though, this experiential asymmetry reveals a fundamental underlying ontological condition of possibility. If I experience entities in-themselves, like a vase whose being is confined within the causal nexus, the possibilities of their being do not on principle escape me. Beings-for-themselves, by contrast, represent drain holes in the middle of being which in principle lie outside the scope of my understanding. And to the extent that I participate in Heidegger's being-with – that is, when I am dealing with the other as a for-itself and not an in-itself – we also participate in a sort of intersubjective experiential enabling absence.
[101] Ibid., p. 304.

"..the Other looks at me and as such he hold the secret of my being, he knows what I am. Thus the profound meaning of my being is outside of me, imprisoned in an absence."[102]

5.5.3. Merleau-Ponty's reversibility

For Merleau-Ponty too, as for Heidegger and Sartre, the perception of others is prior to and the condition of any deduction I might make regarding the existence of another.[103] Merleau-Ponty also counters the idea that there is a radical asymmetry between a clear and distinct experience of ourselves and our opaque, ontologically vitiated experience of others: "The other can be evident to me because I am not transparent for myself..." For Merleau-Ponty, this is "... because my subjectivity draws its [visible] body in its wake."[104]

This derives from the ontological unity underlying what Merleau-Ponty refers to as the body's "chiasmatic" structure. The evidence/opaqueness at the heart of experience corresponds to this reversible structure, which is like an ontological Möbius strip – that is, like "obverse and reverse, or again, two segments of one circular course which goes above from left to right and below from right to left, but which is but one sole movement in its two phases."[105] The condition for the possibility of being able to see is our participation in the visible by means of our body.

For Merleau-Ponty, the other's gaze can only inspire self-consciousness if I already have a sense of my own visibility to the other that is immediately tied up with the pre-reflective, proprioceptive sense of my body. He backs this claim with the observation that if I playfully bit a baby's finger, it will imitate me, opening its mouth, even though it may have never seen itself in a mirror. It has a sense of its own mouth, from the inside, and it is immediately capable of the same intentions. There is an inner relation between my experience of my body as I feel it from the inside and that of another as I see it from the outside.

As for Heidegger, my understanding of the other is grounded in a shared understanding of the world we share in common, which is a permanent and primordial

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[102] Ibid., p. 363.
[103] Merleau-Ponty, *Phenomenology of Perception*, p. 410.
[104] Idem.
[105] Maurice Merleau-Ponty, *The Visible and the Invisible*, ed. Claude Lefort, transl. Alphonso Lingis (Evanston: Northwestern University Press, 1968), p. 138.

dimension of our being. For both Heidegger and Merleau-Ponty, then, there is a primordial sharedness that makes possible the deficient mode of being-with illustrated by Sartre's shame.

Although it might not at first glance seem evident how the other would fit into an exploration of the incorporation of technological tools, the relevance of others comes into view if we recall that, as we noted earlier, by constituting the actions we can perform in the world, technological tool use co-constitutes the world and since others are a fundamental dimension of that world – and of our own being – that co-constitution will apply to our own selves as social – that is, to Dasein's being-with – as well. And since this constitution occurs when we act – that is, in the context of intentionality – it is time we proceed from a consideration of the conditions of the possibility for the intentional arc to a consideration of the structures of experience more immediately involved in intentionality.

6. EXPANDING EXPERIENTIAL POSSIBILITIES

Until now, we have been developing an account of the setting – in terms of Heidegger's existential analytic and Merleau-Ponty's embodiment – where our practical engagements in the world take place. This has involved descriptions of the basic features of human existence that make experience possible. Let us turn now to some of the dynamic features of the practical existence that unfolds in the setting we have established. Doing so will entail two tasks: first, exhibiting the ways we build on the basic structures of experience to make ever-expanding constellations of experience possible and, second, showing how these experiential possibilities are constrained by and integrated with the complex matrix of nested projects, both short- and long-term, within which we live our lives. The first task will show how the incorporation of tools is possible and the second will elucidate the contexts in which that incorporation actually takes place. We will tackle the first task in this chapter and turn to the second in chapter 7.

6.1. Disclosing a world of concern

Let us apply ourselves then to the first task by elucidating, in Heidegger's existential analytic, the structure of concern through which Dasein pursues its dealings with the world. We have seen that the possibility of the being of entities, like tools, appearing in Dasein's Lifeworld is grounded in the world's ontological disclosedness. Dasein's disclosive "here" is the scene of its practical dealings with entities in the world and these dealings have concern as their type of being. And having concerns means being-alongside the entities in the world Dasein finds itself in.

This ontological picture in which entities can begin to be integrated into an intentional arc – practical dealings are practical by virtue of their purposive structure and that purposiveness entails intentionality – may be mapped onto Dasein's spatiality, which correlates our general capacities for dealing with the world and the interconnected whole in which entities find their place in that world.

When we engage practically with entities, we do so thanks to a general familiarity with the space in which they are disclosed. That familiarity is based primarily not on

knowledge or explicit rules, but on a know-how Heidegger calls circumspection, the "sight" which constitutes Dasein's understanding in its projective character.[106]

The entities that Dasein's circumspection discloses understandingly do not simply occur in a spatial position. They occur within a particular framework of practical concern – the ontical world Dasein is always already attuned to.[107] This is why Heidegger refers to them as "equipment." Each piece of equipment has its place that is defined as "one place out of a whole totality of places … belonging to the context of equipment that is environmentally ready-to-hand"[108] – the "region" discussed above that Dasein is always already thrown into. "Something like a region must first be discovered if there is to be any possibility of allotting or coming across places for a totality of equipment that is circumspectively at one's disposal."[109] The totality of regions available to Dasein make up the world it is thrown into – the world Dasein lives in.

It is within this framework that the topology of lived space is opened up or de-severed. De-severance brings things within the scope of Dasein's concern so that they can be experienced as near or far. It is a spatial attunement to the world of Dasein's particular concerns. It is in this sense that, according to Heidegger, radio "conquers remoteness," de-severing the world.[110] When I hear of a bomb attack in a city across the world and wince, that remote location has been brought within the scope of my concern. When things are near in the context of Dasein's concern, they are "ready-to-hand."

Particular tools are ready-to-hand when they are in use. A hammer in use is not an object of conscious reflection; it is transparent while we concentrate on the task of hammering a nail. We see through the hammer, though our concernful use is guided by circumspection. If things go wrong, we can then focus on the hammer, encountering it as present-at-hand – that is, as an object of what is now a disengaged reflection. Readiness-to-hand is the primary mode of being proper to practical engagement in the world out of which presence-at-hand, the intermittent, derivative mode of being proper to epistemological concerns and goal-directed intentionality, arises.

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[106] Heidegger, *Being and Time*, p. 186.
[107] Ibid., pp. 172–173.
[108] Ibid., p. 136.
[109] Idem.
[110] Ibid., p. 140.

6.2. Coming to grips with the world

Merleau-Ponty's account of the phenomenology of perception was clearly inspired by Heidegger's account of Dasein's absorption in everyday life. Consider this passage from the *Phenomenology of Perception* in which Merleau-Ponty discusses a space of practices and equipment we saw Heidegger deal with above, the carpenter's workshop, but now with the body included:

> "The bench, scissors, pieces of leather offer themselves to the subject as poles of action; through their combined values they delimit a certain situation, a certain kind of work. The body is no more than an element in the system of the subject and this world, and the task to be performed elicits the necessary movements from him by a sort of remote attraction ..."[111]

For Merleau-Ponty embodiment is intimately bound up with agency: the body is the means whereby practical action is made possible and "it is clearly in action that the spatiality of our body is brought into being."[112] Practical space is oriented according to the structure of the body on one hand and the projects undertaken to fulfill its needs on the other; it is polarized by its tasks. Merleau-Ponty writes that "My body is wherever there is something to be done"[113] and the body in its pursuit of its goals projects a space of potentialities and limitations for action. On his account, entities have a significance for us in terms of our bodily capacities to interact with them. It is our particular corporeal thrownness, our body's ability to interact with the world that attunes us to it. Merleau-Ponty agrees that our concerns determine what in the lived world is de-severed, what is near and far, but for him those concerns are fundamentally embodied and the de-severance is to be understood in terms of perception.

He argues that the body determines what is near and far by establishing a balance between the forces at work in the perceptual field. For science, he writes, an object seen at a hundred meters and the same object at arm's length are indistinguishable. It is only apparent size that changes, nothing else. But for the perceiver the object at a distance is not at all the same. There is a

[111] Merleau-Ponty, *Phenomenology of Perception*, p.122.
[112] Ibid., p. 117.
[113] Ibid., p. 291.

> "... privileged perception [that] ensures the unity of the perceptual process and draws into it all other appearances. For each object, as for each picture in an art gallery, there is an optimum distance from which it requires to be seen, a direction viewed from which it vouchsafes most of itself: at a shorter or greater distance we have merely a perception blurred through excess or deficiency."[114]

And this privileged, optimal perception is determined by the body's ability to come to grips with the world:

> "If I draw the object closer to me or turn it round in my fingers in order 'to see it better,' this is because each attitude of my body is for me, immediately, the power of achieving a certain spectacle, and because each spectacle is what it is for me in a certain kinaesthetic situation. ... In so far, therefore, as I know the relation of appearances to the kinaesthetic situation, this is not in virtue of any law or in terms of any formula, but to the extent that I have a body, and that through that body I am at grips with the world."[115]

We saw above that whenever I perceive anything, the experiential center from which the perceptual field is projected must be absent from that perceptual field – I do not see my retina.

6.3. Dimensions of disappearance

However, the body may be better understood not as a point, but as a phenomenological space undergoing constant reorganization – a phenomenological anatomy, as it were, that is constantly in flux. One form of reorganization takes place when different regions of sensorimotor intelligibility come to the fore at times while others withdraw into the background, shifting their forms of presence and absence.

6.3.1. Surface disappearance

When parts of the body constitute origin of a perceptual or actional field, they disappear from focal experience in the enabling way we saw above. As Leder puts it, they are in the mode of focal disappearance. They participate directly in enabling experience. When bodily organs or regions are not the focal origin of our sensorimotor engagements

[114] Merleau-Ponty, *Phenomenology of Perception*, p. 352.
[115] Ibid., p. 353.

and are relegated for the moment to the sensorimotor fringes of the intentional arc or are not directly participating in it, they are in the mode of background disappearance.

The distribution of these modes of disappearance depends on the ways we are attuned to the situation we find ourselves in. I might look up in my study to figure out if the door that just opened in the apartment building is my front door or a neighbor's and then, after establishing that it was a neighbor's, return to my computer monitor. Here, ears and eyes have exchanged modes of disappearance.

6.3.2. Depth disappearance

But there is another type of disappearance in addition to the complementary focal and background modes, which Leder calls "depth" disappearance.

He distinguishes between the horizontal dimension of the "surface" body, which participates in the intentional arc as the origin the different sensorimotor fields that make up our phenomenological world, and the vertical dimension of the "depth" body, which comprises the visceral, autonomic functions that take place mostly underneath the threshold of the intentional arc. Phenomenological disappearance is manifest in both dimensions – as the focal and background modes of disappearance discussed above in the "horizontal" dimension, and as a depth disappearance within which organs like the liver or the autononomic nervous system carry out their functions in the "vertical" dimension.

It is the surface body which takes part in the reversibility discussed by Merleau-Ponty in *The Visible and the Invisible*. When one of my hand touches the other, the touching hand disappears focally. When I substitute my eyes for my ears in attending to the world, I exchange focal and background modes of disappearance. But whereas I can substitute modes of surface disappearance, the liver and spleen are inaccessible to the intentional arc within the mode of disappearance. Depth and surface organs are not reversible.

The surface body tends to disappear from awareness because it subtends the intentionality through which I perceive and act in the world. Directed ecstatically outward, the surface organs of perception and motility disappear in use because they participate in an intentional arc that carries attention away from its corporeal zero point.

By contrast, the depth body disappears because it lies underneath the threshold of this arc. We do not use the visceral organs to perceive or act on the world directly.

Our engagement with the world is grounded in a sphere of anonymous visceral functions veiled in a depth disappearance. That is to a large extent why it may appear as if the lived world is arrayed before the gaze of a disembodied, disengaged mind.

Of course the visceral depths always participate indirectly in our engagement with the world. Hunger, for example, or a depressive mood caused by a neurological disorder can color our attunement to the world. Conversely, the surface body participates in depth disappearance as well. The fingers and eyes that can disappear focally, becoming transparent, also comprise layers of tissue and physiological functions that lie beneath the reach of experience. Desires and emotions involve an often intricate intertwining of visceral and ecstatic features.

In short, elements of the surface body disappears depending on their role in the intentional arc, whereas the visceral body lies underneath the range of this arc. The body disappears both as the enabling basis for intentionality and as the location of preintentional life.

However, our concerns here are rooted in the surface dimension in which the incorporation of tools takes place. There are certainly technological devices that can be incorporated into the visceral body – as are pacemakers, for example – but our concerns in this dissertation are with tools that are incorporated into the intentional arc – that is, into the surface dimension of the body.

So, we have seen that that in the surface dimension, the modes of focal and background disappearance are constantly shifting, depending on what we attend to and what activities we are engaged in. But there are other ways the body plays a fundamental role in reorganizing the phenomenological space of possibilities we can project before ourselves.

6.4. Sedimentation through habit

Some of the ways our embodiment shapes our experience are based on neurological hard wiring like that involved in the limbic system (also referred to as the

paleomammalian cortex) of the brain or on structural characteristics of the body, like its front-back orientation with the eyes placed in front. But it is a particularity of humans that we have the ability to open up spaces of disclosure that are not inborn.

Other domains of experience are built up in the course of life and incorporated into the intentional arc, trickling down from the realm of consciousness and absorbed into the body's "I can" through habit.

The central role of habit in the acquisition and consolidation of practical knowledge has long been acknowledged.[116] It appears in various levels of experience, from the pre-personal habituality of drives and instincts discussed by Husserl[117] and the sensorimotor intentionality of Merleau-Ponty to the inauthentic modes of social being represented in Heidegger's das Man. It is also located somewhere between the sphere of automatic pre-intentional behavior and that of deliberate intentional action – in fact, it forms a sort of bridge between them.

For Merleau-Ponty, it is the intentional body which constitutes this bridge: by cultivating habit the body establishes a bodily understanding constituting a "harmony between what we aim at and what is given, between the intention and the performance – and our body is our anchorage in the world." The fundamental role of habit in the investment of the world with the perceptual significance Merleau-Ponty is concerned with can be seen, for example, in the early neurological development of our visual capacities.

In early infancy, babies acquire perceptual constancy – the ability to synthesize visual adumbrations of objects and correlate them with tactile information – by exploring the world around them. With practice, the ability becomes absorbed into their bodily "I can"

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[116] Think, for example, of Aristotle's account of disposition and habit (*ethos*) in 1103a–1103b, Book Two of the *Nicomachean Ethics*, pp. 23–24.

[117] "Habits are necessarily formed, just as much with regard to originally instinctive behavior (in such a way that the power of the force of habit is connected with the instinctive drives) as with regard to free behavior." Husserl, Edmund. *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy: Second Book – Studies in the Phenomenology of Constitution.* Trans. Richard Rojcewicz and André Schuwer (Dordrecht: Kluwer Academic Publishers 1989), p. 267. Thus, as intentional life grows outward from a pre-personal sphere "determined by drives, from the very outset and incessantly driven by original 'instincts'" and through sensorimotor engagement with the world, eventually rising up to "a higher, autonomous, freely acting Ego, in particular one guided by rational motives..." (Husserl, *Ideas II*, p. 267). Interestingly, both Heidegger and Merleau-Ponty had read *Ideas II* in typescript according to Dermot Moran, "Husserl's Phenomenology of Habit", *Journal of the British Society for Phenomenology*, 42, no. 1 (January 2011): pp. 53–77, p. 60.

and thereby invests their world with increasing perceptual significance. Especially plastic infant brains are adept at acquiring sensorimotor abilities like perceptual constancy and the process of sedimentation they rely on applies not only to sensorimotor abilities, but to cognitive ones, such as spoken language, as well.

And the acquisition of language, with all the rehearsing that entails, in early childhood is fundamentally an embodied process, as well. When we become proficient, our ears scan spoken language with comprehension. Our mouths can articulate what we want to say. Our linguistic ability, with all the neural infrastructure supporting it, grows out of the body's "I can."

In Heideggerian terms, when we have acquired a language, we find ourselves thrown understandingly into a particular language that articulates the world into a region of intelligibility – in this case comprising the categories of phonetics, grammar, parts of speech, syntax, etc. – upon which Dasein projects its linguistic possibilities. As it is integrated within the network of our concerns, linguistic equipment becomes ready-to-hand in our dealings with the world.

Which is to say that words, phonemes and syntactic structures undergo a focal disappearance when I use them as tools for producing and receiving meaning – that is, when they are incorporated into the embodied intentional arc.

6.5. Conceptual metaphor

Habit also plays an important role in another way our embodiment shapes our phenomenological lifeworld: through the application of the ways in which our sensorimotor embodiment articulate phenomenological space to other domains of experience. We might say, for instance, that we grasp (a sensorimotor experience) an idea to indicate that we understand (a cognitive experience) it. This sort of mapping, which pervades the way we articulate our experience through language, enables us to take advantage of the body's familiarity with grasping to think about understanding ideas. In *Philosophy in the Flesh*, Mark Johnson and George Lakoff call the mechanism by which sensorimotor experiences, with their neural underpinnings, are mapped onto non-sensorimotor experiences, largely through habit, to form permanent neural connections that lay the foundation for conceptual domains "conceptual metaphor."

Johnson and Lakoff's developmental account of how conceptual metaphor arises is as follows: for young children, non-sensorimotor experiences and judgments on one hand and sensorimotor experiences on the other are regularly intertwined in everyday life. As a result, permanent connections develop that span neural networks associated with different domains of experience. Thus, for example, a baby's experience of maternal attachment is normally associated with the feeling of warmth while being held close. During the period in which the two domains of experience – affective and sensory – are conflated, neural connections are established between the two domains. Eventually children become able to distinguish the domains, but the cross-associations remain. These cross-associations then form the mapping on which conceptual metaphor will depend, enabling such expressions as "a warm smile" and "a close friend."

Then, when the domains are both activated in different circumstances, new connections can be created, leading to new inferences. Johnson and Lakoff illustrate this using what they call the "More Is Up" correlation.[118] Neural connections are made during the conflation period when networks characterizing the domain of verticality is associated with the domain of quantity, as when young children consistently experience a group of blocks rising upward as they are piled on top of each other. Through the neural connections, the sensorimotor source domain, verticality, is mapped onto the cognitive target domain, quantity. Then, based on this mapping, it becomes possible to expand, along inferential lines, the range of words relating to verticality – such as skyrocket, plummet, peak, and dip – that may be used to express quantity.

Complex metaphors can be formed at any point in life when different domains are co-activated, leading to the formation of neural connections on the developmental model. Such conceptual blending, which may be the stuff of clichés or entirely original, is the mechanism by which simpler metaphors can be combined to form more complex ones.

For example, we might map the conceptual space travel onto that of love, applying the inference patterns that characterize the domain of travel to draw conclusions about love. If love is a journey, then the lovers are travelers, the relationship is a vehicle and romantic troubles are obstacles on the way to a destination. If we posit two travelers driving fast, we

[118] Johnson and Lakoff, *Philosophy in the Flesh*, pp. 54–55.

could infer that although they might get where they are going quickly and have an exhilarating while they are at it, there is also the danger that the car might crash and the travelers suffer serious injury. If we map the inference pattern to the domain of love, we will get that the lovers who are "driving fast" will get to their destination – common life goals – quickly and experience excitement, but there is the danger of acrimony bringing suffering to the lovers. Conceptual metaphors like this one form an important part of the conceptual systems through which we experience life and structure our concerns and thinking in all dimensions of life, from the everyday to the arts and sciences.

For conceptual metaphor is a central tool we use in abstract reasoning – we use the inferential structures of concrete, empirical domains to reason about abstract domains. Mathematics then enables us to precisely model domain mappings to give explanations of data and make predictions. To see this, consider how Cartesian coordinates enable us to think about time in calculus. Here, the Cartesian coordinate system relies on the metaphor that times are locations in space. We visualize time as the x-axis, plot a curve showing variation of distance with respect to time and infer that the slope of the line tangent to the curve at any particular point is the instantaneous change at a particular point in time. Thus the Cartesian coordinate system enables us to mathematize physics and many other fields as well.

This ability to mathematize other fields serves to extend the certainty provided by mathematics and thereby expand the edifice of knowledge that Descartes was concerned with in his *Meditations*. Certainty in one space carries over into certainty in another. But certainty is not required for metaphorical mapping to be useful. What is required is reliability.

The raison d'être of metaphorical mapping is that meaning in the source sphere can be translated – either exactly, with the aid of mathematics, or fuzzily, as in the love is a journey mapping – into meaning in the target sphere, thereby making the target sphere more accessible or accessible in a different, possibly useful way.

For now, let us emphasize that this ability is grounded in embodiment – that any possible metaphorical space will have to be built in some way upon the spatiality of the body. It will have to participate in the fundamental aspects of the body's spatiality, like

directionality, the foreground/background structure and the fundamental grounding in an embodied zero point.

For this reason, we can see disappearance in the use of a metaphor which has sedimented. The visual model of the mind, for example, offers itself in the context of epistemology because of the way vision provides us with a broad survey of the world around us, offering more detail about the things that populate that world, and therefore more knowledge about the stable properties of those things than any other sense. Think, for example, of the amount and quality of the information we would be able to gather about our surroundings if all we could rely on were our senses of touch or hearing. The sense of touch could only open up a field of objects that come into contact with my body. Hearing opens up a field of events we can apprehend for a fleeting moment before they sink away into the past. Contrast the ability of vision to offer up a stable, co-present world. This is surely one of the reasons why the ontology derived from epistemological concerns guided by a visual, seemingly disembodied metaphor of experience, resulted in something like Cartesian dualism. The visual metaphor underwent an enabling, yet distorting focal disappearance.

6.6. Incorporating tools into the phenomenological anatomy

The phenomenological space projected by the habit body is thus in constant flux. We learn new skills at certain points in life through practice and let them fall into disuse. And we supplement our physical bodies by incorporating physical tools into our phenomenological habit body as well. As we have already pointed out, the intimate relationship between a bodily organ and a tool is manifest in the Greek use of one word, *organon*, for both "organ" and "tool." Indeed, tool use participates in the same process of sedimentation by which skills become incorporated into the body's "I can" as enabling absence.

6.6.1. The blind man and his stick

This can be seen in the oft-cited example of Merleau-Ponty's blind man. If, immediately following the accident that has taken his sight, he takes a stick in hand for the first time and begins to explore his surroundings, his sensitivity will be focused around his hand.

Through analysis and inferences based on the tactile and auditory information provided by the stick indicating the locations of physical features, he will begin to habituate himself to the way his interactions with his surroundings open up a spatial region before him. At first, the entities populating this region will be arrayed before him like an unfamiliar workshop. Once he learns the locations of the different pieces of equipment, he will be able to consider incorporating the region into the system of concerns embedded in larger concerns and eventually grounded in Heidegger's care structure of existence. He will do so by performing actions in pursuit of his different goals. He will go to the bakery to get a baguette. In the process, his corporeal schema will reorganize itself to become the means by which a new world, a new set of dimensions with its corresponding coordinate system whose zero point is the body, is opened up before him, populated with entities that have become ready-to-hand through practice with the stick. As Merleau-Ponty puts it, getting used to "… a stick is to be transplanted into [it], or conversely, to incorporate [it] into the bulk of our own body. Habit expresses our power of dilating our being-in-the-world, or changing our existence by appropriating fresh instruments."[119]

The stick will become transparent in use, participating in the body's enabling focal disappearance and be relegated to the background when not in use, but still within reach.

6.6.2. The typist

Merleau-Ponty gives another example involving a typist of how the corporeal schema is rearranged when, through habit, a person becomes able to govern a series of movements with an intention as a result of incorporating an initially abstract space into his bodily space. This example is significant for our purposes, because it illustrates the incorporation of one of the most common interfaces we use to govern the resources of our computers – the keyboard. To know how to type, says Merleau-Ponty, is to know where the letters are on a keyboard in the way we know where our arms and legs are. That is, we know where they are not in a coordinate grid in objective space, but as types of motor responses, without having to think about the starting positions of my fingers or the paths they need to traverse in order to type a word. To be sure, when confronted with a keyboard for the very first time, the typist must have deliberately, laboriously broken

[119] Merleau-Ponty, *Phenomenology of Perception*, p. 166.

down words into letters in his mind, mapped visual images of letters and their locations on the keyboard onto the movements of fingers necessary to strike the appropriate keys, aiding himself with visual confirmation from both the keyboard and the results of his movement on the paper – or the monitor screen, to update the example. With practice, however, motor patterns are formed as the typist carries out an intention to type a word; a motor space opens up around his hands and that space is coordinated smoothly with a visual patterns in a visible space. With practice comes understanding, the type of understanding which subtends intentional action: "To understand is to experience the harmony between what we aim at and what is given, between the intention and the performance – and the body is our anchorage in the world."[120] When I press the keys with my fingers, I experience the movements not as the fulfillment of an intention which is aimed at the keys as objects to be manipulated; instead, I experience them as parts of the living body whereby I inhabit a two-dimensional visual-tactile space in which I act. For Merleau-Ponty, "It is literally true that the subject who learns to type incorporates the key-bank space into his bodily space."[121]

6.7. The importance of agency

Generally speaking, a tool must be well fitted to our natural capacities and integrated into our lives so as to become potentially transparent in use. But how is that possible? We have discussed the ontological, transcendental possibility of such incorporation by outlining the bodily spatiality within which tool use takes place. Let us consider for a moment the possibility of tool incorporation in terms of the visceral body – that is, in terms of neurology.

The integration of tools into our bodily capacities is based on our natural ability to support plastic body schemas, as has been shown by neuroscientists like V.S. Ramachandran, who has shown how neural plasticity plays a role in the treatment of phantom limbs. He discovered that the brains of patients who reported paralyzed or painful phantom limbs could be retrained with a box and mirror contraption (containing two mirrors placed back to back – one facing left, the other right – in the center) that would eliminate the paralysis or pain. The patient puts the real hand into one side and

[120] Merleau-Ponty, *Phenomenology of Perception*, p. 167.
[121] Idem.

the stump into the other. Then, the patient looks at the mirror on the side with the real hand and makes symmetric movements, such as one might make while accelerating on a motorcycle. Because the patient sees the reflection of the real hand, it looks as though the phantom were also moving. The visual feedback of a "virtual" moving hand which seemed to be where the phantom was allowed the brain to reorganize its body schema, allowing the patient to recover a sense of motor control in the phantom or relieve the pain. In the words of Ramachandran and Sandra Blakeslee

> "For your entire life, you've been walking around assuming that your "self" is anchored to a single body that remains stable and permanent at least until death. . . .Yet these [results] suggest the exact opposite—that your body image, despite all its appearance of durability, is an entirely transitory internal construct that can be profoundly altered with just a few simple tricks."[122]

Significant here is the role of intentional experience in the alteration of body schemas. And since intentionality plays such a significant role in our ability to transform our body schemas, it should come as no surprise that it also plays an essential role in the incorporation of tools – that is, the integration of tools into body schemas. To see this, let us consider a case that is particularly suggestive for our purposes.

Paul Bach-y-Rita's tactile-visual substitution system (TVSS) provides a striking example of how tools can be incorporated into our existing sensorimotor capacities. The basic form of the TVSS[123] was a device fitted to the backs of blind subjects and connected to a head-mounted camera. The backpack consisted of an array of blunted pins, each of which was activated by a region in a pixel grid generated by the camera. In response to camera input, regions of the array corresponding to the grid stimulated the skin underneath. Subjects who were able to actively navigate their environment, controlling the camera by moving their bodies while engaging in goal-oriented activities, were eventually – after a only a few hours – able to shift the focus of their attention from the skin stimulation to the objects arrayed before the camera in three-dimensional space and have quasi-visual

[122] V.S. Ramachandran and Sandra Blakeslee, *Phantoms in the Brain: Probing the Mysteries of the Human Mind* (New York: William Morrow, 1998), p. 62. For another interesting case, see Jonathan Cole, Oliver Sacks and Ian Waterman, "On the Immunity Principle: A View from a Robot," *Trends in Cognitive Sciences* 4, no. 5 (2000): 167.
[123] Discussed in Paul Bach-y-Rita, *Brain Mechanisms in Sensory Substitution* (New York: Academic Press, 1972).

experiences. Thus, if the camera presented a rapidly approaching object – represented by a rapid expansion of the array – subjects would duck. A more recent version of the device uses a smaller electronic grid worn on the tongue, which is far more sensitive and mobile than the back.[124]

Here we see how the ability of the subjects in the experiment to incorporate the TVSS devices into their bodily and perceptual capacities depend on the ability to coordinate bodily and perceptual abilities with intentional control – that is, it depends on the ability to use the devices to act. The key, then, to tool incorporation is, as Clark puts it, "the creation of new forms of rich, feedback-driven agent-world circuits, with sensing and acting under active intentional control."[125] That is to say, the subject must experience a sense of agency.[126]

[124] Paul Bach-y-Rita and Stephan W. Kercel, "Sensory Substitution and Augmentation: Incorporating Humans-in-the-Loop," *Intellectica* 2, no. 35 (2002): 287–297.
[125] Andy Clark, "Reinventing Ourselves: The Plasticity of Embodiment, Sensing, and Mind," *Journal of Medicine and Philosophy*, 32 (2007): 263–282.
[126] See also A. Farne, et al., "The Role Played by Tool-Use and Tool-Length on the Plastic Elongation of Peri-Hand Space: A Single Case Study," *Cognitive Neuropsychology*, 22, nos (Danto 1979). 3–4 (2005): 408–418 and A. Maravita, et al., "Reaching with a Tool Extends Visual-Tactile Interactions into Far Space: Evidence from Cross-Modal Extinction," *Neuropsychologia*, 39, no. 6 (2001): 580–585.

7. REINING IN THE POSSIBILITIES: AGENCY

Now that we have made some progress towards exhibiting the ways we build on the basic structures of experience to make ever-expanding constellations of experience possible, let us apply ourselves to the second task we set for ourselves at the beginning of chapter 6: showing how these experiential possibilities are constrained by and integrated with the complex matrix of nested projects, both short- and long-term, within which we live our lives. It is time to consider agency in greater detail.

In Heideggerian terms, the pragmatic dimension of agency would take into account the goal of the action – its "toward-which – and is always in turn be embedded in a broader toward-which network of involvements that ultimately derive their ontological meaning from the for-the-sake-of a possibility of Dasein's being. Within this pragmatic context of involvements, entities are discovered as ready-to-hand within their equipmental regions. Lacking the toward-which of building a cabinet, the hammer would not be discovered as potentially ready-to-hand. Each toward-which organizes around itself a subintentional field of readiness-to-hand, giving each action its meaning and it is that toward-which that is the appropriate pragmatic level of description.

Although the Heideggerian description of an action would take place at the toward-which level – the level of the organizing goal and the relevant involvements that makes the action intentional – there is a projective understanding that enables Dasein to comport itself toward the entities involved in each toward-which. It is that understanding which coordinates any intermediary, subintentional toward-which steps required to carry out the organizing toward-which and gives the action its meaning.

So, to summarize, on the interpretation of an action we have been developing, when we perform an intentional act, we act for a reason, to achieve a goal, and we have an awareness of our being in control of our action – this sense is part of the structure of our experience of agency.

Heidegger's transcendental ontological account of Being – that is, of conditions of possibility – has served us well up to now. However, there is much to be gained in

analytic clarity and precision from exploring the resources of analytic philosophy regarding the particular entailments of agency and intentionality in greater detail.

7.1. Actions vs mere movements

Let us begin by distinguishing between an action and a mere movement. There are certain types of movements which we would not be likely to consider actions in themselves. For example, if a neurosurgeon applies an electrode to the motor cortex of a conscious patient on an operating table, causing her arm to move, she has made a movement.

Similarly, if a man making a phone call chewed on the inside of his cheek as he waited for his friend to pick up, he would be making a movement or perhaps a series of movements. Moving an arm or chewing the inside of a cheek would certainly qualify as movements, but they seem to fall short of being actions for they have no conscious goal (though the latter might serve some vague purpose like reducing psychological tension). In other words, there is no conscious mental state representing anything for my awareness to be directed toward – the movements are not intentional. We are not going to understand an action by understanding such non-teleological movements.

By contrast, certain movements might be, in some way, goal oriented, even though we would not think of them as constituting the core description of an action. Consider, for example, a man sitting in front of his laptop who has decided to call a friend on Skype. To make the call, he might 1. slide his thumb over the trackpad to 2. move the cursor until it is over the call button on the screen and then 3. press on the trackpad with the other thumb to click the button. All of these separate movements support or subtend the action of calling making the call and therefore could be considered intentional movements. If you stopped him before he clicked the button on the screen and asked him if he was aware that he was moving his thumbs, he would say yes. If you asked him why he was moving them, he might say he was moving them so he could click on the call button on the screen. Such movements are subordinated to the organizing conscious intention. But if someone walked into the room and asked him what he was doing, he would probably not refer to any of the subordinated movements.

There is another type of movements that serve and subtend intentional action, such as saccadic eye movements. If we were to carry out certain tasks while looking at a monitor, such as wondering if a friend might like the jacket we are looking at, remembering a seldom-used password or looking for an expression in a block of text, my eyes would saccade differently. Such eye movements are automatic and not conscious, yet they serve the intentional acts in question. If asked whether we knew our eyes were jumping this way and that, we would say no.

So what makes a movement an intentional action, then?

Generally speaking, agency depends on an agent's consciousness of acting. We are not agents if we do not know we have intentionally performed a movement. For this reason, we will not understand an action by grasping what is happening in a purely physical, non-conscious sense. Explaining an action in terms of the neural processes that enable the motor control and perception involved will not provide a proper, complete understanding of an action. We would most likely not be satisfied if we asked the Skype caller what he was doing and he answered, "Firing a battery of cortico-motor neurons to fine tune control of my fingers." An explanation of an action at the proper level of description would have to address what we were aware of while we were acting and involve the reasons we might give for doing so. It would have to take intentionality into account.

So, when we act, we must be aware that we are acting. But when we carry out an intentional act, what exactly are we aware of? If we make a decision to do something, it seems clear that the action is intentional. But if we decide to make a call on Skype, we don't explicitly choose to move our thumbs to move the cursor and then press on the trackpad (if we are familiar with laptops and Skype), even though we would certainly answer yes if asked whether we had intended to press the trackpad just then. We can give our reasons retrospectively if necessary. But we do not explicitly deliberate about pressing the trackpad.

So what are we aware of? To put it another way, what is the intentional content of our consciousness as we engage in intentional action?

As the man sits in front of his laptop, he will be thinking about what he is going to say when the person he is calling appears in a window on the laptop screen; he will not be thinking about his eyes jumping from one point on the screen to another or his fingers sliding over the trackpad. Though he is aware in some sense of such movements, it is a pre-reflective awareness that either does not involve awareness or involves it in a vague, peripheral way. If we walked in the room and asked him what he was doing, his answer would most likely be "I'm calling a friend" – that is, it would be in terms of where his attention was directed, and that is at the most appropriate pragmatic level of description.

7.2. Experiential agency vs attributional agency

We might say there are two ways the notion of agency enters into intentional action. First, there is an experiential sense of agency – that is, a first-order level of awareness at which we have the sense that we are acting, even if we are not aware of all the subordinated, subintentional movements involved. Second, there is an attribution of agency that we can make if someone asks us about an action we have made. Clearly, the experiential sense is more basic since we can make an attribution based on memory, but the memory would not be there to begin with if we had not first had the experiential sense of agency for the action.

The first-order experiences of agency are embodied, non-conceptual experiences and are closely related to the temporal structure of consciousness. For example, if we reach to click on our trackpad, there is information in our motor system that specifies something about the present position and immediate history of our hand position, and an anticipation that is built into our movement as our hand shapes itself for clicking. This temporal structure of movement is mirrored in our sense of control over the movement and so in our sense of self-agency.

Higher-order attribution of agency is perceptual or conceptual. For example, if we see and hear the sound that indicates Skype is dialing, even if we don't remember clicking the call button, we deduce that we must have done so inadvertently did so based on the dialing sound and an inference based on the fact that there's no one else around who could have clicked on the button. Such attribution of agency also takes place when an action is spread out over time. For example, we might send a letter by post to a friend

living in another city and encouraging her to call another friend she doesn't yet know who has just moved there. If we were to describe our action as follows: "I got María and Jerry to meet in Madrid," then our sense of agency would have to come from finding out that María actually did call Jerry and get through to him. Otherwise, the action would simply have been "I sent a letter to María encouraging her to get in touch with Jerry," a different action. When we get confirmation that they actually met and can thus take responsibility for the action of getting them to meet, we have a sense of agency. That sense, however, comes from the memory of having written the letter, stamping the envelope and putting it in a mailbox – a series of subordinated actions done at a remove in the past. In this example, we light a long fuse and must wait until the action is eventually triggered. Although the sense of agency can in principle involve such long temporal fuses, as we will see, an embodied, motor sense of agency of the type required for the incorporation of tools into bodily schemas requires much, much shorter gaps.

7.3. Generating the experience of agency

It seems reasonable to assume that higher-order conceptual attributions of agency or ownership are based on this first-order experience of agency. However, even if we posit that the sense of agency is already present in first-order experience, we still have the question regarding how it is generated. On one type of account, it is conscious intentional processes that generate the sense of agency. On another type of account, it is sensorimotor, embodied aspects that generate the sense of agency. Gallagher and Zahavi refer to the form as "top-down" accounts of the sense of agency and the latter as "bottom-up" accounts.

In order to put together a plausible account of the experiential sense of agency, which will need to be preserved during tool use if we are to achieve the type of incorporation we are interested in, we will explore an issue in the philosophy of agency known as deviant causation. For in the attempt to deal with the issue, philosophers have come up with ways of clarifying the nature of agency that will help us flesh out our analytical apparatus.

7.4. Top-down vs bottom-up accounts of the sense of agency

7.4.1. The top-down approach

Central to our commonsense understanding of ourselves as free, morally responsible, autonomous agents is that we interact causally with the world. The world causes us to experience it and we cause things to happen in it. And underlying perception and action, the principal ways we deal with the world, is intentional causation. If you ask me where your laptop is and, after scanning the room for a moment, I point to the Macbook sitting on the table over there, I have caused my finger to point at it.

Some people who wish to eliminate any intellectual fuzziness deriving from talk of minds – and thus avoid the formidable problems bedeviling accounts of just how the mind and the world would interact – might try to explain my pointing in terms of the types of causal relations that hold among events generally, whether or not anything like a mind is involved. For such people, who have been called event-causalists, there are no irreducible causal relations involving anything like a mind or agent that are not an event or a sequence of events. Event-causalists, however, run into difficulties when they try to account for what is referred to in the philosophical literature as "deviant" or "wayward" causal chains.

Examples of deviancy

Consider two classic examples.

> 1. "A climber might want to rid himself of the weight and danger of holding another man on a rope, and he might know that by loosening his hold on the rope he could rid himself of the weight and danger. This belief and want might so unnerve him as to cause him to loosen his hold, and yet it might be the case that he never chose to loosen his hold, nor did he do so intentionally."[127]

> 2. "A man may try to kill someone by shooting at him. Suppose the killer misses his victim by a mile, but the shot stampedes a herd of wild pigs that trample the intended victim to death."[128]

[127] Donald Davidson, *Essays on Actions and Events* (Oxford: Oxford University Press, 2001), p. 73.
[128] Davidson attributes the example to Daniel Bennett. Ibid., p. 72.

Intentional causation in the right way

The reason these examples are so troublesome for event-causalists is that although we might consider the mental events in each case – the climber wanting to rid himself of the weight and danger and the man trying to kill someone – to be the right kind of cause for their respective events in the world – the climber being rid of the weight and danger and the victim being killed – to count as actions, our intuitions in each case are violated. We would be reluctant to say that the intentions were satisfied in the examples – or at least that they were satisfied in the right way.[129]

Agent-causalist or intentional accounts avoid such difficulties by setting constraints on the causal path connecting agential cause and effect so that it develops in the right way.

Logical analysis

Christopher Peacocke's top-down treatment of deviant causality[130] stipulates that in order to avoid deviancy, the causal chains in the above examples must be characterizable by a "differential" explanation. That is, when an aspect of the effect is explained by an aspect of the cause, the explanation should specify a differential function according to which incremental changes in the aspect of the cause – the mental event or intention – result in corresponding changes in the aspect of the effect along each link in the causal chain. If the cause is different, then each link in the causal chain will be correspondingly different. In neither the case of the climber nor in that of the killer would there be any such smooth function relating any relevant aspects of the intention to corresponding aspects of any of the intermediate links in each causal chain.

Searle's Intentionality

Peacocke's differential function is something of a conceptual black box. What is the nature of his differential functions? How are they related to the nature of mental life? John Searle's meticulous "logical" account of intentionality – the power of the mind to be directed towards things, properties and states of affairs – provides detailed answers to

[129] [129] This requirement was first articulated in Alvin Goldman, *A Theory of Human Action* (Englewood Cliffs: Prentice Hall, 1970), p. 62.

[130] In Christopher Peacocke, *Holistic Explanation: Action, Space, Interpretation* (Oxford: Clarendon Press, 1979).

these questions and his analysis of intentionality, and of intentional causality in particular, will provide us with a forceful top-down account of the sense of agency and will point us towards the types of bottom-up accounts that can complete a picture of agency by going beyond his logical analysis and taking up the practical entailments of our embodiment.

Let us begin with Searle's distinction between prior intentions and intentions in action. Intentional acts often entail the performance of subordinate actions, which Searle calls intentions in action. If I decide to leave my house – that is, if I have a prior intention to do so – I might turn off the lights in the foyer and lock the door on the way out. When I stretch out my hand (maintaining my balance, something robots must be engineered to do) to put the key in the lock – as I have done countless times before – my fingers, with fine motor control and guided by my eyes, will steer the key toward the keyhole. Then, after a millimetric adjustment – or none at all – the key slides in and I turn it.

Some of the movements involved here are intentional, such as turning the key. Some of them take place just below the reach of intentionality, such as the maintenance of bodily equilibrium and the minute finger movements. Performing movements entails recruiting a wide variety of action patterns that do not require conscious monitoring, though they contribute to the performance of the action. When, then, does a movement become an intentional action? In other words, where does the analysis of actions bottom out?

Arthur Danto's concept of basic action provides an answer. A basic action is one performed directly – that is, an action "where, in order to do a, there is nothing x such that x causes a and the agent does x."[131] A causal description of my locking the door might encompass my minute finger movements, but those movements are not actions in their own right. If you asked what action I am performing, I might say, "I'm leaving my house." If you said, "Yes, but what are you doing right now?" I would say, "turning the key in the lock" And that is where my description would bottom out. I would not answer, "making minute finger movements to control the trajectory of the key so that it will enter the keyhole."

[131] Arthur Danto, "Basic Actions and Basic Concepts," *The Review of Metaphysics*, 32 no. 3 (March 1979), p. 471.

As Searle points out, actions are basic relative to agents and their skills. So, while for me turning out the light in my foyer is a basic action, for a friend who has never been to my house, it would not be. If I stopped a person I had asked to turn off the light and asked what she was doing, she might answer, "I'm looking for the light switch."

Now, how does causation fit into this analytical framework?

Experiential analysis

On what Searle refers to as his logical analysis of intentionality, all actions are accompanied by an experience of acting and this experience of effort has as its intentional content the fact that it is causing an intentional movement of mine.[132] In other words, an action's intentional content – which specifies what event(s) must happen in order for the action to succeed – necessarily includes the experience of causation. The conditions of satisfaction of an intention executed in the right way are necessarily caused by the experience of action itself.[133] When a person performs a bodily movement, it is not the movement that causes the experience that she is moving it. The experience is part of her moving it. Without this experience, the movement is not an action. It is this self-referential experience of causation that sustains the development of the action in the right way.

There is a self-awareness built into action, which can be seen, according to Searle, in the fact that if I am stopped and asked about an action I am performing – even if I am performing it in a non-deliberate way, as in spontaneous actions like pacing while thinking hard (what Searle would call an intention in action) – I can still say what I am doing. This shows that my movement must be caused by a self-referential intention in action.

In our cases of deviant causation, the causal paths are not regulated in the right way by an intention in action or an experience of causation. Let us examine each of the deviant examples in this light.

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[132] John Searle, *Intentionality: An Essay in the Philosophy of Mind* (Cambridge: Cambridge University Press, 1983), p. 131.

[133] Searle, *Intentionality*, p. 131.

If the man with the prior intention of killing his victim had performed the action in the right way, the prior intention would have caused the victim's death by way of causing an intention in action, which would have in turn caused the death of the victim as its condition of satisfaction. Now, even though prior intentions do not necessarily specify all the intentions in action necessary to satisfy the prior intention's conditions of satisfaction, each intention in action must proceed in the right way. But the death in the deviant example was not the condition of satisfaction of any intention in action. There is no such prior intention in action in the case of the climber, but formally it is similar: the climber has no intention in action of loosening his hold. As Searle points out, "There is no moment at which he could say, 'I am now loosening my hold,' as a way of articulating the content of his intention in action …"[134]

So far we have been considering the deviant cases in the light of their logical failings – in neither case do the deaths satisfy the conditions of satisfaction of an intention in action. But in order for an action to come about in the right way, an experiential component is necessary as well. Recall the case of the neurosurgeon mentioned above who applies an electrode to the motor cortex of the patient in the operating rom, causing her arm to move. When asked about the movement, the patient denies she has moved her arm, claiming it is the surgeon who has done so. Even though the movement might have been the same if the patient had raised her arm intentionally, in this case the intention and the state of affairs representing the conditions of satisfaction of that intention do not stand in the right relationship. Something is missing.

According to Searle, what is missing is, first, a phenomenal component and, second, a logical one:

> "…first there is an obvious phenomenal difference between the case where one moves one's hand and the case where one observes it move independently of one's intentions, the two cases just feel different to the patient; and secondly [...] this phenomenal difference carries with it a logical difference in the sense that the experience of moving one's hand has certain conditions of satisfaction. … for every conscious intentional action there is the experience of performing that action, and that

[134] Searle, *Intentionality*, p. 108.

> experience has an Intentional content. ... Now this experience with its phenomenal and logical properties I am calling the experience of acting."[135]

And the intentional content of that experience, according to Searle, is the fact that it is causing the intentional movement.

Since our analysis bottoms out with basic actions (Searle's intentions in action), dealing with the deviance involved in basic actions should be enough to deal with all cases of deviant causation. Prior intentions must cause their conditions of satisfaction by means of intentions in action – whether they are specified or not – and the conditions of satisfaction of those intentions in action must be caused by the experience of action itself. This means that there must be "a continuous efficacy of Intentional content under its Intentional aspects."

That is how Searle specifies the necessary constraints on the causal path connecting agential cause and effect so that it develops in the right way, thereby tackling the problem of causal deviance. But it is not all of the story.

The enabling Background for Agency – Plannable Regularity

Searle deals with deviant causality not only by stipulating that that there must be a "continuous efficacy of Intentional content under its Intentional aspects" – that is, by setting constraints on the causal path connecting agential cause and effect so that it develops in the right way – but also by stipulating that there must also be "plannable regularities."

Performing an action in the right way involves not only the proper constraints on the causal path connecting agential cause and effect, but a regular, reliable enabling ground as well. Acting presupposes a background of embodied abilities, dispositions and practical know-how that are not specified intentionally and yet constitute the conditions for the possibility of action.

As we have seen, intentions in action do not explicitly specify all the movements required to cause their conditions of satisfaction either. The fine motor control of my fingers required for me to lock my front door is not specified in the intentional content

[135] Searle, *Intentionality*, p. 90.

of the action. Neither does the intention of the friend who has never been to my house specify that her index finger should brace itself as she reaches out to flip a switch. She assumes, pre-intentionally, that the mechanism for turning on the light will not involve tugging a rope, for example.

Searle's Background

Searle calls the abilities and practical know-how (comprising what he calls "how to do things" and "how things are") that we rely on when intentions cause actions in the right way the Background (with a capital B).[136] The Background comprises "local" and "deep" forms. The local Background encompasses social practices such as "opening doors, drinking beer from bottles, and the preintentional stance that we take toward such things as cars, refrigerators, money and cocktail parties."[137] The deep Background includes abilities that all humans share based on their biological makeup, such as "walking, eating, grasping, perceiving, recognizing, and the preintentional stance that takes account of the solidity of things, and the independent existence of objects and other people …"[138]

For Searle, our Background capacities bottom out in the brain. He believes they comprise "… a certain category of physiological causation. Because we do not know how these structures function at a neurophysiological level, we are forced to describe them at a much higher level."[139] Here, we are no longer in the realm of logical or phenomenal conditions of possibility but about pre- or sub- intentional neurophysiological structures that function causally to produce intentional phenomena.

7.4.2. The bottom-up approach

Plannable regularity – the Background intentional body

The sense of agency that has guided our examination of Searle's higher-order intentional account can be approached by further explored by delving into Searle's undifferentiated Background. We can do so by appealing either to 1) Merleau-Ponty's

[136] Other thinkers have made use of a similar idea – Searle explicitly acknowledges Wittgenstein and Pierre Bourdieu, though he would probably be reluctant to recognize the conceptual continuity between the Background and related notions in the work of philosophers like Husserl, Heidegger and Merleau-Ponty, who all have much to say about the conditions for there being experience of the world– but we will stick to Searle's account so as not to muddy the water.

[137] Searle, *Intentionality*, pp. 143–144.

[138] Searle, *Intentionality*, pp. 143–144.

[139] John Searle, *The Construction of Social Reality* (New York: The Free Press, 1995), p. 129.

account of bodily intentionality, or to 2) an account in which the sense of agency originates not in intentional structures, but in neural processes responsible for the motor aspects of action or the brain-based cognitive aspects of thought. The first indicates how plannable regularities are grounded in the intentional body and the second how the efficacy of intentional content is made possible at a neurological level. Let us consider each in turn.

The body's praktognosia

Some of the plannable regularities are comprised in the sensorimotor body's praktognosia as described by Merleau-Ponty, which comprises the physiological, visceral dimension of the body's "I can" – Searle's "deep" Background. Others are rooted in the phenomenological body we described above, whose anatomy can be transformed through a process by which actions become sedimented – whether in Merleau-Ponty's sensorimotor intentionality or Heidegger's "They" – through habit. This would correspond to Searle's "local" Background.

That intentionality relies on what Searle refers to as a deep Background that cannot be incorporated logically into the complex of intentional states that Searle calls the Network is what Merleau-Ponty showed in his discussion of Schneider, the patient he discusses in the *Phenomenology of Perception* who suffers from "psychic blindness."

Schneider is unable to perform abstract movements – that is, movements are not relevant to any actual everyday task – with closed eyes. When asked to point to his nose – to perform an intentional action – he can only do so after having taken hold of it. If the movement is interrupted or if he is only allowed to use a ruler to touch his nose, he cannot carry out the action. Yet he can pull a handkerchief from his pocket and blow his nose. Schneider exhibits a dissociation of the act of pointing (*Zeigen*) from the reaction of grasping (*greifen*).[140] The problem, then, is how to explain the inability arising from this dissociation.

[140] Interestingly, as Martin Dillon points out, although Merleau-Ponty cites Gelb and Goldstein, "it is reasonable to asume that he was familiar with Heidegger's treatment of *zeigen* ... in the well-known section 17 of *Being and Time* devoted to reference and signs," Martin Dillon, *Merleau-Ponty's Ontology,* 2nd edition (Bloomington: Indiana University Press, 1988), p. 132.

One approach, the empiricism Merleau-Ponty takes to task in the *Phenomenology of Perception*, tries to do so by appealing to physiological causation, seeking to specify some sort of physical malfunction. According to Merleau-Ponty, empiricism fails because there is a difference in significance which distinguishes the movements Schneider can make from those he cannot and that significance cannot be captured in a purely physiological explanation. Similarly, intellectualism – the other approach Merleau-Ponty takes to task – attempts to account for the dissociation by appealing to the presence or absence of intentionality. Since the intentional significance presupposed by the abstract movement is missing, Schneider can only respond to conditioned reflexes in a practical situation. However, the intellectualist explanation founders as well, since when Schneider performs the practical, conditioned action of blowing his nose, the movements involved are held together by a purposiveness that would be impossible without some degree of intentionality. Merleau-Ponty's account, then, is a way to explain both the physiological data of empiricism and the intentional phenomena of intellectualism. The way it does so is by providing an account of embodied intentionality that can accommodate both.

Merleau-Ponty's account involves the understanding that the body is located in a lived space, which addresses the problem afflicting both empiricism and intellectualism, which both regard the body as something located in an abstract space whose basic structure is untethered from it. As we have seen, the structure of this lived space is a practical, embodied space oriented around the body. The difference between grasping and pointing, then, is that the former takes place in a practical, lived space that is primordial, and the latter in an abstract, theoretical space that is derivative. And it is Merleau-Ponty's account of the sedimentation of habit that shows how abstract spaces are made possible. Building on the body's primordial lived space, intentionality can explore abstract spaces, performing actions in them that, if they become habitual, become absorbed in the body's lived space through the process of sedimentation described above.

This body-based account shows how we are able to perform the range of actions involved in our daily lives. We rely on a plannably regular Background that includes the well-functioning deep body, which depends on an exquisitely fine-tuned physiological equilibrium, the physical and phenomenological anatomy of the surface body that

subtend intentionality (and the reliably consistent natural and social worlds we live in as well).

Feedforward-feedback motor control loops

By contrast with the counterfactual logic that constrains the causal path in Peacocke's treatment of deviant causation, concrete neural mechanisms ensure that intentional causation happens in the right way in neurophysiological accounts. Such accounts ensure rightness by positing motor control mechanisms that keep our actions on track as they develop along changing contexts. The actions are thereby sustained from their initial intentions to their completion and a phenomenal experience of agency is generated in the process.

Joelle Proust describes the process as follows:

> "Perception first locates where or on which object to apply the action program. Working memory then maintains this rule as a context for further steps in the action. Finally, the motor performance relies on the variables delivered by the working memory to insure proper internal feedback, and on the deictics delivered by current perception to get the correct external feedback. Both sources will be used to terminate the action."[141]

At each step of an action, the brain compares feedforward signals (commands and predicted perceptual inputs) with feedback signals (actual perceptual consequences of motor commands) to make sure that the action is on course. In Peacocke's analysis, the differential function specifies what the right causal path should be. Here, the dynamic feedforward/feedback monitoring loop ensures that the causal path develops in the right way.

The traditional neural theory for explaining bodily processes involved in motor control posits a mechanism known as the "comparator" (also referred to as the "emulator" by Clark[142] and philosopher R. Grush[143]). When a command is given to

[141] Joelle Proust, "Indexes for Action," *Revue Internationale de Philosophie*, 53, no. 209 (3), NEUROSCIENCES (September 1999), pp. 338–339.
[142] Andy Clark, "Moving Minds: Situating Content in the Service of Real-Time Success," *Philosophical Perspectives*, 9 (1995): 89–104.
[143] Rick Grush, "The Architecture of Representation," *Philosophical Psychology* 10, no. 1 (1997): 5–25.

initiate a movement, one copy of the command is sent "forward" to a group of muscles and another – an efferent copy – to the comparator. The neural system, which has learned about the typical responses which are likely to follow, compares the efferent copy to afferent proprioceptive or perceptual feedback about the movement which is actually executed, adjusting it as necessary.[144] This mechanism, which creates a sort of neural virtual reality, serves to overcome any problems that might arise due to the time it takes for feedback to return from the bodily periphery to the brain and thus enables smooth motor activity. The control mechanism, on this account, thus contributes to the generation of action and is therefore probably responsible for the experiential sense of agency.

One can argue that such a motor control model also subtends perception. So, for example, Alva Noë argues that to perceive an object is to call on one's sensorimotor skills and invoking a sensory feedback and feed-forward expectation mechanism similar to the motor control mechanism:

> "Perceivers continuously move about and modify their relation to the environment. They do this in order to get better vantage points and to bring themselves into better contact with the relevant detail that is of interest. In this way they exhibit not merely skillful mastery of the ways sensory stimulation varies as they move, but also expectations about the effect of movement on their access to the environment. [...] Perceivers have an implicit, practical understanding of the way movements produce changes in sensory stimulation. They also have an implicit practical understanding that they are coupled to the world in such a way that movements produce sensory change. It is this implicit practical understanding that forms the basis of their readiness to move about to find out how things are."[145]

The Forward-comparator

This feedback-expectation loop may be worked out in terms of the forward comparator mechanism. The visual system can tell the difference between movements on the retina caused by movements in the world and movements on the retina caused by

[144] See, for example, Marc Jeannerod, "The Representing Brain: Neural Correlates of Motor Intention and Imagery," *Behavioral and Brain Sciences* 2, no. 4 (1994): 255–280; M. Kawato, et al., "A Hierarchical Neural Network Model for the Control and Learning of Voluntary Movement," *Biological Cybernetics* 57 (1987): 169–185.
[145] Alva Noë, *Perception in Action* (Cambridge: The MIT Press, 2004), p. 66.

movements of the perceiver's own body. "In order to achieve this," according to C.D. Frith, "a 'corollary discharge' is sent to some monitor system at the same time as a message is sent to the eye muscles. On the basis of this message, movement of the image on the retina is expected. Compensation occurs and the image is perceived as stationary. [...] This mechanism depends upon a comparison between intentions to move and actual movements." Goal-directed movement –action – and perception are inseparably intertwined.[146]

Shaun Gallagher applies Frith's model to cognition as well, by clarifying how embodied action and cognition share temporal structures. To do so, he appeals to the phenomenological retentional-protentional analysis of temporal structure developed by Edmund Husserl[147] in order to explain how consciousness is unified across time. Thus, in the present phase of consciousness – the primal impression – there is a retention (or what cognitive science would refer to as working memory) of the previous phase (in its longitudinal and transverse aspects) of consciousness as well as a protention (or what the motor control model would refer to as the efferent signals sent to the comparator) that anticipates what is about to occur.

As we have seen in the cases of motility, perception and cognition, the efferent-afferent motor control model supports the idea that the first-order, pre-reflective sense of agency belongs to, or is at least based on the realm of motor control and bodily movement.

But how do the realms of neurophysiological motor control and that of intentionality become associated?

We have seen that in Merleau-Ponty's account of bodily intentionality actions, by becoming habitual, become absorbed in the body's lived space through the process of sedimentation described in section 6.4.

According to the account of conceptual metaphor described in section 6.5., intentional life sinks into the neurological Background in the normal development of

[146] Christopher D. Frith, *The Cognitive Neuropsychology of Schizophrenia* (Hove: Lawrence Erlbaum Associates Ltd., 1992), p. 74.
[147] Edmund Husserl, *On the Phenomenology of the Consciousness of Internal Time (1893–1917)*, trans. John Barnett Brough (Dordrecht: Kluwer Academic Publishers, 1991).

human agency when the "semantic" dimension of intentions becomes correlated with the pragmatic dimension of movements, the neural configurations corresponding to each dimension becoming co-activated by a learning process.[148] Once such correlations are established, an agent does not have to specify the causal mechanisms linking intentions and movements as part of the intentional content for an action to satisfy the action's conditions of satisfaction. The agent's intention simply recruits the necessary action patterns, monitoring not the mechanisms themselves, but the action they contribute to. Intentional monitoring involves an awareness that is not wasted on events that can be monitored without it.

Similarly, Searle argues that physical skills can recede from the sphere of intentionality into the Background by a process of learning. A person who is learning to ski, for example, might be given instructions like "lean forward" or "keep the weight on the downhill ski." When he tries to ski by way of following the instructions, we have intentional causation. With practice, the skier improves and then no longer skis by way of following the instructions; he just skis. That is, turning left is not a previous intention he achieves by means of an intention in action whose condition of satisfaction involve keeping his weight on his right ski. The basic action is turning left. So, what is basic for an experienced skier might not be basic for a beginner. According to Searle, what happens is that with practice, physical capacities, which bottom out as neural pathways, take over and the instructions sink into the Background. In other words, the "semantic" dimension of instructions becomes correlated with the pragmatic dimension of movements, the neural configurations corresponding to each dimension becoming co-activated by learning.

7.5. Agency and ownership

We have outlined an account of intentional causation which ensures that intentions cause their conditions of satisfaction in the right way by positing 1) a continuous efficacy

[148] Such an account is laid out, for example, in Christopher Johnson's theory of conflation in the course of learning ("Metaphor vs. Conflation in the Acquisition of Polysemy: The Case of SEE," in M. K. Hiraga, et al., eds., *Cultural, Typological and Psychological Issues in Cognitive Linguistics: Current Issues in Linguistic Theory, 152* (Amsterdam: John Benjamins, 1995) and Srini Narayan's neural theory of metaphor in "Embodiment in Language Understanding: Sensory-Motor representations for Metaphoric Reasoning about Event Descriptions" (PhD diss., Department of Computer Science, University of California, Berkeley, 1997).

of Intentional content under its intentional aspects and 2) the plannable regularities comprised by Searle's Background, Merleau-Ponty's bodily praktognosia and the mechanisms underlying neurological theory's feedforward-feedback monitoring loops. We have also indicated how the intentional and neurophysiological dimensions can be integrated both developmentally and as a result of habitual learning.

7.5.1. Statistical consistency

But a further distinction is necessary if we are to capture the type of plannable regularity that is required not only for intentional causation to develop in the right way but also for skills to be able to recede into the Background through practice. As Searle points out, the plannable regularity required for intentional causation is not the same as statistical consistency. "When I try to shoot free throws from the free-throw line," he writes, "I am only occasionally successful. But the point is that, when I do succeed, *things go according to plan*."[149] That is, when Searle is successful – even if it is only 5 % of the time, he causes the ball to go in the hoop in the right way.

In order for an action to recede into the Background through practice, though, what Searle refers to as statistical consistency is required in addition to plannable regularity. Unless a violinist can consistently get her fingers to do what is required to play her instrument, she will not be able to get through a piece in a way anybody would want to listen to. But what does the conceptual black box of Searle's statistical consistency entail?

To tackle this question, let us turn to a distinction Shaun Gallagher posits between the sense of agency and the sense of ownership for a movement.[150] This distinction will have a direct bearing on the incorporation of tools and will enable us to clarify our account of what is required for tools to become conduits for intentional causation.

To clarify the distinction, Gallagher points to the logic of involuntary movement, in which we have a sense of ownership for a movement without having a sense of agency for it. For example, if a patient's arm moves when a neurosurgeon applies an electrode to her motor cortex, it will be clear to her that it was her body that moved and she will thus have

[149] Searle, *Intentionality*, p. 138.

[150] Shaun Gallagher, "Self-Reference and Schizophrenia: A Cognitive Model of Immunity to Error through Misidentification," in ed. Dan Zahavi, *Exploring the Self* (Amsterdam: John Benjamins, 2000), p. 204.

a sense of ownership for the movement. However, since she was not the author of the movement, she will not have a sense of agency for it.

To put it another way, although she receives afferent (i.e., conducted inward) sensory feedback in the form of visual, proprioceptive and kinesthetic information telling her that it is her arm that is moving, she receives no efferent (i.e., conducted outward) signals from motor commands issued to generate the movement. So, it follows that in voluntary movement the sense of ownership is generated by sensory feedback and the sense of agency by efferent signals that send commands to the motor system.[151] Similarly, in the case of the Husserlian structure of inner time consciousness, the protentional function, which is a part of the intentional structure of consciousness and thus built into cognition itself, is the source for the sense of agency for thought.[152] Retention, by contrast, is in part responsible for a sense of ownership for thought.

7.5.2. Disconnecting agency and ownership

In normal coordinated embodied action, both senses are normally integrated. In certain cases, however, the two aspects of agency can be separated. Some such cases are pathological.

In anarchic hand syndrome, for example, patients find themselves engaged in apparently goal-directed movements which are nonetheless involuntary. A famous fictional example is the main character played by Peter Sellers in Stanley Kubrick's *Dr. Strangelove*, whose uncontrollable hand performs, against his will, the Nazi salute. While he takes ownership of the hand, he has no control over the gesture and therefore has no sense of agency for it.

Similarly, schizophrenics who suffer from delusions of influence seem unable to predict the results of their own movements, thus attributing them to others.[153] A schizophrenic who suffers from such delusions will claim that someone else is causing his

[151] See Shaun Gallagher and Dan Zahavi, *The Phenomenological Mind* (London: Routledge, 2008)l, p. 163.

[152] Shaun Gallagher, *How the Body Shapes the Mind* (Oxford: Oxford University Press, 2005), p. 193.

[153] Christopher Frith and D. John Done, "Towards a Neuropsychology of Schizophrenia," *British Journal of Psychiatry*, 153 (1988): 437–443.

body to move, or complain that someone is inserting thoughts into his mind. In such cases, the sense of ownership is maintained despite the lack of a sense of agency.

In both these types of pathological cases, there is no intentional causality. Though a movement has been caused and there is a sense of ownership for that movement, they are not joined up with any intentional content.

7.5.3. Intentional latency

However, the embodied sense of agency might only be interrupted – though not completely lost – if the neural mechanisms supporting our efferent motor control were damaged and our ability to perform, say, a smooth swinging motion with a hammer were thereby impaired. Once the swinging motion was initiated, the signals correcting the course of the swing would not reach the necessary muscles in time, and we would miss the nail. The normal feedforward-feedback loop that guarantees smooth interactions with the world would be thrown out of kilter, resulting in jerky movements.[154]

There also might be an intentional "latency," to use a computing term, that reduces the sense of agency when we are not yet proficient in a skill we are learning. Before I have assimilated a dance figure, for example, allowing me to perform it as a basic action, I will not have the sense of agency that comes when I am gliding across a dance floor with my partner, my limbs moving harmony thanks to an ability to coordinate my movements that has been absorbed into my bodily background.

The statistical consistency required for skills to be able to recede into the Background through practice entails the joining up of the senses of ownership and agency in the right way – that is, with low intentional latency.

[154] See W.T. Thach, et al., "The Cerebellum and the Adaptive Coordination of Movement," *Annual Review of Neuroscience*, 15 (1992): 403–442.

8. MEDIATED AGENCY

Sometimes, however, the senses of ownership and agency are not joined on the basis of original embodied intentional causality, but thanks to some form of mediation. Such mediation can be relatively simple, like that involved in the use of a hammer, or quite intricate – as intricate as that involved in a Rube Goldberg machine.

In fact, says Searle,

> "... it doesn't matter how weird the physical apparatus might be. Even if unknown to me my arm is rigged up to a whole lot of electrical wires that go through Moscow and return via San Diego and when I try to raise my arm it activates this whole apparatus so that my arm goes up, all the same I raise my arm. And indeed for some complex action types we even allow that one can perform an action by getting others to perform it. We say, for example, 'Louis XIV built Versailles,' even though the actual construction was not done by him."[155]

Whenever an action is mediated, plannable regularity makes it possible to preserve and extend intentional causation, and low intentional latency makes it possible for the skills enabling the action to recede into the background.

8.1. Conditions of possibility for closing the experiential gap

8.1.1. Plannable regularities: mechanical mediation

In cases of intentional mediation, the intentional content is transferred to a medium that preserves intentional causality. Eventually, having been conducted through a causal medium that is not of the usual embodied variety, the conditions of satisfaction for the intention are fulfilled. The tool use that has been such a prominent part of the heritage of the human race dating back to its evolutionary ancestors represents this type of mediation.

To take a rather modern example from the history of tool use among homo sapiens, hammering a nail into a wall a physical intention by transferring it, thanks to the

[155] Searle, *Intentionality*, p. 110.

plannable regularity represented by the solidity of the wood and the hardness of the metal head, mechanically into the hammer, causing the fulfillment of the conditions of satisfaction of the action – the nail is embedded in the wall. In the case of mechanical tool use, intentional latency above a certain threshold simply pushes the causality involved beyond the reach of a sense of agency.

8.1.2. Plannable regularities: informational mediation

The plannable regularity involved in the mediation need not be in terms of the physical and mechanical properties of the body and the world, however. Intentional content can also be preserved in the medium of language. Ever since we have had the use of language, we have been ordering people to do our bidding outside the immediate sensorimotor environment (and this ability probably relied on whatever faculties made it possible for use to free ourselves from the episodic world of our closest evolutionary relatives). Having set the protentional causal ball rolling, once we then get news of our intentional action having been carried out, a sense of agency becomes possible, though not one of the embodied variety.

We saw in section 7.2. how the intention of getting two people to meet in a foreign city was mediated by a posted letter. In this case, the plannable regularity represented by the ink on the paper the letter was written on and the postal service happened to play a role in causally mediating the intention. However, an email sent over the Internet would have served just as well. The more important plannable regularity was the ability of written words to preserve and convey meaning, enabling them to serve as a causal medium for an intention that did not specify a physical movement but a social state of affairs. There was a sense of ownership that came from the protentional anticipation involved in having initiated the causal sequence, and a sense of agency that came from the knowledge that the two people actually met – the retentional feedback. Here, however, the sense of agency is not a first-order, embodied one, but an inferred, second-order, attributional one.

Eventually, technology evolved to a point at which the retentional feedback necessary to close the intentional agential loop, providing a sense – if only attributional at first – of agency, began to be communicated by technological innovations like the electrical

telegraph, the telephone, broadcast media like radio and television, and then the Internet.

It was a matter of time before the latency involved in sending a protentional intention and receiving sensorimotor retentional feedback would be reduced, thanks to the forward march of technology, to the levels involved in embodied action and thus making possible action at a distance with a first-order sense of agency.

In order for this to happen, however, the tools used to mediate action had to become embodied – that is, they had to adjust themselves on the one hand to fit the body and its bodily "I can" – and they had to articulate more and more of the fine grain of the world. In order to do so, tools had to perform more and more complicated mappings between moving mechanical parts, electromagnetic fields, frequencies of sound and light. Slowly but surely technology did so, enabling such mappings automatically by means of machines. And, as we noted in our introduction, since the computer is flexible enough to take on the full conceptual range of possible mappings, we shall consider it our Turing technological tool.

8.2. The expanding the sense agency

Experiments involving experimental apparatuses that allow the experimenter to delay the perceptual feedback identifying an action as self-generated have shown that time delays of between 150 and 300 milliseconds[156] and more in the embodied feedforward-feedback loop are enough to disrupt the feeling of smooth, continuous control associated with a sense of motor control.

In certain real-world tele-operator systems, such as those involving the handling of hazardous materials, agency-disrupting latency can have serious consequences. This has led to the development of strategies for overcoming such latency issues. One suggestive strategy described by Andy Clark in *Natural Born Cyborgs* involves a control system for telerobotic servicing in space.

[156] See, for example, N. Franck, et al., "Defective Recognition of One's Own Actions in Patients with Schizophrenia," *American Journal of Psychiatry*, 158 (2001): 454–9; Gallagher, *How the Body Shapes the Mind*, pp. 198–199 and Clark, *Natural-Born Cyborgs*, p. 107.

In order to overcome the jerky movements resulting from feedforward-feedback latency, Kim and Bejczy, developed a strategy similar to that used by the brain to ensure smooth motor activity. The strategy involved a "predictive/preview display technique"[157] enabling the high-fidelity calibration of a 3-D graphical image of a robot arm and object models at the operator end with 2-D camera images of the robot arm and objects in the actual remote work site in space. What the operator saw as she moved the robot arm was not his actual movements in space, but predictions based on her actions superimposed on the remote footage.

Kim and Bejczy's strategy is analogous to the comparator mechanism discussed above by which the brain overcomes the latency it takes for sensory feedback to return from the bodily periphery to the brain. Clark points out that it is as if the operator were replacing real presence with mock-ups of reality – in a way that we do naturally, however, in producing everyday motor actions.

When we use tools that are well fitted to our natural capacities, we piggy-back on the body's motor capabilities, making use of the "virtualizing" mechanism that makes it possible to act in the world in a smooth manner.

If we take the high-fidelity information transfer involved in Kim and Bejczy's telerobotic system, used in other robotic and high-tech interfaces, and combine it with the high-bandwidth, high-fidelity, real-time (low-latency) information transfer made possible by the Internet, we can get a sense of the potential for connecting protentional motor control with remote places through retentional sensory feedback.

This potential is already being realized, in the brain-machine interface of Miguel Nicolelis connecting the volitional areas of a monkey's cerebral cortex in his lab at Duke University with a robot in Kyoto, Japan,[158] or in the remote cholecystectomy performed

[157] W. S. Kim and A. K. Bejczy, "Demonstration of a High-Fidelity Predictive/Preview Display Technique for Telerobotic Servicing in Space," *IEEE Transactions on Robotics and Automation*, 9, no. 5 (October 1993): 698–702.

[158] Larry Greenemeier, "Monkey Think, Robot Do," *Scientific American*, January 15, 2008, accessed 22 March 2018, https://www.scientificamerican.com/article/monkey-think-robot-do/.

across the Atlantic Ocean by a surgeon operating in New York City on a patient in Strasbourg, France.[159]

Perhaps the neurological comparator involved in motor control, along with the perceptual modeling ability some have argued[160] higher mammals use in their dealings with the world, are the basis of the ability to form and manipulate the mental models of the world that enabled humans to break free from the episodic culture of the higher apes and eventually develop language. It seems plausible that the ability of humans to break free from the episodic world would have taken advantage of the brain's sensorimotor systems and structures developed from them. We saw above how perceptual and motor systems, with their neural underpinnings, form the basis for the ever more wide-reaching experiential worlds when they are mapped onto domains of cognitive experience through the mechanism of conceptual metaphor described by Johnson and Lakoff.

Of course, when those experiential spaces become so intricately articulated as to include more and more realistic representations of the real world which are keyed to well-fitting tools enabling low-latency feedforward-feedback intentional loops and therefore a sense of first-order experiential agency, what we get is virtual reality.

8.3. New horizons of disclosedness

Computers with sophisticated high-bandwidth interfaces and real-time rendering capabilities make it possible for us to interact with virtual worlds through practically latency-free feed-forward-feedback loops and thus construct a robust experiential sense of agency.

It will be particularly helpful to stop and consider virtuality in detail because the immersiveness of the devices that have transformed our everyday life over the past few decades highlights how technological tool use participates in all of the structures of experience we have been discussing and will therefore allow us to review those structures in the context of the technological tool par excellence – the computer – that drives such devices. It is here that our analyses will begin to pay interpretational dividends.

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[159] See "IST's Media Collection," Interface Surgical Technologies, LLC, accessed 22 March 2018. http://www.intersurgtech.com/media.html.

[160] Such as Merlin Donald, based on the work of Philip Johnson-Laird, in Donald, *Origins of the Modern Mind*, pp. 230–231.

8.3.1. Virtual reality devices

Virtual reality devices – whether head-mounted stereoscopic, stereo sound and head motion tracking devices like the Oculus Rift or the monitor-mouse-keyboard setup personal computer users deploy every day – that provide a frame of reference rendered from the perspective of the user disclose an articulated possibility space in which Dasein can comport itself towards entities understandingly, with circumspection, within the care structure.

Projective understanding, discourse

If the virtual reality experience is to be immersive, then the different aspects of the virtual experience will have to rely to some extent on the fundamental understanding with which Dasein projects itself upon its possibilities. That is to say, it will have to rely on some dimension of understanding we bring to the device, whether it be the ability to coordinate one's finger, hand and arm movements, or parse perceptual data – whether visual, auditory or haptic – into meaningful units. A blind person will not be able to disclose the visual world made possible by a virtual reality device. Other forms of understanding – cognitive, for example – might be called on in differing degrees in different virtual scenarios.

That understanding goes hand in hand with the articulation of the field(s) of intelligibility that constitute the virtual reality in question. A thorough knowledge of how the field is articulated as a function of the dimension of understanding appealed to goes into the programming of the virtual space. And unless the space is one of augmented reality, the programming determines the space of possibility. Often, since the spaces are relatively low-resolution simulations of spaces we are already familiar with in the real world, which can interfere in differing degrees with the immersive effect.

Zero point

Just as the body plays a fundamental role in desevering regions in which Dasein orients the practical space in which it pursues its concrete concerns, here too the body as represented in the virtual reality plays an analogous role as the zero point from which the virtual space is organized. Virtual worlds will be anchored in a simulated user presence – a virtual zero point – that is indexed to the body by means of the interface. Co-given –

not as another item represented in the space, but as the practical sensorimotor "I can" – with any of the profiles of an item that are constantly re-rendered in the virtual space (projected onto the space of possibility by the hardware based on my efferent motor signals) is the zero point in relation to which all items are oriented.

The Intentional Arc

To the extent that we undertake actions in the virtual world, they will be subsumable under Dasein's care structure – that is, entities will be desevered, brought close, and thereby become encounterable within a network of concerns (which may range from moving about aimlessly to carrying out complex missions in coordination with teams of other people) and solicitude (of course the others involved might be other instances of Dasein or simulated others – bots).

Within desevered regions entities will be revealed as ready-to-hand if the user has developed a practical skill in dealing with them. The richer the network of concerns that animates the user's actions, the richer the richer the realm of the ready-to-hand and the deeper the device will disappear into the body's focal background.

If the virtual reality is entirely unfamiliar and thus accessible to a meagre circle of concerns, it will be an alien world populated by present-at-hand entities.[161]

The richness of the concern network will also affect the character of the thrownness experienced in the virtual reality. I might be thrown into a world bereft of concerns and a past, attuning myself to the experience by whatever understanding and knowledge (my understanding of how a mouse works and the knowledge I've gleaned from an instruction manual) I might bring to the experience. Alternatively, when I log onto a massively multiplayer online game (MMOG), I may be thrown into a world with a personal history

[161] This, for example, is what all of the games one might play today on any of the popular home video game consoles are like for this author. Since game controllers have gotten so complicated and I have never developed the ability to correlate the on-screen visual adumbrations with the efferent tactile signals my inexpert hands are able to produce, my movements are so like those of an infant that after a few moments of ineffectual stumbling around, I inevitably give up. In all of the games I have tried to play, readiness-to-hand remains a theoretical possibility I have never laid down the habits to make a reality. Note that in my case, not only are entities bereft of readiness-to-hand, but I am lacking the normal self-understanding I would need to have to carry out the roles I might have in the particular game – whether that be driver, pilot or explorer.

of participation along with dozens of others in longstanding campaigns in the process of which I have incorporated a wide variety of skills.

8.3.2. The Personal Computer

But virtual reality devices, though particularly compelling, are not the only gateways to virtual experiences. Personal computers also enable virtual experiences. According to Sherry Turkle, for example, "... it would not be an exaggeration to say that, to date the Macintosh style of simulated desktop has been the most widely disseminated cultural introduction to virtual reality."[162] And though our personal computers might not be as immersive, their deep integration into our everyday lives and the significant changes they have brought about in the numbers and types of interactions possible within the complex system that is today's networked digital world make them particularly significant for our purposes.

The low agential latency that is essential for a smooth virtual reality experience is not quite as important in the case of everyday computer use, but can interrupt the sense of agency here just as well. For example, if my laptop slows down, perhaps due to an overworked CPU, and the cursor stops responding smoothly to my movement of my fingers over the trackpad, the feeling of absorption in my task is interrupted and the computer, until recently a transparent medium, suddenly jumps to the fore, interfering with my task and becoming a source of alienation.

Having said this, the type of real-time, low latency required for complex bodily movements or virtual reality setups is not required for the sense of agency we experience ordinarily as we use our personal computers in our everyday lives. Perhaps the plannable regularities and statistical consistencies that allow networked computer transactions to run smoothly are more important than the continuous efficacy of intentional content when it come to the sphere of activity enabled by personal computers and the Internet.

Disclosedness

The "there" which constitutes the clearing in which entities can be encountered is the computer's operating system, which articulates its resources into recognizable patterns of

[162] Sherry Turkle, *Life on the Screen: Identity in the Age of the Internet* (New York: Simon & Schuster Paperbacks, 1995), p. 276.

meaning, enabling Dasein to identify and distinguish within the clearing. Ubuntu, Microsoft Windows or macOS (along with mobile operating systems such as Android and iOS) represent different discourses that articulate the possibilities of being for the user in each case.

Computer-using Dasein projects itself understandingly on the experiential possibilities laid down by the operating system, relying on certain dimensions of the fundamental understanding with which it projects itself upon its possibilities more generally. There is a sensorimotor understanding that is recruited when we click on a mouse or press a trackpad and parse the visual data on the monitor or the auditory data coming from the speakers or headphones, correlating the feedforward-feedback signals into meaningful patterns within the framework of computer-mediated actions. Many forms of cognitive understanding are also called on, encompassing the skills necessary for using the operating system and any other programs running on the operating system, using language, as well as making commercial transactions, navigating the legal system and interacting with other people, for example.

Zero point

In the most common type of computer user interfaces – graphical user interfaces (GUIs), with their keyboards and mice, and touchscreens – the cursor indicates the present zero point for user interaction on a display that is indexed to keyboard or mouse signals and thereby to the body.

The Intentional Arc

To the extent that we undertake computer-mediated actions, they will participate in Dasein's care structure – that is, entities will be desevered, brought close, and thereby become encounterable as ready-to-hand within a network of concerns (which may range from application-specific concerns, like italicizing a sentence in Microsoft Word, to concerns projected into the computer space from the "real" world, like the need to coordinate a picnic motivating an email) and solicitude (the presence of others can be mediated in a variety of ways, as we shall see).

Deseverable regions will correspond to areas enabling general functions like windows depicting files that can be moved, copied, erased, etc. or the environments of particular applications, like an Internet browser or a word processor. Within such regions, entities will be revealed as ready-to-hand to the extent that the user has developed practical skills in dealing with the entities in them. Here, again, as with immersive virtual reality devices, the richer the network of concerns that animates the user's actions, the richer the richer the realm of the ready-to-hand and the deeper the computer will disappear into the body's focal background.

In the case of computer use, however, an application not being used would recede into a background disappearance mode. Note also the analogy here to the depth disappearance that characterizes the systemic functions that take place in the visceral body, underneath the intentional arc. Just as the surface body and its organs of perception comprise tissues and physiological functions that lie outside the scope of experience, the computer's operating system also comprises hardware components like the motherboard's integrated circuitry, as well as commands and functions in low-level programming languages that map closely to the instruction set dealt with directly by a computers central processing unit (CPU).

If I find myself on the desktop of an entirely unfamiliary operating system – say, a distribution of Linux with a small user base – it will be characterized by a degree of uncanniness. Of course wandering the windows and menus of the strange operating system will not quite be like roaming a completely alien world, as today's graphic user interfaces were first developed to counter the steep learning curve of command-line interfaces (such as MS-DOS) and are designed to be as intuitive as possible.

But if it is my own computer, which I have been using day in, day out for years and the latest iteration of an operating system I have grown into (or has grown into me) for twenty years, there will be a whole system of abilities I have learned that have sedimented into my extended phenomenological body's "I can" and a complex network of nested concerns and interrelated people weaving in and out of the computer clearing to make up the whole of the world comprised by the ontological structure of care.

Some of the sedimented abilities will be grounded in the body. Even though many abilities, such as the skill set of a Photoshop expert, can only be actualized with the causal mediation of the computer and the program and there is an assortment of settings and preferences the skill set relies on tacitly, the abilities sediment over time in the biological body, not in the computer or the program.

However, there are instances in which behavior may be seen as sedimenting in the computer itself or even on the Internet, thereafter becoming semi-automatic.

For many people today, their web browser is the focally disappearing enabler of activities ranging from doing research, working, watching films and communicating with friends to buying and shopping. There is even a computer – the Chromebook – whose operating system uses the Chrome web browser as its user interface.

When users log onto the Internet, their browsers report data about themselves, such as the browser's name and any plugins installed, the time zone and geographical location it is being used in, its default user language, and information about the system it is running on, including the CPU, display resolution and battery level.

In addition, bits of data called HTTP cookies are sent from websites visited and stored on the user's computer by the browser. They serve a variety of functions, like remembering stateful information (such as the contents of a shopping cart), recording the user's browsing activity (keeping records of click behavior, logins and pages visited) and information entered into form fields, such as names, addresses, passwords and payment card numbers.

Cookies can tailor a user's browsing experience by storing preferences and information keyed to the user's digital zero point and thereby filtering out information (the option to download an .exe file if a cookie identifies the user as using a Mac) and populating the space of possibility with what is believed (by whom is a good question) will be in line with the user's browsing activity in the future (displaying search results in the user's operating system language, sorting them according to the user's location and based on browsing history).

All of this happens for most people at an experiential depth level – underneath the scope of the intentional arc – though in principle the ability of a browser to report data and of sites to drop cookies into a user's system can be curtailed to different degrees. And yet it plays a constituting role in the experience of using the Internet.

8.3.3. The mechanism underpinning virtuality: conceptual metaphor

In the previous section, we noted the importance for both action at a distance and virtual reality systems of the ability to map intentional contents from one medium into another. We saw in the section on conceptual metaphor, how the ability that makes this sort of mapping possible grows out of a process early in childhood in which closely related sensorimotor experiences on one hand and cognitive experiences on the other are co-activated and conflated, resulting in permanent neural connections across the networks in the brain defining the different domains of experience. Those connections the form the basis for new mappings: when the domains are co-activated under new conditions, new connections can be created, leading to new inferences.

Virtual reality systems take advantage of our ability to form complex metaphors by co-activating different but associated domains of experience.

Conceptual metaphor – such as its use in virtual reality devices or computers – might be put to use purposefully in different ways.

8.3.4. Spaces of possibility

Low cost exploration

One way is suggested by the virtualization used by the forward comparator mechanism to facilitate motor control. As we saw above, from an evolutionary perspective, an organism with the ability to simulate movements in a sort of virtual trial and error would have had a selective advantage. Given the right sort of plasticity, an organism would be able to learn adaptive behaviors and avoid danger, thus enlarging its survival skill set. Virtual reality systems provide learning environments in which skills can be developed without the real-world consequences of failure.

So, virtual reality simulators can enable

- pilots to train emergency cockpit procedures or flight control operations
- parachute jumpers to pratice free fall maneuvering, avoiding collisions and landing safely
- astronauts to rehearse working in zero-gravity environments
- surgeons to hone their skills without any risk to patients
- young people who have recently gotten driver's licences and are more prone to getting into accidents to experience what a car accident is like.

Transfering inference patterns

They might allow us to project the logic of a source domain into a target domain, where we can carry out tasks at low cost to gain insight into a problem.

For example, in silico experimentation – an alternative to experiments done on living organisms – involving computer simulation have been applied in the investigation of medical, biological, genetic and evolutionary phenomena. For example, in 2007 researchers created an in silico model of tuberculosis, allowing them to simulate and observe phenomena of interest to the researchers and allowing them to observe on a scale of minutes rather than months.[163]

Similarly, engineers can use virtual reality scenarios add dimensions to virtual prototyping, product construction, assembly, repairs, and use scenarios.

IKEA and other retailers have developed virtual systems that enable customers to see their products in virtual situ, to give them a c (Riva, et al. 2007)oncrete sense of how a product might fit into their home.

Metaphors like that of the desktop used in graphical user interfaces allow us to take advantage of our understanding of an office environment – in which files and books can be stored in cabinets and on bookshelves or open on the desktop – to deal with the experience of using a computer – in which "files" can be stored away in ROM or "open" in RAM.

[163] Shenghua Li et al, "Temporal Controls of the Asymmetric Cell Division Cycle in Caulobacter Crescentus," *PLoS Computational Biology*, 5 (8): https://doi.org/10.1371/journal.pcbi.1000463.

Extending the bodily "I can"

Sometimes the issue is not so much avoiding the real-world consequences of failure, but transferring skills embodied in the source domain into the target domain. Virtual reality devices can lead to the formation of new neural connections on the developmental model of the conceptual metaphor described by Lakoff and Johnson when skills are developed and practiced in a virtual target domain. In such cases, they can be absorbed by the phenomenological habit body's "I can" and thus become available when the metaphor is no longer being consciously deployed.

Learning to type

This might be illustrated with my own experience of learning to type.

When I was a child, I was exposed to an arcade game called Missile Command, in which a hail of ballistic missiles represented by lines falling concurrently from the top of the screen constantly threaten the player's six cities arrayed at the bottom of the screen. The game is played by moving a crosshair across the sky with a trackball and pressing one of three buttons to launch counter missiles that explode when they reach the crosshair, leaving behind a fireball that persists for a few moments, destroying any of the ballistic missiles that enter its compass.

Years later, a friend introduced me to a program that taught users how to write by means of a game inspired by Missile Command.

During early stages of game play, I would see a letter at the head of a falling ballistic missile, which would prompt me to look for the key on the keyboard and press it, which would fire a counter missile, ridding myself of that danger. As the game progressed, the letters would begin falling at an increasing pace, allowing me less and less reaction time – I had less and less time to take note of the falling letter, search for the key and press it. Eventually, I would stop looking down at the keyboard, having internalized the position of the key. In this way, I integrated letters and punctuation marks, moving on to prefixes and suffixes, then words and finally to common phrases as the game progressed. In the end I had absorbed the initially abstract space of the keyboard into my bodily space. Eventually, I knew where my fingers were not in terms of the abstract grid of the

keyboard, but as types of motor responses. I no longer needed to think about where my fingers were or where they needed to go in order to type a word.

Now, when I pressed the keys with my fingers, I experienced the movements not as the fulfillment of intentions aimed at the keys; instead, I experienced them as parts of the living body whereby I inhabited a visual-tactile space in which I could act.

Having learned, in effect, to type in a matter of a few hours, I was able to abandon the typing game forever and continue life as a touch typist, having learned and practiced a skill set in a virtual space of metaphor (the hybrid game), with the result that those skills sedimented into and become absorbed by my bodily "I can."

Virtual Reality Exposure Therapy

Virtual experiences can also trigger emotional and physiological responses that can then be harnessed for therapeutic purposes.[164] Virtual reality exposure therapy is another way in which skills keyed to the zero body that are learned and/or practiced by navigating a virtual environment and engaging in specially designed tasks are absorbed in phenomenological body's "I can." Such therapies have been used effectively in helping PTSD patients reduce fear responses, stroke patients to regain muscle control, and autistic patients to develop social skills.

Exploring the outer horizons

They might offer up a purely abstract space with its own inherently interesting problems and satisfying solutions ranging from the useful and meaningful to the outright whimsical. For the past few decades, artists and institutions have been exploring virtual reality, creating immersive artworks, staging virtual exhibitions and installing galleries viewers can interact with in computer-simulated environments based on both real and imagined places.

[164] Giuseppe Riva et al., "Affective Interactions Using Virtual Reality: The Link between Presence and Emotions," *CyberPsychology & Behavior: The Impact of the Internet, Multimedia and Virtual Reality on Behavior and Society*, 10, no. 1 (February 2007): 45–56.

8.4. The mediated other

8.4.1. Other-mediated self-experience

To consider our experience of the other in the context of mediation and more specifically of technological tools like the computer, let us recall Merleau-Ponty's claim that "The other can be evident to me because I am not transparent for myself…" and that this is "… because my subjectivity draws its [visible] body in its wake."[165]

Though in deepest infancy our experience of ourselves and of others is undifferentiated (he points to the fact that an infant will respond to smiling by smiling and if one pretends to bite an infant's finger it will open its mouth to mimic the gesture), there comes a time when we begin to see ourselves as beings separate from others. This happens when we learn to see ourselves from the outside, as a body like other bodies. For Sartre, there is no awareness of oneself as object, as having an outside, before one's encounter with the other. Whether this is the case or not – and Leder, for example, thinks that the body can emerge in experience as an object independently of the other's gaze in experiences such as pain and illness[166] – it is only when we begin to experience ourselves from the outside, as objects, that a sense of self arises, and the other, represented in experience by the gaze, is an essential part of this process.

Just as the body is the ground of my identity for myself, it is the ground of my identity for others.

8.4.2. Self-experience twice mediated

What happens to this experience when that experience is mediated by something like a computer?

To respond to this question, we must consider the terms of mediation: if my subjectivity draws its perceptible body in its wake, what do I draw in my digital wake when I have incorporated a tool like a computer? To the extent that we participate in the digital, we are perceptible to the digital other and therefore have a digital outside. Thus, on the Internet, the point at which the Internet becomes perceptible is also the point at

[165] Merleau-Ponty, *Phenomenology of Perception*, p. 410.
[166] Leder, *The Absent Body*, p. 93.

which (unless stealth measures are taken) one becomes perceptible on the Internet. What is my digital outside like?

8.4.3. Dimensions of the digital self

While putting together any the many profiles we have online – on Facebook or LinkedIn, for example – we are often tempted to construct the person we want to be for the person or people experiencing our digital outside.

Another way we curate our digital selves is by restricting the access others have to us. When we send text messages or emails, we conceal as much as we reveal, not only presenting ourselves the way we want to be "seen," but imagining others the way we want to "see" them.

But we do not only disclose information about ourselves when communicating with others. Often, we reveal information about ourselves in other contexts – while buying things, or signing up for services, for example. In isolation, each bit of information might not reveal much about the self. But the digitally connected world is different in certain significant respects from the offline world.

In the not-so-distant technological past, our physical environments and the limits of human memory constituted natural epistemic barriers to our knowledge of each other. As I walked along a crowded market street I may have noticed – and been noticed by – certain individuals, but the vast majority of times they – and I – soon disappeared back into anonymity and oblivion, thanks to the limits of human memory (and a customary polite indifference). Within the flow of experience our perceptions began to fade when not actually perceived. Much of what I saw of others and what was visible of me to others was thus ephemeral.

By contrast, digital identities are made up of data that can be recorded, transferred with perfect fidelity, stored indefinitely and then searched at any time in the future. Thanks to technological advances enabling vastly increased capabilities for collecting, storing, and processing information over networked computers that enable individuals and institutions to pool resources, there are virtually no limits to how much information can be recorded, how long it can be stored and how it can be analyzed.

Aggregation

As a result, all the bits of information we leave behind in cyberspace can be fitted together like pieces of a puzzle into a digital portrait that may reveal more than what a person may want to reveal or may even be aware of.

To see how this can be done in principle, consider Keith Donnellan's distinction between what he called "attributive" and "referential" uses of descriptions[167] (which is reminiscent of the distinction between the account of sense arising out of the work of Carnap and Church that distinguishes between intension and extension). An attributive description of a person gives attributes without necessarily identifying an individual that satisfies the description: "The owner of a seven-square-meter apartment in Prague 1" might refer to several people who satisfy the description, or nobody if no one does. Used referentially, however, the description would identify a particular person. Even when referential personal information identifying an individual is removed from a digital dossier – as is often done in the interest of privacy protection – different bits of information can be used in an inferential process of triangulation to identify an individual.[168]

Daniel Solove describes an illustrative example in *The Digital Person: Technology and Privacy*:

> "In the 1970s, the United States began selling its census data on magnetic tapes. To protect privacy, the Census Bureau sold the information in clusters of 1,500 households, supplying only addresses – not names. But clever marketing companies such as Donnelley, Metromail, and R. L. Polk reattached the names by matching the addresses with information in telephone books and voter registration lists."[169]

Whereas our physical visible bodies are most usually perceived within the flux of experience – that is, perceived and then relegated to a biological (perishable) memory

[167] Keith S. Donnellan, "Reference and Definite Descriptions," *The Philosophical Review*, 75, no. 3 (July 1966): 281–304.

[168] This use of Donnellan's distinction is proposed by Jeroen van den Hoven in "Information Technology, Privacy, and the Protection of Personal Data" in eds. Jeroen van den Hoeven and John Weckert, *Information Technology and Moral Philosophy* (Cambridge: Cambridge University Press, 2008), pp. 301–321.

[169] Solove, Daniel. *The Digital Person: Technology and Privacy.* New York: NYU Press 2006, p. 18.

trace when not actually perceived, Our digital selves can leave perfect, indelible traces and therefore subject one to a permanent, panopticon gaze.

8.4.4. The visible digital depth body

But there is another issue: there are ways I am visible to the other in principle that are not tied up with my sense of my own visibility because they involve the depth dimension of the incorporation of computers (at both the hardware and software levels) and processes that happen somewhere in the cloud when my browser discloses dimensions of the Internet.

My use of the browser with which I connect to a website provides information about my technologically mediated identity –identifying particulars about the hardware and software I am using, my ISP, geolocation, time zone, language and information about my actions, to the extent that I can act with a computer on the Internet – that is, the trajectory of my cursor and my history of clicks and the information I might have entered into a field.

All this happens, for most people, at a pre-reflective level. There are dimensions of the browser, as the disclosing, enabling zero point from which my embodied computer use projects the space of the WWW, that are absent from the experiential field it discloses because they comprise information and processes that take place in the depths of the computer or the Internet – that is, underneath the reach of most people's intentional arc.

But recall that, as Merleau-Ponty pointed out, the other's gaze can only inspire self-consciousness if I already have a sense of my own visibility to the other that is immediately tied up with the pre-reflective, proprioceptive sense of my body. In the realm of experience, it is to the extent that I am aware of my computer-mediated visibility to the networked other that the other's gaze can make me feel self aware – aware of having an outside. Just as the other's gaze, as Sartre points out, need not be manifested by "ocular globes," in the context of the Internet the other's gaze need not become manifest as a pair of Skype-mediated eyes, for example.

Some people have had the experience of sitting at their laptop and suddenly hearing the webcam's shutter clicking (or noting a camera turn towards them in a public space,

whether a room or a street crossing). When Sartre's peeping Tom, absorbed in his subjectivity, hears the creaking floorboard behind him and turns promptly to face the other, his subjectivity suddenly takes on an other-mediated outside. Similarly, when I hear the shutter, I am wrenched from my subjectivity into an immediate awareness of the other, which has provided me with a perceptible outside. I have a sense of my camera-mediated visibility that is tied up with my embodied use of my computer, which makes me susceptible to the other's gaze.[170]

[170] Of course, in an interesting twist, though hearing the shutter on my webcam click will give me the immediate sense of the other Sartre describes in his keyhole incident, the other in this case need not be an actual other. It could just be a bot programmed to record at set intervals, for example.

9. AUTONOMY AND GROWTH OR SUBJUGATION AND STUNTING?

This dissertation's concern with the contours of a life informed by incorporated technological tools is driven by a desire for insight into this technological whirlwind we are living through these days and that desire is in turn driven by, on the one hand, fears that the incorporation of technological tools might hinder a good life and hopes that it might help us to live such a life. The analytic framework, it is to be hoped, has provided some insight into the ways we and our Lifeworld are co-constituted through computer-driven technological tools. But how can we assess this co-constitution in the light of our fears and hopes?

9.1. An axiological Heidegger?

There are many visions of the good life we might take as a touchstone to test the different aspects of the life informed by incorporated technological tools in the light of the phenomenological analysis we have considered. Since Heidegger's *Being and Time* has been the mainstay of this analysis, it would make sense to turn to it for that touchstone.

9.1.1. Authenticity as autonomy

We must acknowledge Heidegger's protestations that in *Being and Time* he was not concerned with laying down an ethical theory about right action, about what one ought to do, but rather engaged in a much broader ontological enterprise. Nevertheless, there does seem to be a good that underpins his claims regarding the type of life he clearly thinks is worth living: authenticity. His treatment of authenticity addresses questions touching on what constitutes a good, meaningful, rich life. Although he may not have wanted to outline a deontic theory – a theory of right action – he was nonetheless committed to the sort of claims about value that underpin deontological claims. And our claim here is that the central value, the good *simpliciter* that seems to underpin his evaluative claims concerning authenticity, was that of autonomy.

Autonomy – evident in the very etymology of the German word for authenticity, *Eigentlichkeit* – "ownness" or "auto-" – plays a methodological role in the composition of *Being and Time*.

9.1.2. The hermeneutical method of Being and Time

It is required to close the hermeneutic cycle of interpretations guiding its existential analytic and arrive at the deepest understanding of Being. Heidegger claims that his philosophizing through a deepening hermeneutic circle makes it more likely that his deliberations are not being guided by the invisible hand of the philosophical tradition he is embedded in, but firmly in his own hands.

9.1.3. Anxiety and freedom

According to Heidegger, authenticity requires such traits as resoluteness, steadfastness and insight into one's own – he often uses the term "ownmost" – life. It calls on us to wrest ourselves away from the pull of the anonymous everybody so as to freely choose from among our life possibilities what is most relevant to that ownmost life.

Heidegger has been thrown in the existentialist bag of philosophers who postulate an exaggerated radical freedom – Sartre's radical voluntarism – at the center of human existence. According to the existentialized Heidegger, authentic Dasein is depicted as the rugged individualist who, struggling single-handedly with anxiety in the face of the ultimate absurdity of existence, creates its own possibilities in an intensely-lived now through feats of unconditioned freedom.

True, anxiety – the basic mood that opens a door to authenticity for Heidegger – "takes away from Dasein the possibility of understanding itself, as it falls, in terms of … the way things have been publicly interpreted. … Anxiety individualizes Dasein for its ownmost Being-in-the-world, which as something that understands, projects itself upon its possibilities. … Anxiety makes manifest in Dasein its Being towards its ownmost potentiality-for-Being – that is, its Being-free for the freedom of choosing itself and taking hold of itself."[171]

However, if freedom is to be not merely a freedom from but a freedom to, then it cannot be understood as pure spontaneity and an unconditioned will. For it is not

[171] Heidegger, *Being and Time*, p. 232.

Sartre's inertia-less consciousness,[172] where all choices are equally possible, none is better than any other and nothing is binding.

9.1.4. Gravity vs jumping

For if in anxiety Dasein resists the influence of the They, it cannot do so absolutely. As philosopher Taylor Carman put it, "One could say … that there is a kind of tension between gravity and jumping, yet far from rendering us utterly prostrate and inert, gravity is precisely what makes jumping possible, by hindering it. … Just as a good jump at once resists and is shaped by the force of gravity, so too authentic resoluteness consists in resisting the 'movement' or 'agitation' of falling from within the levelling process that is at work in all discursive idioms. … And just as resisting gravity never amounts to escaping or transcending it, so too it would be incoherent to imagine Dasein bypassing the discursive field altogether and confronting its existence immediately in some private sphere of meanings."[173]

9.1.5. Disclosing fateful destiny by breathing life into heritage

For Heidegger, Dasein is indebted to a past that necessarily serves as a foundation for its Being[174] and is responsible because on the foundation of that past it projects possibilities that preclude other possibilities. Once Dasein draws away from the limitless variety of possibilities presented to it, it is brought "into the simplicity of its fate.[175] By breathing new life into the past through repetition, Dasein does not "abandon itself to that which is past,"[176] but breathes new life into the past through what he calls "repetition." And "In repetition, fateful destiny can be disclosed explicitly as bound up with the heritage which has come down to us."[177]

Let us then take autonomy as our pivotal criterion to evaluate whether the incorporation of computer-driven tools, keeping in mind that they not only participate in the falling by which we succumb to the gravity of all the levelling processes involved in

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[172] Sartre, *Being and Nothingness*, p. 61.

[173] Taylor Carman "Must We Be Inauthentic?" in Mark A. Wrathall and Jeff Malpas (eds.) *Heidegger, Authenticity, and Modernity: Essays in Honor of Hubert L. Dreyfus*, vol. (Carman 2000) I (Cambridge: The MIT Press, 2000), p. 25.

[174] Heidegger, *Being and Time*, p. 329.

[175] Ibid., p. 435.

[176] Ibid., p. 438.

[177] Idem.

the discourses of the They, but also in the movement by which we resist that gravity and come to our ownmost selves.

9.2. Autonomy-fostering technology

Quite apart from the question of the proper place of autonomy among other values – and in certain societies the values of social cohesion and security are weighted more heavily than in the Enlightenment-inspired West – the new technosociety that the computer-drive tools we incorporate is embedded in is one in which individuality is fostered. Since there is a larger reservoir of alternatives that challenge social traditions for people to find individual significance in, people are shifting their attention to what is most important to them as individuals.

And this is perhaps evident not only in the ways the digitally networked culture is challenging the traditional scarcity thinking that places a premium on being a star, being in it for the money, producing hits, popularity, etc., but also in the resources societies for which individuality constitutes a threat to social cohesion and security are pouring into restricting access to the Internet.

9.3. The gravity of heteronomous concerns

Even in societies in which individual freedom is ostensibly accorded the status of a core value, the existential threat of falling into the anonymous discourses of Heidegger's They and therefore closing oneself off to authenticity does not seem like the only threat. We saw above that the fundamental quality of habituality characterizes not only the inauthentic social modes of being represented by Heidegger's das Man, but also Husserl's pre-personal drives and instincts and Merleau-Ponty's sensorimotor intentionality. If das Man represents the ontological gravity behind the experience of falling, then there is an mode of das Man that is not simply a sort of composite anonymous picture of ways of doing things, but rather a They with concrete interests that might not be those of individuals, but nevertheless drive classes of people.

There are average behaviors common to consumers, social media users, citizens etc. that are average because advertisers, the owners of e-commerce sites and social media technologies and governments have an interest in their being average, not just because myriads of individual behaviors just blend into bell curves in a sort of free statistical

market. When people fall into online They behaviors, they may be succumbing to the gravity of economic or political interests.

9.4. Applying the framework: growth or diminishment?

Having specified in detail a phenomenological framework, let us see how it might be applied to two concrete aspects of the incorporation of computer-driven technological tools with the aim of assessing how such incorporation can either foster or diminish an autonomous life. The first aspect concerns technologically mediated privacy and the second technologically mediated agency.

9.4.1. Technologically mediated privacy

Let us consider, from a phenomenological perspective, how the boundaries and content of what we consider private are inflected in a digitally networked world.

Definitions, distinctions

To begin, let us get a sense of some of the ways privacy has been defined in the philosophical literature so we can then go on to explore how phenomenology can add clarity and depth to considerations of the issue in a technologically mediated world.

Some theorists who deal with privacy concerns argue that when privacy claims are defended, the justifications are exhausted with reference to values common to other moral and social concerns, independently of a concern with privacy. Such theorists agree that there is nothing distinctive about privacy concerns. In this paper, we shall argue here that there is something distinctive about privacy. Next, consideration of the phenomenological tradition will underpin a deeper understanding of our experience of privacy. Finally, in the light of the foregoing, we will explore what happens when that experience is mediated by digital devices in our present-day networked world.

Respect due to the person

There seems to be a broad consensus that the sphere of the inherently private is that which is most intimately bound up with the personhood that confers respect – that is, having the capacity to make free choices regarding the ways we present ourselves to others without interference and free from the pressures of conformity. J.D. Velleman, for example, argues that we "have a fundamental interest in being recognized as a self-

presenting creature."[178] Reducing a person to a stereotype causes indignation precisely because it precludes that person's capacity to freely choose how to present him- or herself.

Control

Thus, under one conception, privacy is identified as the measure of control over personal information. Under this conception, privacy violations involve infringements of an individual's right to discretionary control over personal information.

However, one can imagine a person who has complete privacy but no control over who has access to information about her, like a shipwreck survivor on a desert island. Such a person would lack control over who has information about her, but we would not want to say that she lacked privacy.

Similarly, we would not consider a person who implemented his discretionary control by disclosing everything to lack control, though we would hardly view him as having any privacy. For example, as part of weliveinpublic.com project Josh Harris installed 30 motion-controlled surveillance cameras and 66 invasive microphones in his apartment and placed it under 24-hour web surveillance that anybody could access.[179]

It does not seem that control exhausts what we would consider as privacy concerns.

Ownership

Under another conception of privacy, it is ownership of personal information that underpins privacy claims. Under this conception, privacy invasions boil down to misappropriation of or trespass onto a person's property.

But much of the information about us is produced in interactions with others and therefore not owned by us alone. When a person engages the services of a tax advisor, for example, or sees a lawyer, information is created as a result of the interaction in each case. The idea of ownership does not capture the privacy concerns involved in such longstanding conceptions of confidential communication as accountant-client or attorney-client privilege.

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[178] Velleman, J.D. 2001 "The Genesis of Shame," *Philosophy and Public Affairs*, 30: 27–52.

[179] Nicole Powers, "Ondi Timoner: We Live In Public," *SuicideGirls.com*, accessed February 23, 2010, https://www.suicidegirls.com/girls/nicole_powers/blog/2680208/ondi-timoner-we-live-in-public/.

Moreover, we cannot be said to own all the features of a self that, as our consideration of the phenomenological tradition below will make clear, is not completely transparent to us.

Both views – the one identifying privacy with reference to control and the other to property – justify privacy concerns based on the claim, entitlement or right to decide what about an individual is disclosed to others.

Harm

Under another conception, privacy concerns are understood in terms of injuries causing emotional distress inflicted by particular wrongdoers on individuals.

However, issues arising when entities collect a person's personal information without ever contacting that person or that person ever finding out – as when Apple was found to have been collecting and storing its customers' geolocation data in an uprotected file[180] or whenever a plethora of websites install cookies on users' computers that communicate bits of user data – do not necessarily involve particular injuries.

In isolation, a particular piece of information may not involve an invasion of privacy, but when many innocuous bits of data are aggregated – combining a mobile phone user's geolocation data with information reported by cookies on that user's computer and the user's browser, for example – the collecting entities can piece together a personal profile and thereby acquire the power to impact a person's life.

If people do not participate meaningfully in the collection and use of their personal information, they are exposed to a risk of injury without necessarily suffering any harm in particular. Still, increased vulnerability is as much a harm as weakening a person's immunity would be, or disabling that person's home security system.

Such issues do not involve particular injuries, but are systemic, caused by the structures, whether they take the form of physical architecture, computer code or legislation, that regulate access to an individual's personal information.

[180] Brian X. Chen, "Why and How Apple Is Collecting Your iPhone Location Data," *Wired.com*. last modified April 21, 2011, accessed March 20, 2018, https://www.wired.com/2011/04/apple-iphone-tracking/.

It is not merely because we are capable of pain that our privacy concerns should be respected.

Distinctiveness vs reduction

Views holding that there is something distinctive about privacy argue that there is something special that is lost in accounts that reduce privacy claims to claims about control, property or harm.

One non-reductive account defines privacy as a condition of restricted access to a person.

Privacy as restricted access

This definition makes it possible to distinguish a loss of privacy resulting from problems related to the structures that provide access to personal information from a violation of a person's claim, entitlement or right to privacy.

For it is possible to imagine a situation in which a person's privacy is diminished without any infringement having occurred – as when that person voluntarily discloses intimate information. Conversely, we can imagine situations in which there is no loss of privacy and yet the right to privacy has been violated. For example, what irked so many people about the revelations of whistleblower Edward Snowden was not that people had in fact suffered a loss of privacy – because the US National Security Agency had not monitored them – but that their right to privacy had been violated.

What gives this definition its teeth is that it bears in mind not only the individual – as a free agent deserving of respect and capable of control, possession and feeling pain – whose privacy is at issue, but the ways the web of social relationships we live in impinge upon privacy concerns. We would not consider being observed by a spider in a hotel shower an invasion of privacy; privacy involves the potential for observation by other human beings who participate in our shared world of values, interests and purposes and whose judgments can shape our lives.

The Social Context: modulating access to the intimate self

Now, if we want to show that there is something distinctive about privacy concerns, then we need to show how they are grounded in something other than social arrangements involving contingent values and preferences.

That is why we must take into certain features of the human condition that show how and why privacy is of concern to us.

Participant vs observer roles

Consider, to begin with, a distinction Robert Gerstein makes between two stances a person might take to a situation involving other people. One might participate in the situation (and take a participant reactive attitude, to use the language of P.F Strawson's seminal "Freedom and Resentment,"[181] which this distinction is highly reminiscent of) or stand outside it as an observer (to take an objective attitude).

The sense of involvement as a participant in a social situation can be transformed by being observed. The sense of spontaneity and freedom a person might experience in an intimate relationship is compromised by an awareness of being observed and judged by a non-participant. This view counters the tendency to describe privacy in terms of some set of objective, logical conditions, maintaining instead that the participant role is an essential aspect of the social nature of human life.

Since privacy involves practices embedded in our human form of life, any judgments we might appeal to in defense of privacy claims will be based on principles internal to the practices involved. That is, we will justify them by referring to an account of the ways we participate in social situations – and much of what has been written on privacy does just that.

Modulating social relationships

One view, for example, argues that privacy reflects the ways we regulate access to the personal sphere and thus make possible a spectrum of relationships ranging from the intimate to the public. Relationships characterized by trust, friendship and love involve

[181] P. F. Strawson, *Freedom and Resentment and Other Essays*. (Abingdon: Routledge, 2008), pp. 1–28.

allowing access to an intimate personal sphere. Less intimate social interactions restrict the type and degree of personal knowledge it is appropriate for people to possess.

Privacy can thus enable us to interact with people we might have serious disagreements with in situations where cooperation is desirable without having to acknowledge the disagreement.[182]

The idea that the criteria that determine how we regulate access to information about ourselves depend on the particular relationships or circumstances involved has been referred to as "contextual integrity"[183] and "spheres of access"[184] by philosophers Helen Nissenbaum and Jeroen van den Hoven respectively.

According to this idea, requests for personal information that a relationship or situation marks as inappropriate are considered privacy violations. And, as Nissenbaum argues, for a request to elicit indignation, it need not pertain exclusively to confidential information. "People's judgments that privacy has been violated," writes Nissenbaum, "concur more systematically with breaches of contextual integrity than with breaches of only intimate or sensitive realms. Although they may ascribe special status to the latter, they do not thereby accept that outside of this special realm no norms of privacy apply; they do not accept that outside this special realm information is detachable from its context. ... This attitude is reflected in the indignation that may follow as simple a gesture as a stranger asking a person his or her name in a public square."[185]

When we regulate access in this way we are allowing access to a dynamic field of personal identity. It is dynamic because we modulate the roles we play and the information we disclose about ourselves depending on the people we are engaged with and the situations we are in – as Sartre and Merleau-Ponty noted, the self is other-mediated.

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[182] Ruth Gavison makes this point in Ruth Gavison, "Privacy and the Limits of Law," in ed. Ferdinand D. Schoeman, *Philosophical Dimensions of Privacy: An Anthology* (Cambride: Cambridge University Press, 1984), pp. 346–402.

[183] See Helen Nissenbaum, "Protecting Privacy in an Information Age: The Problem of Privacy in Public," *Law and Philosophy*, 17, No. 5/6 (November 1998): 559–596.

[184] See Jeroen van den Hoven, "Privacy and the Varieties of Informational Wrongdoing," *Australian Journal of Professional and Applied Ethics*, 1, 1 (1999): 30–44.

[185] Nissenbaum, "Privacy in an Information Age," p. 584.

Erik Erikson's notion of the adolescent psychosocial moratorium

It is also dynamic in a developmental sense captured in psychoanalyst Erik Erikson's notion of the adolescent psychosocial moratorium. According to Erikson, adolescents develop their identity during a time of impassioned experimentation with people and ideas. The idea of the moratorium refers to the tacit social understanding that during the period of experimentation all adolescents go through, they are to be forgiven their excesses. According to Erikson, the moratorium thus enables use to eventually develop a distinct, core personal identity.

Private life enables differentiation from others

But privacy not only makes it possible for us to maintain the variety of relationships we participate in; it also enables us to differentiate ourselves and develop as individuals. Private life provides resources, perspective and emotional and intellectual space to reflect on unpopular ideas without the pressure of social disapproval and thus be able to form independent views on social issues. A person completely open to public scrutiny would feel pressure to conform to convention, thereby suffering a loss of autonomy, uniqueness and the sense of personal identity.

John Stuart Mill recognized the need for individuals to find refuge from the tyranny of social conformity and resist its pressure to suppress individuality. In *On Liberty*, we wrote about what happens to individuals living in a repressive society like that of Victorian England: "It does not occur to them to have any inclination, except for what is customary. … they exercise choice only among things commonly done … they become incapable of any strong wishes or native pleasures, and are generally without either opinions or feelings of home growth, or properly their own."[186]

Importance of privacy and solitude for creativity

And sometimes we need a private space conceived as one that is inaccessible to the gaze of others, in which we are completely alone, for solitude is a wellspring of creativity. Writers require extended periods of quiet reflection to get the heft of ideas and hash out

[186] John Stuart Mill, Utilitarianism *and* On Liberty *Including Mill's "Essay on Bentham" and Selections from the Writings of Jeremy Bentham and John Austin*, ed. Warnock, Mary (ed.), 2nd ed. (Oxford: Blackwell Publishing, 2003), p. 136.

arguments; Beethoven and Tchaikovsky would weave their musical tapestries while on long walks. During such periods of quiet innerness, ideas can circulate freely and come together in unexpected ways, a process that might be inhibited by the presence of others.

The phenomenological perspective

Thus, privacy entails a state of restricted access to a person as regulated by two factors: first, the person's ability to select who and in which contexts has access to that person's body and thoughts (which we have discussed above); and second, the complex web of social relationships the person is embedded in, which provide the contexts within an individual exercises his or her control. Architecture broadly conceived as the design and organization of the spaces we live in also plays a role in regulating access to the personal sphere and we shall discuss this further below, when its particular significance in the context of the digitally networked world that this paper is concerned with will become more salient. For now, let us turn to the complex web comprising personhood and person's social context.

But our lives are shaped not only by the design of the physical spaces we live in, but also by the essential properties and structures of human experience, which is the subject matter of phenomenology. If we want to understand issues of access, it makes sense to do so within a framework that considers both the individuals for whom privacy is an issue and the contexts in which privacy becomes an issue as an interconnected totality grounded in structures of human experience. Let us explore, then, how phenomenology might add depth and clarify the issue of privacy.

A hermeneutical endeavor

However we define privacy is an abstraction of how it already exists in the contexts in which we live our lives. This means that before defining privacy, we should consider how it is embedded in the human life world viewed as a totality consisting of persons and a far-ranging network of knowledge, behaviors, resources and purposes in which the person is embedded.

Grasping the concept of privacy is therefore a hermeneutical endeavor of the type described by Heidegger in *Being and Time*, where he argues that since we are

fundamentally embedded in the world, we cannot understand ourselves without reference to the world and we cannot understand the world without reference to the structures of human experience.

Structures of experience: the Other

To answer this question, consider that being observed by a spider on the ceiling does not constitute a privacy invasion. Violations of privacy involve being observed by other human beings, whose judgments and actions have a special significance in the social contexts our lives unfold in. Living with other people is part and parcel of what it means to be human. It structures human experience and is thus the sort of thing phenomenology deals with.

As we saw above, by contrast with a conception of experience according to which we access our inner life in an exclusively privileged, self-enclosed way, with clarity and distinctness, and can never experience the inner lives of other human beings, according to the phenomenological tradition we experience others directly and there is no radical asymmetry between what is ostensibly our clear and distinct experience of ourselves and our murky experience of others.

Jean-Paul Sartre makes his case for the immediate nature of experience of the other by means of his well-known analysis of shame, which we examined in section 5.5.2. According to this analysis, in shame, "the Other is the indispensable mediator between myself and me.[187]" In shame, we appear in our own experience, but as an object for the other's gaze. The other provides me with an outside. For Sartre, our experience of ourselves and our experience of others is reversible – it is precisely because we have an outside that we are encounterable for the other.

The reversibility of our experience of ourselves and others is grounded in the reversibility of our experience of our body: "Either it is a thing among other things, or else it is that by which things are revealed to me."[188] Experientially, however, though it can be both by turns in the body's surface dimension, it cannot be both simultaneously.

[187] Sartre, *Being and Nothingness*, p. 222.
[188] Ibid., p. 304.

This experiential asymmetry does not mean, nonetheless, that we experience ourselves from the inside with clarity and distinctness. There is an aspect of myself – the way the other sees me, which confers on me an outside – which is distinctly alien. He writes, "...The Other looks at me and as such he hold the secret of my being, he knows what I am."[189] In other words, the other plays a constitutive role in my personal identity.

We saw in section 5.5.3. that Maurice Merleau-Ponty also counters the idea that there is a radical asymmetry between a clear and distinct experience of ourselves and an opaque, ontologically vitiated experience of others. This fact derives from the ontological unity underlying what Merleau-Ponty refers to as the body's reversible experiential structure. The condition for the possibility of being able to see is our participation in the visible by means of our body.

For Merleau-Ponty, the other's gaze can only inspire self-consciousness if I already have a sense of my own visibility to the other. There is an inner relation between my experience of my body as I feel it from the inside and that of another as I see it from the outside.

The other-mediated self

However, it is only when we begin to experience ourselves from the outside, as objects, that a sense of self arises, and the other becomes an essential constitutive part of the human experience of selfhood.

This brief review of what Sartre and Merleau-Ponty have to say about our embodied experience of others enables us to establish a few points that will guide the discussion of privacy that follows: first, that our experience of ourselves and our experience of others are two sides of the same coin – that is, our experience of other people is constitutive of our experience of ourselves; and second, that the body is the ground of my other-mediated personal identity.

Privacy extended

The intimacy between selfhood and body puts body in realm of inherently private. However, the sphere of the private goes beyond a person's body.

[189] Ibid., p. 363.

On one hand, certain elements of a person's environment – such as the letters that bear testimony to a person's thoughts or that person's bed, desk or home – are commonly regarded as extensions of self and thus considered as lying within the private sphere.

On the other hand, the design and disposition of environmental structures is an important factor in the ways people set boundaries and regulate access to one another. Windows, doors and walls modulate access to the different spaces in which we live our lives. Within the home, spaces used for entertaining guests are usually differentiated from more private areas of the home such as bedrooms. In buildings with access to the public, like banks, shops and restaurants, spaces for customers are differentiated from back areas reserved for employees.

And in today's world of ubiquitous and pervasive connectivity in the form of internet-capable smartphones and laptops that are perpetually at hand we are extending ourselves into digital environments like the Internet, where a sort of technologically mediated digital person represents the self and privacy issues take on a new dimension. Just as the physical environment factors in the regulation of access, the computer code used to structure the systems in which we live our digital lives also serve to regulate access to our digital selves.

How does this technological mediation factor into our privacy concerns?

The other-mediated digital self

If my subjectivity draws its perceptible body in its wake, in the words of Merleau-Ponty, what do I draw in my digital wake when I have incorporated a tool like a smartphone or a computer deep into my everyday life and thereby participate in the digital world? What is my digital outside like?

On the Internet, the point at which the Internet becomes perceptible is also the point at which (unless stealth measures are taken) one becomes perceptible on the Internet. That perceptibility is the basis of the digital person. And our interest in self-presentation transfers over into digital spheres.

Technologically-mediated disclosure

As we integrate technologically mediated activities deep into our everyday lives, we are increasingly using technological devices to regulate our privacy in digital environments. One way we do this is by curating the self we present to others.

Inhabiting an avatar with characteristics wildly different from the offline self in an online game is one way to do this, but most of us do so in more subtle ways. When sitting in front of a screen, we are often tempted to construct the person we want to be in the form of online profiles on sites like LinkedIn or Facebook. We also regulate our private spheres is by restricting the access others have to us. When we send text messages or emails, we conceal as much as we reveal, not only presenting ourselves the way we want to be "seen," but imagining others the way we want to "see" them. To people who make intensive use of these forms of communication, the relative immediacy of a telephone call, which does not allow us to delay responses until we have properly edited them, can seem to reveal too much.

A paradoxical aspect of the networked life noted by Sherry Turkle is that while curating our online selves enables us to experiment with identities in online spaces that feel private and fleeting, the perfect reproducibility and indelibility of information on the Internet vitiates Erikson's moratorium on the consequences of experimentation with identity. "In the cocoon of electronic messaging," Turkle writes, "we imagine the people we write to as we wish them to be; we write to that part of them that makes us feel safe. You feel in a place that is private and ephemeral. But your communications are public and forever."[190]

But we do not only disclose information about ourselves in the course of the privacy-preserving regulation of access to information about ourselves. Often, we reveal information about ourselves in non-private electronic contexts, while making purchases, for example. Such information might seem innocuous – that is, neither intimate nor sensitive – and therefore not relevant to privacy concerns. And in isolation, each bit of information might not reveal much about the self. But as we noted above the digitally connected world is different in certain significant respects from the offline world.

[190] Sherry Turkle, *Alone Together: Why We Expect More from Technology and Less from Each Other* (New York: Basic Books, 2011), p. 258.

And it is here that some causes for concern will come into focus.

Digital architecture

Whereas in the past our physical environments and the limits of human memory in the flow of unrecorded experience constituted natural epistemic barriers that protected everyday privacy concerns involving such non-sensitive information by concealing it in a fog of oblivion, today digital identities are made up of data that can be recorded, transferred with perfect fidelity, stored indefinitely and then searched at any time in the future.

But even non-ephemeral personal information that can overcome the limits of human memory, such as government records freely accessible to the public in the US thanks to the Freedom of Information Act, was subject to implicit, privacy-protecting limitations. For such public records could only be examined and copied on site. Such access, writes Helen Nissenbaum, "was costly in time and effort. … Such effort created de facto protection, serving to limit access and, therefore, exposure."[191]

Today, personal information available in public records is no longer protected by the practical difficulties of accessing it. Thanks to technological advances enabling vastly increased capabilities for collecting, storing, and processing information over networked computers that enable individuals and institutions to pool resources, there are virtually no limits to how much information can be recorded, how long it can be stored and how it can be analyzed.

Aggregation

As a result, even though in isolation each non-intimate disclosure we make in a non-private context might in fact be innocuous and therefore seemingly not relevant to privacy concerns, when aggregated, each bit of information be fitted together like pieces of a puzzle into a digital portrait that reveals more than what a person may want to reveal or may even be aware of.

We saw in section 8.4.3. that even when referential personal information identifying an individual is removed from a digital dossier – as is often done in the interest of privacy

[191] Nissenbaum, "Protecting Privacy in an Information Age," p. 577.

protection – different bits of information can be used in an inferential process of triangulation to identify an individual.

Causes for concern

Harm

This is cause for concern because such knowledge – that is, information that has been processed and transformed into forms people can use for their purposes – provides others with the ability to wield power over us and cause us harm – by revealing our private life and making us vulnerable to harassment, fraud, violence and theft – including identity theft.

The violation of contextual integrity

Moreover, much of our personal information is acquired by people and entities that have not established any sort of relationship with us. In such situations we are not active participants in social situations, modulating the roles we play and curating the self we present depending on the people we are engaged in and the needs of the situation; we are potentially vulnerable, subject to observation and judgment by non-participants.

Potential misrepresentation

It is also cause for concern because our digital biographies – which contain fragmentary information that need not be completely true without qualification – are reductive and distorting, highlighting aspects of ourselves and relegating others to the shadows. They distort and can form the basis for false inferences.

Moreover, sometimes the knowledge that results from processing can be greater than the sum of the bits of information being input. Connecting a person with a particular home address and membership in a political party can enable inferences regarding that person's purchasing power, race and views on a number of topics, for example. And coupling a husband's purchase of condoms at a local pharmacy with his wife's purchase of a herbal medicine for female infertility at the same pharmacy can ground inferences regarding the husband's extramarital activities.

Using such reductive and distorted biographies to establish beliefs and judgments about people would not only be epistemologically irresponsible, but would disregard their capacity to make free choices regarding the ways they present themselves to others. Jeffrey Rosen stresses the importance of privacy in this context: "Privacy protects us from being misdefined and judged out of context in a world of short attention spans in which information can easily be confused with knowledge."[192]

Digital biographies and bad faith

Whether our digital persons are constructed through the give and take of privacy-preserving online social intercourse or through the aggregation of seemingly impersonal bits of information, the construction of our digital selves participates in the other-mediated constitution of the self discussed above. Our digital selves are not, however, destiny. Sartre would go even further: nothing about the aspects of ourselves that we cannot change is destiny.

In Sartre's account of human existence, we are at once facticity and transcendence – that is, we are what we are and we are not what we are at the same time. There is a sphere of givens in life which are outside the reach of our freedom and limit it; but there is also a sphere in which we are what we are not and are not what we are – the sphere of freedom. In principle, the two aspects of human reality can and ought to be coordinated. When we pretend to reduce ourselves to one or the other – by denying the incontrovertible limitations of our facticity or failing to take responsibility for the freedom to which we are condemned – we act in bad faith. And when we reduce others to facticity or transcendence, we perpetrate an other-directed sort of bad faith.

What this framework entails is that there is an essential sense in which I am not what I am – I am not confined to being but transcend towards non-being. That is, I am never condemned to be what I have been, but must always make myself what I am. There is a heady, perhaps disquietingly untethered sense of freedom here, but also the sense that I am not the sins of my past and if there is responsibility, there is also redemption in transcendence. By contrast, in a context of perfect, indelible information about

[192] Jeffrey Rosen, "The Eroded Self," *The New York Times Magazine*, April 30, 2000, Nytimes.com retrieved 20 March 2018, https://www.nytimes.com/2000/04/30/magazine/the-eroded-self.html.

individuals, there is a tendency for people to act in other-directed bad faith by, as Sartre might say, condemning people to their facticity.

Unconscious disclosure

Much of the information involved in the regulation of privacy concerns is the result of conscious disclosure, even if we might not always be aware of all the consequences of such disclosure. Posting a picture of myself on Facebook, sending a message to a lover on WhatsApp or providing a billing address in the course of making a purchase on Amazon will only happen if I intentionally click or tap a button.

However, not all the information produced about me derives from intentional disclosure on my part. A CCTV camera I am unaware of, for example, can reveal information about my activities at a particular place and time. But such information is at least in principle accessible to me. Some information about me, however, involves circumstances that fall underneath the scope of my conscious intentions.

Disappearance

When I interact with other people, what I come into contact with are intangibles like the expressions of beliefs and desires and perceptible bodies. But not every dimension of our physical selves is directly perceptible, whether to others or ourselves.

For example, our body is not directly perceptible to us is when it is enabling entities to appear in experience. When I reach out and feel the texture of a piece of silk, the silkiness on the tips of my fingers is the figure in the foreground of my experience and the rest of my body – the arm holding up my hand, for instance – is relegated to the background.

Generally, the body is always there as the revealing background that is experientially absent from the field of what it discloses in the foreground. We do not see our retina. The way the body as background is necessarily absent from any foreground experience is a fundamental way our experience is structured. Nevertheless, this corporeal dimension of ourselves is still perceptible in principle, even if the body might not be perceptible in a particular experience in which it is serving as a revealing background.

Depth disappearance

As we saw in section 6.3.2., there is a dimension of our corporeality that normally falls below the threshold of the intentional arc, however: Leder's depth body, comprising its visceral, autonomic functions, which is characterized by experiential disappearance. But how does disappearance relate to the technological mediation of privacy?

Recall, first, that when we use tools we are familiar with, our experience is also characterized by the disappearance structure. That is, the tool disappears into the body's enabling experiential absence, as in the case of Merleau-Ponty's blind man. The disappearance here, though, is not a depth disappearance, but a surface disappearance. The blind man's stick in use sinks into his surface body's enabling disappearance.

Tools like smartphones and laptops become just as transparent in use, and encompass a depth dimension as well. Just as the visceral depth body is absent from experience, there is a dimension of technological devices that lies below the threshold of experience. Of course, there are engineers who have in principle experiential access the inner workings, whether in terms of electronic components or different layers of programming code; however, for most people, and even such engineers when they are actually using their devices, the technological viscera participate in a depth disappearance analogous to the viscera of the body.

Digital depth

There is a difference, though. In offline social life, the physical body's depth dimension is normally not visible. As I walk along a city street, I do not notice the retinas or livers of passers by. Things are different, however, in online life.

There are dimensions of the browser, as the experientially disappearing tool from which my embodied computer use projects the space of the WWW, that are absent from the experiential field it discloses because they comprise information and processes that take place in the depths of the computer or the Internet – that is, underneath the reach of most people's intentional arc.

The use of the browser (whether on a computer or a mobile phone) with which a person connects to a website provides information about her technologically-mediated

identity – identifying particulars about the hardware and software being used, the person's ISP, geolocation, time zone, language and information about her actions, to the extent that she can act with a computer on the Internet – that is, the trajectory of her cursor and her history of clicks and the information she might have entered into a field.

But recall that for Merleau-Ponty the other's gaze can only inspire self-consciousness if I already have a sense of my own visibility to the other that is immediately tied up with the pre-reflective, proprioceptive sense of my body.

However, there are ways I am visible to the other in principle that are not tied up with my sense of my own visibility because they involve the depth depth dimension of the incorporation of computers (at both the hardware and software levels) and processes that happen somewhere in the cloud when my browser discloses dimensions of the Internet.

In the realm of experience, it is to the extent that I am aware of my computer-mediated visibility to the networked other that the other's gaze can make me feel self aware – aware of having an outside.

Just as the other's gaze, as Sartre points out, need not be manifested by "ocular globes,"[193] in the context of the Internet the other's gaze need not become manifest as a pair of Skype-mediated eyes.

The visible digital depth body

Not only is the digital depth body of the user on the Internet visible, but the processes that take place in the digital depths are manipulable, too.

> "Suppose you are contemplating becoming vegetarian and visit a few websites on the subject. The profiling software – which may belong to Facebook or Google or any other online intermediary – correctly infers your aspirations and estimates that there's an 83 percent chance that you will stop eating meat within the coming month.
>
> Whoever operates the software then sells this information to the industry association of meat producers. All of a sudden, you start receiving free samples of excellent meat while ads about the benefits of eating beef follow you everywhere on 'the Internet.' This happens because the profiling software has calculated that

[193] Sartre, *Being and Nothingness*, p. 257.

> sustained exposure to thoughts about meat will reduce the chance that you will stop eating meat by 23 percent, which – magic! – you decide not to do in the end.
>
> You, of course, remain unaware of the connection between your vegetarian aspirations and the free meat samples in your fridge. You seem to be exercising autonomy while, in reality, you aren't: while you believe you are making conscious choices, parties you are not even aware of are actually influencing them invisibly. And the Internet companies are not ashamed to acknowledge their own role in all of this. FetchBack, a company that seeks to bombard consumers with ads for products they once exhibited an online interest in, puts it this way: 'When prospects leave [a company's] site and browse the Internet, [the site's] ads will display on other sites they visit, keeping [the original] website in their peripheral vision and top of mind.' When something is deliberately kept in your peripheral vision without you realizing it, it's perhaps a good time to question your autonomy."[194]

We are able to regulate access to the spaces where the self can develop thanks to privacy and there are many aspects of online life that threaten the boundaries protecting those spaces. Without such boundaries, the development of individuality is threatened and we are subject to the pressures of conformity, of the herd.

Technology actively shapes our notion of who we are. They structure the spaces in which the experimentation that is crucial to the development of the self takes place. If those spaces are taken over surreptitiously by processes that take place under the threshold of our awareness, hijacking our choice-making processes, then the spaces where we can cultivate our individuality shrink considerably.

Due to the collection and analysis of information about us that takes place outside the scope of our awareness, we may lose the ability to mold an other-mediated representation of ourselves that is appropriate to contexts we are unaware of and/or cannot access, populated with people we don't have relationships with.

The developing self

Privacy enables us to regulate the access other people have to the spaces where our unique selves can develop. Due to the ever deeper integration into our everyday lives of technological devices and the world of ubiquitous computing they enable us to inhabit,

[194] Evgeny Morozov, *To Save Everything, Click Here: The Folly of Technological Solutionism* (New York: Public Affairs, 2013), p.349.

privacy is increasingly under threat and along with it our ability to resist the conformist pressure of the herd.

Peter Galison and Martha Minow warn of a potential downward spiral in the scope of privacy and people's expectation of it:

> "if people repeatedly experience telemarketers passing on their names, phone numbers, addresses, and purchasing records to others; if people watch courts refuse challenges to governmental and corporate collection and sharing of personal information, the actual scope of privacy protections declines, and so does the motivation and willingness to demand privacy in any of these settings. Before we know it, such a downward spiral could affect the very sense of self people have – the sense of room for self-expression and experimentation, the sense of dignity and composure, the sense of ease and relief from public presentation."[195]

Privacy in the wider social context

Nonetheless, privacy concerns are not limited to protecting an inner sphere of freedom and autonomy.

As we noted at the beginning of this essay, a person on a deserted island cannot be said to have any meaningful privacy. Privacy involves behaving autonomously within a set of structures of access and those structures are not built by the individual alone, but by other members of the different social contexts we belong to and by norms and traditions that govern them.

Sherry Turkle argues that in rarefied digital contexts, controlling access to ourselves also entails attenuating the commitments we have towards others. There is a danger here. For we are not only individuals with rights, like privacy, but members of communities with responsibilities towards one another. But that is not merely to say that our rights are circumscribed by the rights of other individuals. Privacy does not trump all other values or the value that is the common good. Individual rights must be balanced with social responsibilities; autonomy with the common good; privacy with concerns for public health and safety. One value cannot be allowed to dominate. Digital networks like the

[195] Peter Galison and Martha Minnow, "Our Privacy, Ourselves in the Age of Technological Intrusions," in ed. Richard Ashby Wilson, *Human Rights in the "War on Terror"* (Cambridge: Cambridge University Press, 2005), p. 259.

Internet are not extra-social. They are bound by the same need to balance privacy and the common good as other social environments.

Authoritarian, totalitarian regimes that emphasize social order and national security at the expense of individual freedoms are easy to condemn in the Western world. But even in the West the common good in the form of national security is often adduced to justify the repression of individual freedoms, as the revelations of Edward Snowden have made clear. In technological societies that claim to be conscientiously balancing the common good with a concern for individual freedoms, the erosion of privacy can go unnoticed.

The importance of design

Unless the architectures that regulate access to personal information are designed with privacy in mind, in a coherent manner that takes into account the ways information can be accessed, processed and transferred, what Daniel Solove calls "architectures of vulnerability"[196] will continue to erode privacy:

> "When a person is made more vulnerable – such as being exposed to a greater risk of injury but not yet actually injured – it is harder to establish damages because one can't point to concrete economic loss of physical pain and suffering. Nevertheless, increased vulnerability is a palpable harm – just as weakening a person's immune system would be, or disabling her home security system."[197]

Legislative architectures, which can have similar effects as spatial design and computer code on behavior, attitudes, interactions, and the sense people have of being free, in a safe, private space, can make people less vulnerable if they are designed right.

Legislation: US vs EU

Different legislative frameworks, like those of the US and the EU, for example, can illustrate contrasting ways privacy issues are be adjudicated.

[196] Solove, *The Digital Person*, p. 99.
[197] Ibid., p. 108.

While the EU, which considers privacy and data protection as fundamental rights, enacted a general directive dealing comprehensively with privacy protection, the US has no overarching privacy legislative framework.

In the EU, privacy and data protection legislation rests on a set of well-defined principles – for example, personal data, which is subject to data quality standards, can only be collected for legitimate purposes, with restrictions on further use and dissemination and with time limits on retention.

There is no legal framework of comparable scope in the US. On a federal level, the US approach is a patchwork covering certain sectors – like health insurance, credit transactions and children's online privacy protection – but passing over others. As a result, according to political scientist Colin Bennet, "[t]he approach to making privacy policy in the United States is reactive rather than anticipatory, incremental rather than comprehensive, and fragmented rather than coherent. There may be a lot of laws, but there is not much protection."[198]

Value Sensitive Design

Likewise, the ways the constantly on hand devices (and the software running on them) that mediate our online experience are designed can have as profound an impact on our sense of privacy as the legal and digital architectures that govern the spaces in which we lead our social and digital lives.

That is why the value sensitive design movement pioneered by people like John Perry, Terry Winograd and Batya Friedman, which holds that human values – like privacy – can be built into the technologies we engineer and use, is so important. Sensitively designed, technology can expand, rather than shrink, not only the scope of individual agency, but also the spaces where we think through the problems that challenge us all. And if our lives and societies, on the one hand, and technologies, on the other, co-constitute each other, we need to get the constituting right, or face the consequences of being constituted in undesirable ways by our technologies.

[198] Solove, *The Digital Person*, p. 71.

9.4.2. Technologically mediated agency and deviant causation

In section 7.4.1. we considered some classical cases of deviant causation, which motived the construction of a framework of agency that might be able to deal with them. Let us now consider deviant causality within the context of technologically mediated agency and see how that motivate us to further refine our agential framework in the hope that it might serve to clarify discussions about the incorporation of technological tools and focus on important issues.

The cases of mediated intentional causation we will consider here, however, are deviant not because our intuitions regarding the right way the intentional causality involved in basic actions should develop are violated, but because our intuitions regarding our commonsense understanding of ourselves as free, morally responsible agents are violated.

To set the stage, let us recall that whenever action is mediated, plannable regularity makes it possible to preserve and extend intentional causation. The relatively simple plannable regularity involved in the use of a hammer consists in the solidity and length of the handle, its fit to the hand and the hardness of the hammer's head.

In the case of tools that are more complicated, like the digital Rube Goldberg machine which is a computer, the plannable regularity encompasses a complex system of parts and processes (analogous to the body's physiology not only in its complexity but in its inaccessibility to intentional awareness as well) working together to ensure that the intentional content is the is the causal aspect of a computer-mediated action. When computers are packed into portable devices like smartphones, computation becomes ubiquitous.

And when smartphones are connected to the Internet, the Rube Goldberg machine conducting the intentional causality encompasses not only the hardware that makes up the computer and the software running on it, but all the hardware (think fiber optic cable networks and data centers) and software (think HTML and TCP or financial transaction protocols) enabling Internet-mediated action.

Much as the body's pre-intentional neurological processes become correlated with intentional life, hardware and software configurations corresponding to the neural configurations of practical computer use become co-activated by learning. Once such correlations are established, a computer user does not have to specify any deep digital mechanisms to get her work done. Her intention simply recruits the necessary digital processes and she must monitor not those processes, but the work they contribute to. Thus basic computer actions are absorbed through habituation into part of the computer user's local Background.

A writer sitting at a computer might rely on internalized patterns of finger movement that incorporate the QWERTY keyboard layout to format text using basic keyboard shortcuts and compose his ideas into an essay. Change the keyboard to a Dvorak layout and the plannable regularity is gone. Whereas for the practised typist composing an argument might involve staring deep into the screen without even looking at the keys, for the unexperienced one, finding where the letter F is might be a basic action.

Navigating the physical world, whether on foot or in a vehicle, accessing the information on the web we need to make choices, communicating with others through telecommunications channels and paying for goods electronically all presuppose a practical know-how and a technological infrastructure. This can be seen most clearly if we contrast the intuitive ease with which digital natives make use of technology in their everyday lives and the perplexity with which the grandparents of those digital natives struggle to carry out the simplest of technological tasks. Basic actions for the former will not be basic for the latter.

For the digital native, the practical know-how that relies on ubiquitous, perpetually on-hand computing has become part of the intentional Background, much as the knowledge of where her fingers must fall in order to play in tune have become part of the expert violininst's Background.

But the technological devices and infrastructure in our increasingly digitized lives exist in a world inhabited by people who have often competing interests and ambitions as well as the whole range of biases people are susceptible to. What happens when such interests, goals and biases are built invisibly into the technology that users integrate so

deeply into their everyday lives it becomes second nature? It is in this context that a form of deviant technologically mediated causation might be said to appear.

Constraints baked into mediating tech

Sometimes, the integration of such biases into the technology we use everyday is not done with the explicit intention of influencing users or curtailing their freedom. Think, for example of what assumptions a young person – a digital native – might appropriate unconsciously through hours upon hours of playing a simulation game like SimCity, in which players start with an empty plot of land and build a city by deciding where to put roads, power plants, schools, hospitals and development zones and then setting parameters like tax rates, budgets and social policy. Obviously, the game – which the young person will not be playing on a supercomputer but a laptop – cannot model the real-world dynamics at play in a city with accuracy. The game designers have to make choices as to how the game models the world. But what choices do they make? The player cannot choose between Keynesian or monetarist macroeconomic policies. Nor can she decide whether hospitals are run privately or by the state.

At other times, however, the intent to influence users of technology is out in the open. Social media services like Twitter and Facebook select what aspects of user contributions and their clickstream data are significant, quantify them and plug them into proprietary, secret algorithms that are then put to work in pursuit of the services' interests: manipulating and creating content to increase user interaction, thereby producing more information that will be useful to the service – for creating and selling better ads, among other things.

Amazon is in a position to glean information about its customers and their purchasing patterns. Such information is then used to put together recommendations through its "Frequently bought together" and "Customers who bought this item also bought" features, which enable the company to cross-sell other products. Amazon's data trove and its ability to turn that data into workable knowledge enables it not only to anticipate, but to influence customer behavior in the future.

And Amazon's success has inspired law enforcement too. Just as Amazon's algorithms enable it to predict what books customers might buy in the future, similar algorithms

might enable law enforcement to predict crime. What happens when authoritarian governments get access to the type of big data Facebook and Amazon produce and use it not only to predict crime, but to enforce strict obedience to its authority? We can look to the Chinese government to get an idea.

In China, social media sites like Facebook and Twitter are blocked in China by China's "Great Firewall." However, the country's alternatives, WeChat and Tencent QQ, are required to collect big data that can be analysed and evaluated in ways that might prove useful for many purposes – like the country's Social Credit System, for example, a government initiative for creating a national reputation scheme. Using big data analysis technology, the Social Credit System will calculate a social credit rating for each citizen based on qualities like "commercial sincerity, social sincerity and judicial credibility."[199]

How will the social credit system impact the ways individuals make decisions in their lives? It is hard to say, but it is safe to say that many actions will be pre-empted by an awareness of the ways their actions might impact their social credit ratings. Of course much online activity is already pre-empted by China's comprehensive Internet censorship system, the Great Firewall, which monitors the activities of Internet users in China based on big data algorithms designed to protect the state and society from harm – as the Chinese government sees it.

Malign uses

The ubiquitous connected technology that mediates so much of our everyday life might also be put to more plainly malign uses. Social media profiles contain a wealth of personal information, much of which may be mined to identify or predict psychological proclivities and disorders.[200] Sophisticated artificial intelligence with access to big personal data could allow not only social media services, corporations and governments, but also cybercriminals and cyberterrorists to target individuals with methods tailored to their psychological profiles. In addition to getting people to buy things, this type of AI

[199] "Planning Outline for the Construction of a Social Credit System (2014–2020)," last modified April 25, 2015, chinacopyrightandmedia.wordpress.com, March 22, 2018, https://chinacopyrightandmedia.wordpress.com/2014/06/14/planning-outline-for-the-construction-of-a-social-credit-system-2014-2020/.

[200] M. De Choudhury, S. Counts, and E. Horvitz, "Social Media as a Measurement Tool of Depression in Populations." *Proceedings of the 5th Annual ACM Web Science Conference*, 2013 pp. 47–56, https://dl.acm.org/citation.cfm?id=2464480

might be implemented to influence a wide range of other behaviors as well, like recruiting terrorists, influencing voting, or pre-empting disobedience to an authoritarian regime.[201]

Implications

Consideration of deviant causation has inspired philosophers to come up with accounts of intentional causation that specify what happens when it unfolds in the right way. In order to get those theoretical accounts right, we must test them against our practical intuitions about agency.

The problem the somewhat dystopian picture we have been sketching in which values, decisions and goals are baked into the technology we use everyday is not that it will allow for deviant causation to rear its head once again within the theoretical framework we laid out above, which posits an experience of causality that participates in the intentional content of actions and is underpinned by plannable regularities. The problem is that it allows for situations that violate our commonsense understanding of ourselves as free, morally responsible agents as we interact causally with the world – and it is that commonsense understanding that we have been relying on to make sure our account is on the right track.

Not only is the periphery of my technologically mediated experience colonized by parties with a range of possible interests trying to sway my actions – priming the field of options and tweaking the irrational biases described by behavioral economics – but whole ranges of the space of actions available to me are variously cordoned off by the invisible technological infrastructure that makes my mediated actions possible. Just as the implicit psychosocial and neurophysiological Background articulates my experience in ways that are largely beyond the reach of awareness, the ubiquitous network of connected hardware and software that mediates my experience constrains my digital actions in ways I might not even be aware of.

[201] This is not simply imagining what is in the realm of possibility. As I write, for example, Cambridge Analytica, a company that mines and analyses data to "change audience behavior," according to its website (https://cambridgeanalytica.org/, accessed 20 March 2018) has come under scrutiny for its use of Facebook data to create psychological personality profiles enabling political campaigns – such as Donald Trump's presidential campaign and the Brexit campaign – to target individuals with tailored "strategic communication." The company is presently under criminal investigation in both the US and the UK. See, for example, Matthew Rosenberg, Nicholas Confessore and Carole Cadwalladr, "How Trump Consultants Exploited the Facebook Data of Millions." *New York Times,* last modified March 17, 2018, https://www.nytimes.com/2018/03/17/us/politics/cambridge-analytica-trump-campaign.html.

The attention economy that dominates the web, for example, uses a plethora of design tricks to ensure a compulsive, irresistible browsing experience. It priviliges impulses over intentions, the sensational over the nuanced, and appeals to emotion, anger and outrage because such emotions engage users, getting them to click.[202]

Whenever a Facebook user browses through her news feed, ads based on her clicking behavior while browsing through sites outside Facebook poised seductively at the margins of the page, or a Chinese Internaut searches for information about the events of 4 June 1989 at Tiananmen Square on Baidu, which returns banal links to pages dealing with wedding anniversaries and birthdays, there might very well be a "continuous efficacy of Intentional content under its Intentional aspects" that relies on the plannable regularities comprised by the Background of each.

Frankfurt Cases

Cases in which technological choice infrastructures rule out certain classes of actions are reminiscent of "Frankfurt cases." In 1969, Harry Frankfurt presented a template of cases as counterexamples to the principle of alternate possibilities, which claims that a person is only responsible for an action if that person could have done otherwise. Here is an illustrative Frankfurt case by way of John Martin Fischer that is particularly well suited to our discussion:

> "Black is a nefarious neurosurgeon. In performing an operation on Jones to remove a brain tumor, Black inserts a mechanism into Jones's brain which enables Black to monitor and control Jones's activities. Jones, meanwhile, knows nothing of this. Black exercises this control through a computer which he has programmed so that, among other things, it monitors Jones's voting behavior. If Jones shows an inclination to decide to vote for Carter, then the computer, through the mechanism in Jones's brain, intervenes to assure that he actually decides to vote for Reagan and does so vote. But if

[202] Paul Lewis. "'Our Minds Can Be Hijacked': The Tech Insiders Who Fear a Smartphone Dystopia," *The Guardian*, October 6, 2017, accessed 22 March 2018, https://www.theguardian.com/technology/2017/oct/05/smartphone-addiction-silicon-valley-dystopia.

> Jones decides on his own to vote for Reagan, the computer does nothing but continue to monitor – without affecting – the goings-on in Jones's head."[203]

If Jones decided on his own to vote for Reagan, then there are two upshots. First, according Frankfurt, he would be responsible for his decision, even though he could not have done otherwise. Second, though he would have acted freely in the sense that he would have been in control of the mechanism at work in the action's causal path, his will would not have been free. There would be responsibility, but with a truncated sort of freedom.

Now, much has been written about Frankfurt cases and their implications for the principle of alternate possibilities and the free will vs determinism debate. We will not try to adjudicate any of those issues here. Let us note simply that although our intuitions concerning responsibility are preserved in Frankfurt cases, our intuitions concerning freedom are not.

This is because our intuitions concerning freedom and responsibility involve not only the positive, formal conditions of intentional causation in the right way, but the negative condition of freedom from external constraints. A person whose actions are shaped by others in such a way that her critical reflection is trumped is heteronomous. What, then, are the conditions of personal autonomy?

Autonomy

Frankfurt famously argued that to choose freely – i.e., to be autonomous – a person's desires must be aligned in the right way. Frankfurt's distinction between first-order and second-order desires and volitions is well known.[204] A dog can desire a bone, but does not

[203] John Martin Fischer, "Responsibility and Control," *The Journal of Philosophy* 79, no. 1 (1982): 24-40. Fischer has updated the case in articles throughout the years to reflect the vicissitudes of American presidential politics.

[204] More so, perhaps, than José Ortega y Gasset's related distinction (made in a text published in English translation in 1935), between a person's being *causa sui* to the first power and *causa sui* to the second power. "Man," writes Ortega y Gasset, "is the entity that makes itself, an entity which traditional ontology only stumbled upon precisely as its course was drawing to a close, and which it in consequence gave up the attempt to understand: the *causa sui*. With this difference: that the *causa sui* had only to 'exert itself' in being the *cause* of itself and not in determining which *self* it was going to cause. It had, to begin with, a *self* previously determined and invariable, consistent, for example, to infinity. But man must not only make himself: the weightiest thing he has to do is determine *what* he is going to be. He is *causa sui* to the second power." See José Ortega y Gasset, "History as a System," in ed. Paul S. MacDonald, *The Existentialist Reader: An Anthology of Key Texts* (Psychology Press, 2001), p. 130.

appear to have the capacity to want or not want to have a bone. Only persons have such second-order desires – that is, be able to want what they want.

Reluctant addicts who shoot up my wish that they did not want heroin, but if they succumb to their first-order desire for the drug, they will not act autonomously. According to Frankfurt, only persons who identify with their preferred desires and act correspondingly are autonomous as a consequence of the hierarchical alignment of their desires.

Ironically, one problem with Frankfurt's scheme is that the hierarchical alignment of a person's desires might come about due to interference from others – as in Frankfurt cases and the situations involving technology we have described above. Gerald Dworkin tried to shore up the concept of autonomy with a procedural independence criterion stipulating that for an action to be autonomous, persons must identify with their desires for reasons that are their own.[205]

But some reasons that seem to be a person's own might be part of a larger value system that has shaped that person and her desires. The idea that persons are not ontologically independent entities, but relational and social – and thus never completely free from external constraints – has led some to formulate a theory of relational autonomy. According to Diana Meyers, for example, the critical reflection that underpins autonomy requires certain competencies, such as a person's autonomous self-definition, self-discovery and self-direction.[206] Such capacities exist in social contexts and the ways those contexts foster or impede the development of a person's competencies determine the degree of autonomy a person – or a group – can have. Critical reflection is not an all or nothing capacity.

Relational autonomy theorists argue that the social contexts constitute background conditions that must be assessed when considering issues of personal autonomy. And since today those contexts are so pervasively mediated by technology, it makes sense to

[205] Gerald Dworkin, *The Theory and Practice of Autonomy* (New York: Cambridge University Press, 1988), p. 18.

[206] Diana Meyers, "Intersectional Identity and the Authentic Self: Opposites Attract!" In *Relational Autonomy: Feminist Perspectives on Autonomy, Agency, and the Social Self*, eds. Catriona MacKenzie and Natalie Stoljar (Oxford: Oxford University Press, 1999), p. 172.

assess the technological contexts we are so deeply embedded in when considering issues of personal autonomy.

Technological constraints on autonomy

We might highlight the importance of assessing our socio-technological contexts when considering autonomy by examining the concept of the "nudge" which has gained such traction in recent years. Cass Sunstein and Richard Thaler's "libertarian paternalism,"[207] which combines the principle that people should be free to do what they want with the acknowledgment that it is legitimate for those who hold sway over the decisions of others – like governments, employers, health officials, corporations and the designers of ubiquitous technological devices and infrastructure – to wield their influence in the individuals' own interest, by means of "nudges." Nudging people in the direction of their own best interests through invisible background tinkering – what could be wrong with that? If we can get at what is wrong with such an ostensibly benign situation like this, we might be able to get at what is wrong in essence with the forms of deviant technologically mediated agency we have been considering.

One problem is that when the competing values and aims of differing choice architects become cast in the technological devices and infrastructure that mediate our everyday decisions, they are taken out of the sphere of public discourse, where people can deliberate about them embracing, revising or discarding them as they see fit – that is, integrating them into the critical toolkit that underpins their autonomy.

Whereas the competitive interests and goals of a business like Amazon may justify the secrecy with which it veils its algorithms, the same cannot be said of the interests and goals of a public institution like a police force. The police need warrants to evaluate an individual's private information, but businesses like Facebook or Amazon can access such data at will, without having to go through a judicial system built on principles hammered out in the public sphere – in a democracy, at least.

Aristotle argued that virtues, such as critical reflection, are skills that are built up through practice. But that means we have to have the opportunity to reflect critically.

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[207] Richard Thaler and Cass Sunstein, "Libertarian[sic!] Paternalism". *The American Economic Review* 93 (2003): 175–179.

When the technological infrastructure that regulates our behavior robs us of the opportunity to do so, we are also robbed of the opportunity to practice.

What happens when we have the values and aims we do only because the invisible choice architecture designed into technology has made it impossible to implement other values and aims?

Smart technology is already integrated into our everyday lives. It is also being integrated into areas like business, the workplace, law, and government by a wide variety of actors, including corporations, states – both democratic and authoritarian – and organized crime. It is being used to predict and influence an ever wider range of behaviors.

By relegating the inner workings of technological tools to the status of unconscious neural mechanisms, we risk limiting and perhaps stunting our own capacities for interpreting our past, engaging with the world, carrying out our projects and, more broadly, creatively defining who we are.

The design and implementation of technology poses formidable challenges in the future. Let us hope we get them right.

10. Directions for further research: phenomenological vectors of constitution

Different tools make our Lifeworld gravitate around certain forms of constitution – Leder calls them phenomenological "vectors" of meaning and use. It is as if the gravitational pull of each tool deformed the Lifeworld space around it in its own particular way. One possible direction for future research might be to consider how the incorporation of the computer-driven technological tools distorts the fabric of the Lifeworld along phenomenological vectors of constitution.

An investigation into such vectors of constitution with the tools laid out in this dissertation might then be of use when considering the benefits and drawbacks of the incorporation of technological tools. Just as having a clear conception of how we are constituted anatomically and physiologically helps us to decide what is good or bad for us, the hope is that gaining some clarity regarding how we are constituted phenomenologically will help us figure out what the possible benefits and drawbacks we are interested in might be.

To get a sense of what we mean by a phenomenological vector of constitution, consider Walter Ong's description of how oral language – that is, language before the invention of writing – shapes our experience: in oral communication, for example, speakers and listeners are present to one another; thus, it tends to unite individual into groups (as opposed, as we shall see, to writing, which atomizes individuals as they immerse themselves in the pages of a book or the screens of computers, for example).

Oral communication is subject to the limitations of memory unaided by external storage other than other individuals. Thus, "Oral societies live very much in a present which keeps itself in equilibrium or homeostasis by sloughing off memories which no longer have present relevance."[208] For this reason, "Oral memory works effectively with 'heavy' characters, persons whose deeds are monumental, memorable and commonly public. Thus the noetic economy of its nature generates outsize figures, that is, heroic

[208] Ong, *Orality and Literacy*, p 46.

figures, not for romantic reasons or reflectively didactic reasons but for much more basic reasons: to organize experience in some sort of permanently memorable form."[209] Language also extends the scope of possible action. If I am a member of a culture endowed with language, I am no longer limited to acting within my immediate environment based either on what I myself can do or what I can get someone else to do based on, for example, gestural cues tied into aspects of the immediate environment. With language, I can represent an action and communicate it to another individual who can then, retaining it in memory, go on to carry out the action at a different place and time.

As writing became increasingly fitted to the contours of language, reflecting its content and structure – and thus the cognitive profile of the embodied minds that used it – it was able to become a new constitutional vector for human experience. Whereas orality fostered experiences that were collective and externalized, writing and reading tended to be more solitary, introspective activities. Writing unburdened thought of the need to retain information in memory and thus freed it up for flights of grammatical complexity and analytical depth. Trains of thought could be organized into articulated chunks like chapters and volumes, enabling the mind to take in ever greater swathes of mental landscapes, which could themselves be mapped out in greater detail. The distance and disengagement writing established between knower and known made "objectivity" possible.

A few phenomenological vectors of meaning and use in today's world of ubiquitous, connected computer-driven tools that have become transparent in everyday life suggest themselves.

Generally speaking, Heidegger's technological attitude towards the world can be construed as a sort of phenomenological vector of constitution. Although in principle technology may expand the range of actions available to us, agency in general is technologized, relegating non-technological actions to the shadows. Problems call for technological solutions, committing things to memory means committing them to computer memory – all else gets abandoned to oblivion. Technology filters out the

[209] Ong, *Orality and Literacy*, p. 69.

turbulent noise of reality, disclosing it as transparent processes amenable to optimization with the right apps or algorithms. How we conceive of problem spaces may be even more important than the solutions we come up with. What is more worthwhile: bringing brainpower and resources to bear on the development of driverless cars, or public transportation networks?

Another phenomenological vector might be an emphasis on virtuality. Although simulation brings benefit to those who want to learn to fly airplanes or deal with post-traumatic stress disorder, it can be a disservice when human relations are mediated by virtuality. Virtual spaces provide opportunities for communication and connection, but they weaken the bonds of commitment. We might be able to count on Facebook friends for recipes, but how many will come by when we are sick? Our physical surroundings and real-world embodiment may temper disagreement in a way that online spaces do not. As Turkle notes, "Freed from the face-to-face, some people develop an Internet-specific road rage."[210] Messy direct experience can often seem less tractable than simulations, which immerse us in worlds analogous to Plato's cave, where meanings and actions come pre-interpreted according to concerns that might not be our own and do not benefit from the salutary influence of the sun outside. When we come out of our digital spaces, the light of reality might seem all too bright. And as we live more and more of our lives through the mediation of screens, our ideas about what is real might be influenced by that fact. What, for example, is reality for a professional gamer?

A related phenomenological vector might involve seeing problems as individual rather than social, to be solved by individualist consumers tinkering with mobile apps rather than citizens concerned with social welfare engaging in political action.

Moreover, instead of rational discussions and decisions made on the basis of abundant good information at our fingertips, there seems to be a tendency – spurred by the engagement algorithms of social media like Facebook and Twitter – to engage in emotionally charged, divisive shouting matches in echo chambers. The depressing effects on electoral processes across the world are becoming painfully clear every day.

[210] Turkle, *Alone Together*, p. 236.

Sometimes different, contradictory phenomenological vectors might be at work at the same time. On the one hand, a fluid conception of the self seems to be replacing a more fixed one. In the words of Turkle, "Not so long ago, stability was socially valued and culturally reinforced. Rigid gender roles, repetitive labor, the expectation of being in one kind of job or remaining in one town over a lifetime, all of these made consistency central to definitions of health But these stable social worlds have broken down. In our time, health is described in terms of fluidity rather than stability."[211] On the other hand, digital dossiers seem to tend to imprison people mercilessly in a past of social media pronouncements, ads clicked on and indiscrete photos. We are beset by swarms of "favorites" that eclipse the serendipity that might lie in our peripheral vision.

Finally, the agency entailed in tool use – especially, perhaps, in the use of technological tools with a requiring a cognitive component – might constitute a sort of tyranny of the intentional. Solving problems is seen as requiring action. But perhaps we need downtime from our devices and action more generally in order to focus and be creative. Rainer Maria Rilke put it beautifully:

> "I have often wondered whether especially those days when we are forced to remain idle are not precisely the days spent in the most profound activity. Whether our actions themselves, even if they do not take place until later, are nothing more than the last reverberations of a vast movement that occurs within us during idle days. In any case, it is very important to be idle with confidence, with devotion, possibly even with joy. The days when even our hands do not stir are so exceptionally quiet that it is hardly possible to raise them without hearing a whole lot."[212]

[211] Turkle, *Life on the Screen*, p. 255.

[212] Quoted in Andrew Smart, *Autopilot: The Art & Science of Doing Nothing* (New York: OR Press, 2013), p. 1.

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