Technology, domination and liberty: liberalism and republicanism confronted with technological change

by

Alexander Pleming Satola

A thesis submitted in partial fulfillment
of the requirements for the degree of
Bachelor of Arts
Philosophy, Politics and Economics (PPE)
in the University of Michigan
2021

Honors Thesis Committee:

Arthur F. Thurnau and Associate Professor Mika LaVaque-Manty, Advisor
Associate Professor David J. Baker, Second Reader

Alexander Pleming Satola

apsatola@umich.edu

ORCID iD: 9999-9999-9999-9999

© Alexander Pleming Satola

Dedication

To my father.

Acknowledgements

First, I would like to acknowledge my advisor, Dr. Mika LaVaque-Manty, whose advice, comments and encouragement were invaluable throughout the writing and revising process. I am also indebted to Dr. Laura Ruetsche, who led the Fall 2020 Undergraduate Honors Thesis Seminar for philosophy with great enthusiasm and supported me in carving out a thesis project I was excited to work on. Many thanks as well to the other students in the Fall 2020 Seminar who were always ready to pose a helpful question or raise a pressing issue during my initial presentations on the literature. And finally, I would like to thank Dr. David Baker, Dr. Eric Lormand and Dr. Elizabeth Wingrove for their advice in helping me formulate my research questions in the initial stages of the project; those conversations contributed greatly to my arrival at the particular approach to philosophy of technology and political theory that I outline in the following work.

Furthermore, I have to thank my friends Rohan Palacios and Atharva Talpade, as well as my sister Nancy Haskell, for their attention in reading early draft chapters for this thesis. I am also grateful in ways I cannot express for the continued support of my brother, parents, grandparents and other family members who offered their encouragement and support throughout this process. And to the many other friends and relatives who said a kind word or offered their support to me while writing this thesis, I am grateful to you all as well.

Table of Contents

List of Tables

List of Figures

Introduction

The following thesis examines the more than three-centuries old confrontation of liberalism and technological change and sketches an alternative approach based on the political theory of republicanism. It offers an intellectual history of liberalism on the subject of technological change as well as a theoretical and practical alternative to the liberal modes of thinking the variant pasts, presents and futures of technology.

The concept of technological change is essential to my study of the politics of technology. Whether one is viewing technology as a historical phenomenon or as an actually existing set of tools, machines, techniques, etc., there is no possibility of studying technology as a static object. Additionally, positioning technological change as a matter of open criticism eschews any moral or political philosophy that would assume in advance the inherent value of alleged improvements to existing technology. On a rhetorical level, technological change is non-neutral, though compared to notions of technological "progress" and "innovation" the mere fact of change is undogmatic; it leaves room for dissent, deconstruction and reconstruction. If we are to go "to the things themselves" as Husserl advocated, then we should also be aware that these things, technological things, exhibit a tendency toward flux: they are slippery things that admit of sustained reflection if they are to be described and critiqued at all.

However, the metaphysics of technological change does not bother me here so much as the notion of technologies and technological systems as phenomena in the field of politics. The alliance, for instance, of technology and political power is sometimes treated as irrelevant because

the technologies-themselves do not have moral agency. On this view, humans are the ultimate cause of technological change and therefore the only relevant moral actors to consider when new technologies begin to upset the existing social order. When millions of rural laborers in the first Industrial Revolution found themselves working in squalid conditions in the new factories, when European colonial powers utilized compass navigation and modern shipbuilding techniques to transport human chattel across the world's oceans, when a social media platform collects, holds and processes data pertaining to their human customers without external oversight, it is the people in charge, not the technologies-themselves that are to blame.

This thesis challenges the assumption that technology consists of neutral objects, tools, machines and software that merely perform their intended functions. I argue that technologies have a moral and political significance that demands attention from the people of a democratic republic; indeed, the same kind of attention that citizens give to their laws should be extended to the technologies under which they live. Further, the task of political theory is to imagine institutions that will facilitate this public reflection and discussion on technologies. The slowness of democratic deliberation is the first counterweight to the frenetic acceleration of technological change in our time.

My notion of democracy, however, differs from others that emphasize popular sovereignty, the control of the people [*demos*] over the national government. Many contemporary calls for the "democratization of technology" seem to float in this populist direction, albeit for the purpose of garnering the participation of people as users and consumers rather than citizens. Participation is in-itself an insufficient marker of democracy when democracy is understood as a means of securing the freedom and equality of citizens; one can still participate in a political system that dominates people of their religion, race, class, gender, sexual orientation and socioeconomic status.

This brings me to the fundamental frames that guide my constructive thinking in the following work. The first of these is republicanism, a branch of political thought with historical commitments to constitutionalism, mixed government and freedom understood as the absence of domination. The political thought of the republican theorist Philip Pettit, in particular, has guided my thinking on the subject of technology and freedom, and on the questions that surround the propensity for technology to increase or impinge upon the political freedom of the citizen. The concept of non-domination receives its most thorough treatment in chapter three, "Technology and non-domination."

Second, this thesis includes an attempt to synthesize republican political thought and the phenomenology of technics. Phenomenology provides the basis from which a thorough critique of technological conditions can arise, both analytically and in terms of existing scholarship on the relations between humanity and technology. The phenomenology of technics refers to the movement in phenomenological philosophy to engage with the phenomena of technology; my usage of the term "technics," is due in part to an affinity with this movement and with their goal of coming to grips with technology as it appears on the level of experience. More generally, phenomenology as a philosophy of human experience describes the essential relationship between the human subject and technological object through the concept of intentionality, whereby my engagement with technologies is a process of creating practical meanings related to technological artifacts and systems. Intentionality describes the process by which my engagement with technology makes me who I am on an individual level, and, furthermore, how technologies become embedded in social relationships via a process of co-constitution. In short, we make technologies, though technologies also make us who we are.

The synthesis of republicanism and phenomenology happens on the level of awareness of relations of domination. Phenomenology offers a method of examining the things that make up the technological constitution; republicanism offers a strong normative frame with which to critique the conditions the technological society has constructed.

To arrive at a republican approach to the theory of technics, I have also chosen to do the work of analyzing the confrontation of liberalism and technology from the writings of John Locke in the late 17th century to the present-day discourse of cyber-libertarianism. I allot the first half of this thesis to the examination of liberalism and its dominant tendencies toward the process of technological change. An alternative approach such as the one I present in the later chapters must be an alternative to something, and in this case, I perceive ideas from the liberal tradition as guiding the trajectory of technological change from its foundations to the present day.

Chapter one, "Liberalism I: Technology at the foundations liberal political thought" is the first of this two-part intellectual history. In this chapter, I begin by analyzing the political and economic philosophies of three founding figures of modern liberalism: John Locke, Adam Smith and Jeremy Bentham. Locke and Bentham supply competing discourses of political rights and individual freedom, with Locke drawing his theory of property from the natural law tradition, whereas Bentham advocates a new axiom of legislation based on the principle of general utility. Additionally, Bentham's attempt to establish a new science of morals and legislation complements the free market position of Adam Smith on the value of innovation to national productivity. Later on, however, the rise of social liberalism, with its conception of positive freedom, would unsettle the classical liberal tenets of individualism and *laissez-faire*; the political and social philosophy of T.H. Green and Leonard Hobhouse, in particular, qualified the claims of the Industrial Revolution and centered instead the experiences of oppressed workers caught in the economic machine.

Chapter two, "Liberalism II: 20th century technological change," picks up where the first chapter left off with the continued articulation of social liberalism. In this first section, John Dewey's critique of the old liberalism and desire to free engineers from the interests of business is complemented by the progressive ideas of Louis Brandeis on the value of individual rights, especially privacy, in the face of technological change. However, social liberalism would be supplanted by three other approaches to technology from the other corners of liberal theory: liberal technocracy, neoliberalism, and cyber-libertarianism. I analyze the significant theorists from these traditions in the section that follows and conclude with the claim that the majority of liberal theorists are not equipped to deal with the politics of technology because of the liberal ideal of non-interference. For Pettit, liberalism is a "broad church" that includes a wide range of political ideals and practices; however, the liberal tradition has also staid fast to the notion of freedom as non-interference, a notion that has permitted violent changes in the technological constitution of society and justification of these shifts in the rear-view mirror of history (1997 p.10).

Chapter three, "Non-domination and technology," transitions to the aforementioned synthesis of republicanism and phenomenology for the purpose of sketching an alternative means of thinking technological change. Beginning with an exposition of republican non-domination and the existing applications of phenomenological thought to technology, especially from the work of Don Ihde and Peter-Paul Verbeek, I then move on to defend the synthesis on the grounds that the phenomenological framework represents an improvement over existing descriptive methods that treat technological change as exogenous, and the republican notion of non-domination captures an essential harm of technologies that standard liberal accounts do not have the language or conceptual frames to express.

Chapter four, "The constitution of technology," addresses the question of designing institutions to investigate and regulate technological change. Through the lens of constitutionalism, in this chapter I critique existing approaches in Technology Assessment and present an argument for thinking of technological change as a relation of co-constitution between humanity and technology. I also critique the political theorist Langdon Winner's writings on the technical constitution of society, arguing that his image of democratic politics is not a substantive base from which to secure the means of promoting freedom as non-domination. After explaining my own formulation of democracy grounded in the republican tradition, I compare and contrast two essential institutions of popular control—the legislative body and the citizens' committee—and their potential to secure citizens against the threat of domination.

Thus, the normative claims in this thesis rest on the principles of freedom and domination. Why should this negative notion of freedom be of any relevance in a discussion of technology, whose impact on freedom is always cast in terms of augmentation, expansion and evolution from a primitive past into an enlightened future? The demand freedom makes of technological change is expressed by the revolutionary thinker Frantz Fanon in the context of the decolonial struggle : "I, the man of color, want only one thing: / That the instrument never dominates the man. That the servitude of man by man ceases forever. That is to say, of myself by another. That it might be permitted for me to discover and to love man, wherever he may be" (187).[1]

Whenever technology recedes from awareness, it becomes a potent instrument of domination. Whenever technology is acknowledged for what it is, only then can we begin to discover what it can be.

[1] « Moi, l'homme de couleur, je ne veux qu'une chose : / Que jamais l'instrument ne domine l'homme. Que cesse à jamais l'asservissement de l'homme par l'homme. C'est-à-dire de moi par un autre. Qu'il me soit permis de découvrir et de vouloir l'homme, où qu'il se trouve » (*Peau Noir, masques blancs* 187). [My translation]

Chapter 1.

Liberalism I: Technology at the foundations of liberal political thought

The traditional commitments of liberalism, including individual rights, free expression and market exchange, have undergirded the political and economic systems of states since the enlightenment. However, despite the relative staying power of liberalism, it often operates under an apparent contradiction: liberty is understood as the absence of interference, yet interference on the part of the government is a necessary component of political society. While many liberal thinkers have found creative ways to resolve this contradiction, deny it or simply assume it away, it has been and always will be a major stumbling block in liberal thought.

Liberalism produces a twofold danger when it pairs the doctrine of non-interference with an unwillingness to engage with challenges to its authority. From the liberal economic point of view, for instance, technological change is cast as "innovation," a process of continuous technical improvement that invariably leads to increased efficiency and individual autonomy. Though liberal thinkers recognize the replacement of human with machine labor as a social problem of some concern, they refuse to acknowledge more pressing threats to political institutions. The digital revolution has thrown this uncritical attitude into relief. Even as modern technologies engender automated decision-making, electronic surveillance and the dilution of the public sphere, neoliberals and cyber-libertarians argue the state should curtail regulation. Paradoxically, the liberal state should both render itself impotent against the exercise of economic freedoms and remain potent in its defense of these freedoms when they are under attack.

In this chapter and the next, I examine and evaluate the ways in which a variety of liberal thinkers have approached the tensions between freedom, technology and the law. I cover an expansive domain of modern political thought, spanning from the Glorious Revolution of 1688 in England to the present day and its global crises of politics, economics and public health. Whether their responses are explicit or implicit, the thinkers with whom I engage provide answers to three basic questions: (1) what is the meaning of liberty, (2) what is the proper domain of the state in which it can intervene to secure political, or civil liberty, and (3) to what extent is technology part of this domain of intervention? The last question is the most pressing, in my view, because it implicates the fundamental issue of whether the state has a legitimate interest in regulating technological change. Within this question lies the disquieting notion that certain technologies have the potential to impinge on political liberty; more specifically, that certain devices and techniques, and, in some cases, entire technological systems, can constrain the capacity of individuals to meaningfully participate in the public affairs of their community and enjoy the equal exercise of their rights and duties with respect to their peers.

With regard to the place of technology in the polity, there are three roughly distinct periods for the development of liberal thought, the first two of which I address in this opening chapter. First, three intersecting revolutions of the enlightenment—political, industrial and scientific—accompany liberalism in its foundational period. Second, the elaboration of liberalism occurs in the wake of these revolutions, with the emergence of the modern nation-state, corporate industry and social protections against the perceived detrimental effects of industrialization. Third, the dissolution of Keynesian economic policies in post-war democracies catalyzes the rise of two interpretations of liberal thought that persist today, that of neoliberalism and cyber-libertarianism.

The development of the liberal state has been accompanied by political and economic policies that seek to prolong an interminable technological revolution. These policies undermine the foundations of the liberal state, excluding the general public from discussions about the future of technology and replacing informed deliberation with socially engineered consent. However, I conclude that this has been an endogenous process, not necessarily caused, but certainly inclined by the contradictions within liberal non-interference. If it is true that certain technologies have impinged on liberty while liberals turn a blind eye, in theory and in practice, then we stand on firm ground in claiming that liberalism has lost its way. It is my goal in this opening chapter to explicate the origins and development of the liberal tradition that have contributed to its modern crisis of disorientation.

INSTRUMENTS AND MACHINES AT THE FOUNDATION OF LIBERALISM

In 1688, William of Orange's accession to the British throne and parliament's subsequent drafting of a Bill of rights ushered in the end of the Stuart monarchy. The next year, John Locke returned to England from exile and published *Two Treatises of* Government, though he had composed much of the work in the years leading up to his flight from the country in 1683. In fact, convincing historiographical evidence suggests Locke wrote the *Treatises* not in response to the new constitutional monarchy, but in criticism of the paternal absolutist writings of the previous decade, especially those of Sir Robert Filmer.[2] With this background in mind, it seems that Locke was not at all concerned with technology, and in a general sense, this is true. However, Locke was deeply concerned with the rights of the individual against arbitrary power. It is the depth of Locke's humanism, then, as well as its pitfalls, that bears on our question concerning technology.

[2] See Peter Laslett, "Two Treatises of Government and the Revolution of 1688," *Cambridge Historical Journal,* vol 12, no. 1, March 1956, pp. 40-55.

In *The Second Treatise of Government*, Locke employs the theory of natural right to justify the perfect freedom and equal status of men in the state of nature.[3] In that theoretical state, each man has "an uncontroleable Liberty, to dispose of his Person or Possessions," but lacks the liberty to harm others, except in self-defense (ch. II §6). To sustain themselves, men enjoy the right to appropriate parts of the common, God-given stock of the world as their own. To do so lawfully, without gaining the consent of all other members of mankind, requires that each man "has a *Property* in his own person" (ch. IV §27). From the idea of self-ownership, it follows that each man has a natural title to the labor of his body and the works of his hands. In removing an item from what is held in common—an apple from a tree, for instance—man mixes his labor with it, improves it, and thereby makes it his own.

Unlike his well-known predecessor,[4] Locke differentiates between the state of nature, "Men living together according to reason, without a common judge Superior on Earth," and the *state of war*, in which the absence of a common judge leads men to employ "force, or a declared design of force" in settling their disputes (ch. III §19). The state of nature, then, represents a fragile peace, and the reason for men to enter into political society is "the mutual preservation of their Lives, Liberties and Estates, which I call by the general Name, *Property*" (ch. IX §123). Again, in Locke's view, each individual owns himself; there is thus an identity of liberty and property. Similarly, the people as *one body* consent to the law of government, giving up their natural liberty, though in return they gain the safety of the commonwealth. Locke writes further that "express consent" is necessary to incorporate oneself as a member of the body politic; profiting from the security of a

[3] While I tend to alternate between masculine, feminine or gender-neutral pronouns in my own writing, when discussing the work of a philosopher I employ the language they use in their original written work.

[4] Cf. Hobbes, *Leviathan* chap. XIII

particular country makes the individual subject to that country's laws, but to enjoy the rights and duties of citizenship requires active submission (ch. VIII §119).

Given the centrality of private property in Locke's political thought, in what instances does the commonwealth have a legitimate reason for interference in the affairs of individuals? First, the state can interfere on grounds of inefficiency. Locke, who claims that God gave the world to mankind in common, emphasizes that any man who takes more than he is able to enjoy, letting the products of nature spoil, has "invaded his Neighbour's share, for he had *no Right, farther than his Use*" (ch. IV §37). Such a person, in Locke's view, is liable to be punished by his fellow man in the state of nature, and, by extension, the government in political society. And though it would be incorrect to call Locke a proto environmentalist, his vilification of waste speaks to a growing problem in mass consumer societies.

The introduction of agriculture and manufacturing technologies, for example, has greatly magnified the volume of waste since the publication of the *Second Treatise.* In the 2018 "What a Waste 2.0" report from the World Bank, Kaza et al. note that Food Loss and Waste accounts for about 30 percent of all food produced in the world, amounting to 1.3 billion tons of wasted food per year (30). Most of the food waste in low-income countries occurs at the production and storage and distribution stages, and the authors cite "managerial and technical limitations" as one of the key causes of this failure (31). Blockages in supply chains, high market prices and intentional retention of food supplies contribute to food waste, and on a Lockean view the commonwealth would have an interest in punishing, and thus deterring those who allowed excessive waste in their production process. In this case, however, the liberality of the state has resulted in letting both food waste and environmental degradation occur within generous limits of acceptability.

For the people to tolerate government intervention, Locke expects that the Legislative power always uphold the right to life, liberty and property. Express consent is the keystone of the legitimate commonwealth, though to some degree Locke admits this consent is only valuable if the people have access to the practical means of resisting arbitrary power (ch. XIX §226–229). An individual's consent to live under the laws of a commonwealth is conditioned on the relative rightness or corruption of the government; to claim that a person should not resist unlawful government because it would disturb the peace is tantamount to the claim that "honest Men may not oppose Robbers or Pirates, because this may occasion disorder and bloodshed" (ch. XIX §228). It is in this sense, however, that Lockean consent leaves us at a loss to resist the process of technological change, which has no obvious locus of power, nor center of authority to whom one can express one's disapproval. Thus, the concept of consent in-itself is incomplete; such consent is not meaningful if all parties to the contract do not have the opportunity to express their views and influence the outcome of the deliberation.

Locke's ideas concerning individuals' right to pursue life, liberty and property would be further developed during the first major turn towards mechanized production during the First Industrial Revolution. Especially in the domain of political economy, thinkers were beginning to recognize the transformative potential of machines in labor and industry; it was in this context that Adam Smith published his economic treatise *The Wealth of Nations* (1776). In the first two chapters of *The Wealth of Nations,* Smith makes two significant claims that together serve as the wellspring of his economic theory. The first is that "the division of labor, however, so far as it can be introduced, occasions, in every art, a proportionable increase of the productive powers of labor" (Bk. I.i 5). To support this claim, Smith describes the effect of the division of labor on the productive capacities of a pin-manufacturer; namely, that splitting the different stages of the

production process amongst several workers is more efficient than having an equal number of workers each manufacture pins individually. Smith's second major claim is that all men have a "propensity to truck barter and exchange one thing for another" that leads naturally to the creation of markets based on self-interested economic behavior (Bk. I.ii 14).

Smith argues that lone individuals profiting from the division of labor drive technological innovation. Such individuals typically fall into one of three categories: workers, makers and philosophers. Smith conjectures that workers who specialize can then devote time and energy to inventing new methods of production, and indeed their self-interest motivates them to do so. For example, Smith relates an incredible anecdote about a boy who, tasked with operating the valve of an early "fire [steam] engine", finds a way to automate his labor by tying a string from the handle of a valve to another part of the machine, an ingenious improvement that allows him to go out and play with his friends (Bk. I.i. 10).[5]

Smith does not have much to say of the makers—whose occupation, after all, is invention. However, in the philosophers he finds further proof of the benefits of the division of labor. Philosophy, of course, does not connote the professional university departments of today (though these might also serve as proof of Smith's argument); instead, philosophy, or speculation, refers to the work of individuals "whose trade it is, not to do any thing, but to observe every thing" (Bk. I.i. 11). While workers want to streamline the industrial process, philosophers nurture academic interests which are adjacent to technology, thereby contributing unintentionally to the creation of new methods and machines of industry.

[5] The moral of this story is that individual workers, operating from self-interest, are liable to improve upon existing techniques. Smith's stance on the moral permissibility of child labor, however, is ambiguous.

In sum, the benefits Smith associates with technological progress are the virtuous outcome of the division of labor and market competition. There is a potential problem with this claim, however, because of the inefficiency involved in coordinating innovation on the macro-scale. It is plausible that a single worker might figure out a more efficient production process, but to contribute substantially to the national economy the process must eventually enjoy widespread adoption. The difficulty is to find a method or process by which inventions can spread naturally, without the hindrance of government planning or intervention.

For Smith, the market mechanism achieves in the absence of conscious guidance much more than the state can hope to achieve by unified intention. In the pure competitive markets of classical economics, firms quickly adopt new methods of production that might give them a slight edge, and over time the free market allocates the fruits of invention. In this way, the drives of human nature, as Smith understood them, provide fuel for the automated process of market exchange. Smith therefore resisted efforts to tamper with this mechanism, allocating to the state a comparatively narrow domain in which to regulate economic activity. The state's only duty is to maintain conditions under which market transaction can occur, including the provisions of defense, a justice system and public works (Bk. IV.ix 745). In short, the state intervenes in instances where the market mechanism fails—though this also includes the need to address moral degradation among workers in the "large manufactories" of newly industrialized urban environments, in which "the temptation of bad company" is a threat to the moral development of the individual (Bk I.viii 96). Overall, the Smithian perspective on technology is characteristically *laissez-faire*, positing technological change as a natural process that tends toward the public good.

Classical economists like Smith recognized the transformative role of machine technology due to its effects on economic activity. However, the impact of science and technology on politics

proved more abstract and difficult to articulate. Before confronting technology as a political phenomenon, modern political thinkers gained fluency in importing a science discourse into politics and economics. Jeremy Bentham, the father of utilitarianism, played a pivotal role in bringing a scientific attitude to the legislative process and applying to legislation his principle of general utility: the greatest happiness for the greatest number. In 1789, Bentham published his first major work, *An Introduction to the Principles of Morals and Legislation*, in which he claims the pursuit of pleasure and the evasion of pain are the source of all human conduct. Working from this premise, he derives a moral and political formula for legislators to apply in their work: "Between two opposite modes of action, would you know to which the preference is due? Calculate the effects, in good and ill, and decide for that which promises the greatest amount of happiness" (310).

Within the recommendation to legislate on the basis of moral calculation lies a significant fracture with preceding liberal theorists. In detaching politics from what he termed the "fictions" of natural law and the social contract, Bentham appealed not to an absolute moral authority, but to the authority of an axiomatic moral principle, the principle of general utility, from which burst forth an extensive body of political thought (303). However, despite his formidable oeuvre of moral and political writings, Bentham is most well-known among scholars of science and technology as the architect of the panopticon. The panopticon's structure resembles a cylinder, with a high watchtower in the center that affords the inspector a view into the prison cells on the circumference. The cells are partitioned such that the prisoners cannot see the inspector, nor each other, though the inspector can see them. Its original application was to prisons; however, Bentham believed the architectural principles of the panopticon could also be applied to other settings in which individuals must be constantly watched to ensure their good behavior.

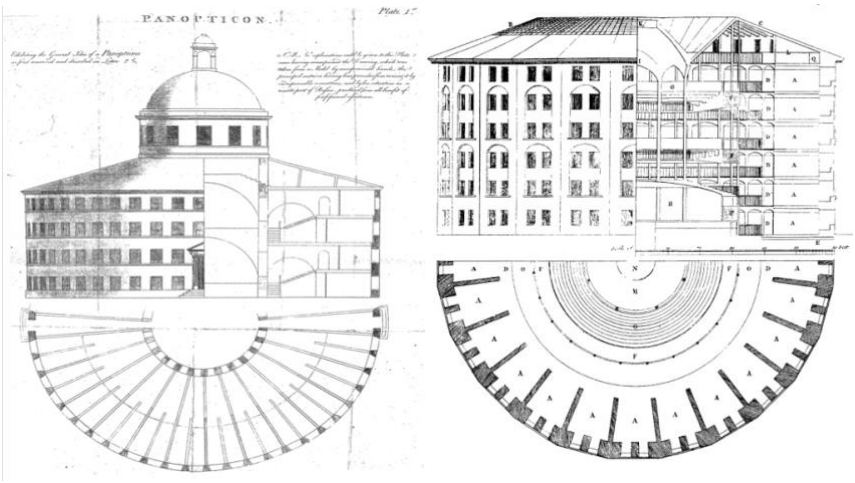

Figure 1-1. Architectural drawings of the panopticon prison by Willey Reveley from the 1791 plans

Bentham published the panopticon plans in 1791 under the title *Panopticon: or, the Inspection House*, though this work and the later 'Postscripts' came after years of reflection. Bentham, however, never saw the construction of a real panopticon. The contemporary obsession with panopticon metaphors comes, no doubt, from its treatment in Foucault's 1975 work *Surveiller et Punir: Naissance de la prison*. Foucault argues that the arrangement of power structures in modern society has come to resemble a panopticon, in which individuals discipline themselves under the exposure of institutions that induce the perception of total surveillance. The total diffusion of panopticism, Foucault writes, is no accident, but a Benthamite dream come true:

> These disciplines, which the classical age had elaborated in specific, relatively enclosed places—barracks, schools, workshops—and whose total implementation had been imagined only at the limited and temporary scale of a plague-stricken town, Bentham dreamt of transforming into a network of mechanisms that would be everywhere and always alert, running through society without interruption in space or time. (2008 p.12)

Foucault intimates that Bentham's ultimate goal was to subject people in every social context to the same disciplinary measures used to manage lepers, prisoners and schoolchildren. Despite the

undeniable influence of Foucault's interpretation, however, his characterization is incomplete. Bentham indeed wished to introduce the panopticon principle to schools, hospitals and factories, though there is scant evidence to support the goal of total implementation. In fact, Bentham considered the panopticon an "answer to one of the most puzzling of political questions, *quis custodiet ipsos custodes* [who will watch the watchmen]?" referencing a line from the *Satires* of the Latin poet Juvenal (1791 p.26). Through the verse of the poet, Bentham illustrates a challenge: how to verify those in power are wielding power in the right way. However, despite our intuitions about the psychological oppressiveness of panopticism, Bentham actually viewed the panopticon as a *solution* to this challenge. How could this be the case?

One answer lies in the performative role Bentham envisioned for the prison system. The real Bentham, argues Sajjad Safaei (2020), believed the prison held instructive quality for the onlooker of the tortured prisoners, adding in the 'Postscripts' that "in a well-composed Committee of Penal Law, I know not a more essential personage than the Manager of a Theatre" (58).[6] The prison had to be theatrical not for the entertainment of the guards, but for that of the general public. Bentham wanted the panopticon and similar institutions to be subjected to the scrutiny of the public eye, "thrown wide open to the body of the curious at large: —the great *open committee* of the tribunal of the world" (30). He encouraged officials and ordinary citizens to visit the panopticon, not simply to witness the suffering of the prisoners, but to keep tabs on the inspector as well. The above considerations contradict Foucault's thesis that the practice of gruesome medieval torture had given way to torturous banality and regimentation. And though Bentham's obsession with social engineering is cause for concern on a classical liberal view, the great mistake of panopticon

[6] Safaei acknowledges a debt to Philip Smith (2009) for bringing this quote to their attention.

metaphors is that they stop at the prison gate; those in the watchtower, too, expose themselves to a transparent, quasi-democratic process of monitoring.

If there is any strictly Benthamite influence on the contemporary modes of technological regulation, it lies not in the panopticon as a metaphor for the surveillance state, but in Bentham's integration of utilitarianism into a new quantitative science of politics. Nothing should be so familiar to us, yet so strange given the history of constitutionalism and legislation, that the art of politics should base itself on a quantitative understanding of happiness. I say "familiar" because of the rapid advances in speed and power of computers within the past half-century, and the concomitant deluge of digital data in our technological society. Bentham, on the other hand, wrote during the fledgling years of statistical method, when it would have been impossible to process the necessary data to implement the felicific calculus he proposed.

In *The Taming of Chance*, a history of the emergence of national statistics in Europe, Ian Hacking writes of the first attempts to record numerical indications of social welfare. On the advice of G.W. Leibniz, the kingdom of Brandenburg-Prussia began recording births, deaths and marriages during the reign of Friedrich Wilhelm I (1713-1740), using these numbers as proxies for the vigor of the state (Hacking 19). Suffice it to say those Prussian administrators would be amazed at the sheer volume of data that contemporary governments collect on their citizens. With the United States as a notable exception, many countries today have comprehensive national ID systems that connect the personal information of citizens to an array of government services. In addition, the phenomenon of "big data," the collection, storage and distribution of data sets too large for standard IT devices, has greatly increased the volume and types of data organizations can feasibly process (see Alam et al. 2014; Chen, Chiang and Storey 2012).

Modern technology has not achieved the Foucauldian panoptic dream, so much as the distinctively Benthamite dream of quantitative morality. Take Bentham from any stage in his career—from his early conservatism to his late radical republicanism—and you will find a constant adherence to the principle of general utility (Schofield 93). Everywhere the legislator is expected to carry out moral calculations to ascertain the amounts of pain and pleasure drawn from a particular act, while at the same time he is faced with the impossible task of quantifying the subjective mental states of millions of citizens. Bentham, however, seems to sidestep the practical difficulty of moral calculation:

> When we are familiar with it [moral calculation], when we have acquired the judgement which results from such familiarity with it, we compare the sum-total of good, and the sum-total of mischief, with so much promptitude as not to perceive the items of the reasoning. We do the sum without knowing it (*Morals and Legislation* 238).

According to Bentham, moral calculation has always been followed implicitly; over time it becomes ingrained in the mind of the legislator. What this really sounds like, however, is the use of heuristics: rules of thumb for making informed, but hardly quantitative judgements about the moral acceptability of public policies.[7] The Benthamite legislator was, then, a "computer" in the literal sense of the word, albeit a groping and inefficient one. But if processing power is the most important attribute of the legislator, are there now digital computers that can do a better job?

It is tempting to claim that information technology has dragged the least practical aspects of utilitarian government into the realm of possibility, though the same weaknesses of utilitarian thought also plague modern data-centrism. Latent within the utilitarian foundations of the modern state is a logic of government that attaches political meaning to quantitative proxies of social

[7] See Tversky and Kahneman (1974) for a detailed study of the general use of heuristics in human decision-making.

progress. These are often presented in the form of economic ratios and averages, and thus are liable to obscure increasing inequality and the decay of basic freedoms. There is, in fact, no fundamental agreement between utilitarian aims and institutions that safeguard political liberty. Indeed, there is a diminished need for representative government if the state can effectively measure public opinion and predict the effects of its actions via technological means. Further, as was demonstrated by the Snowden leaks in 2013 of post-9/11 National Security Agency electronic surveillance, an apparatus of mass surveillance allegedly designed to protect American citizens supplements the traditional bureaucratic machine of government. The startling lack of legislative oversight in that case further proves the imperative of technical execution over the messier process of legislative deliberation. Democracy becomes superfluous, and a data-driven enlightened despotism constitutes an attractive alternative.

THE ELABORATION OF LIBERALISM IN THE INDUSTRIAL AGE

Over the course of the 19th century, interpretations of the impact of machine industry on social progress gained greater relevance in liberal spheres of thought. Classical economists working within the tradition of Adam Smith lauded the advantages of machine technology for both producers and consumers, touting the invention of new methods of production as an undeniable social good. This form of economic liberalism constituted a powerful intellectual current, but it did not stand unopposed; the advent of social liberalism, beginning with the late political thought of John Stuart Mill, turned towards an acknowledgement of the recurring crises of unemployment and unequal contractual relationships the factory model had engendered. These social liberals emphasized the duty of governments to foster conditions that would allow citizens to develop as creative, engaged and moral members of democratic society, though they still hesitated to inquire directly into the political content of the machine.

Though a disciple of Bentham's utilitarianism, Mill accorded individual liberty and its realization within a system of representative government a central position in his political thought. For Mill, locating the proper limits of government coercion over the individual—what he terms "the struggle between Liberty and Authority"—represents the single greatest challenge in the history of government (*On Liberty* 5). In this way, Mill articulates a similar flashpoint between the commonwealth and its citizens. The problem of government coercion is especially pronounced when the authorities impose a tax, a rule or some such other provision that comes into conflict with the desires of individuals. In response to this concern, Mill advocates a supreme political principle: "That the only purpose for which power can be rightfully exercised over any member of a civilized community, against his will, is to prevent harm to others" (Ibid 14). The security of the individual, however, is not an end-in-itself, but a precondition for his active flourishing as a member of society. Indeed, it is Mill's broad definition of utility, "grounded on the permanent interests of man as a progressive being," that ties the moral progress of the individual to that of the community (Ibid).

One of the instances in which Mill supported government intervention was in the reform of factory working conditions, especially as it concerned the treatment of women and children. Mark Blaug (1958) documents the economic debates surrounding early factory legislation in Britain, in which Mill was a central figure. Mill first argued in an 1832 article for a law that would ban children and females of all ages from working in factories, while answering possible objections to his position from the adherents of a "non-interference philosophy" (qtd. in Blaug 214). Later, however, he argued for women's right to employment and even expressed a desire to extend worker's protections to men as well. Mill emphasized the "propriety of government intervention" in cases where the legislature ought to support the interests of workers, whose bargaining power

paled in comparison to that of the industrial capitalist (220).[8] It might be assumed that the classical economists aligned themselves against the Factory acts in England, though Kenneth Walker (1941) actually reported a lack of consensus among the most prominent liberal economists of the time. Thinkers such as David Ricardo and Thomas Malthus, for example, stayed relatively silent on the matter, and most of the attendees of the star-studded 1821 meeting of the Political Economy Club—which included Ricardo, Robert Torrens, J.R. Mcullough and Mill—actually favored factory legislation, at least on behalf of children (Walker 171).[9]

If Walker is right that the English political economists did not express strong opinions on factory legislation, perhaps it will be more fruitful to look elsewhere; namely, among the thinkers of the more uncompromising French Liberal school of economic thought. In his *Traité d'économie politique*, for example, the French economist Jean-Baptiste Say argues unreservedly for the advantages of industrial machinery.[10] Say address two key concerns of his opponents: that machines destroy occupations and that they benefit the capitalist producer at the expense of laborers. To the first point, Say expounds the idea that all machines, from the simplest tools to the most complex instruments, are merely methods for harnessing the powers of nature (65). Though Say admits that new inventions risk certain "disadvantages" [*inconvéniens*] for those who lose employment, these disadvantages have always been greatly outweighed by the overall benefits (66). He therefore has no sympathy for arguments to the contrary, chalking them up to shortsightedness, even madness on the part of the critics of industry:

---

[8] See Mill, *Principles of Political Economy* (London, 4th ed., 1849), pp. 427-30.

[9] See also *Proceedings of the Political Economy Club, 1821-1920 (London 1921), IV, 41*.

[10] From the fifth edition of the *Traité D'économie Politique : Ou Simple Exposition De La Manière Dont Se Forment, Se Distribuent Et Se Consomment Les Richesses,* published in Paris in 1826.

> Et l'on a tiré là des arguments assez graves contre l'emploi des machines ; plusieurs lieux, elles ont été repoussées par la fureur populaire, même par des actes de l'administration. Ce serait toutefois un acte de folie que de repousser des améliorations a jamais favorables à l'humanité, à cause des inconvéniens qu'elle pourraient avoir dans l'origine ; inconvéniens d'ailleurs atténués par les circonstances qui les accompagnent ordinairement.[11] (66)

Say further observes that the loss of employment in one sector often causes a demand for labor in another; the construction of a hydraulic machine (aqueduct) replaces the labor of water porters, with a demand for the labor of architects, masons and steel workers (67). In addition, there will be less suffering among members of the working class when machines carry out exhausting jobs, because "machines do not die of hunger" [*des machines ne meurent pas de faim*] (71). Finally, such improvements give workers greater purchasing power due to the decreased costs of production, allowing firms to reduce their prices to compete on the market.

On Say's view the continuous invention of new machines is one of the single greatest determinants of economic and social progress, diffusing benefits to all members of the society, managers and workers alike. It follows that any attempt to regulate the process of technological innovation is likely to be ill-conceived, ultimately tending toward the harm of the very same individuals or groups its author sets out to protect. The liberal economic interpretation of technological change can always fall back on the assertion that the temporary pain felt by some

[11] "And there have been some rather serious arguments against the use of machines; in many places, they have been pushed out by popular fury, even by acts of administration. It would be, however, an act of folly to reject those improvements ever favorable to humanity because of the disadvantages they may have in the beginning; disadvantages, moreover, attenuated by the circumstances that ordinarily accompany them." [My translation]

will surely yield long-term benefits for all. The entrepreneurial inventors of technology need only say "leave it to us" [*laissez-nous faire*], and abundance will follow.[12]

It is perhaps ironic, then, that the economic doctrine of *laissez-faire* would gradually lose its standing within the liberal tradition due to a series of innovations that were not technological, but ideological in nature. The first of these innovations was the addition of 'positive liberty' to the working vocabulary of liberal theorists. While the idea of positive liberty was by no means a completely new phenomenon, having been a cornerstone of concepts of liberty in the classical republics of ancient Greece and Rome, the negative notion of liberty as the absence of constraints had dominated liberal thought since the beginning of the enlightenment.[13] However, in the mid to late 19th century a new generation of social liberals had taken up the concept and began employing it as a justification for more vigorous government intervention performed in the interest of the community.

One of the first thinkers to elaborate a positive concept of liberty during this period was the English philosopher Thomas Hill Green. Like the social contract theorists, Green argues that man in the state of nature, while enjoying perfect freedom in terms of the absence of constraint, lacks freedom because he cannot exercise the full faculties of thought and action: "He is not the slave of man, but he is the slave of nature" (371). Green, for his part, emphasizes the gains the individual makes when he submits to the law and enters into political society. What is also distinctive is the extent to which the freedom Green refers depends on the definition of man as a social being: "freedom… is valuable only as a means to an end: That end is what I call freedom in the positive

[12] This quote is attributed to the French merchant M. Le Gendre, who, speaking on behalf of the merchant class in 1681, allegedly refused the economic assistance of finance minister Jean-Baptiste Colbert with the phrase, « Laissez-nous faire ».

[13] See Quentin Skinner, *Liberty before Liberalism,* Cambridge UP, 1998.

sense: in other words, the liberation of the powers of all men equally for contributions to a common good" (372).

On this view, although the individual is still an important point of reference, there is a clear rejection of atomistic individualism. Green's philosophical anthropology thus consists of a rejection of *homo oeconomicus* and an embrace of the Aristotelian *zoon politikon* [political animal], whose existence is inextricably tied to life in the polis. Liberation, the removal of obstacles, is instrumental to the enactment of positive liberty in this social context. Extending the liberal commitment to individual rights, Green also advances a critique of economic interpretations of labor. Unlike Smith or Say, for example, who treat labor as a market commodity, Green claims that labor "attaches in a peculiar manner to the person of man," and therefore requires greater restrictions on its sale (373). Labor is much more than a factor of production; one's occupation is also a vital source of purpose and dignity.

Though Green accords the state a responsibility to maintain a minimum set of conditions under which citizens can attain a high degree of self-fulfillment, the nature of this maintenance is proactive as it regards the actions of individual agents, but reactive as it regards processes such as technological change. Regarding the general population, he is not convinced that "the enlightened self-interest or benevolence of individuals, working under a system of unlimited freedom of contract," would have been able to resolve the problems addressed in the Factory Acts (376). The intervention of the legislature was necessary, he argues, in order to rearrange the rights and regulations involved in contracting one's labor in the novel industrial context. Still, Green offers little guidance in the way of influencing the introduction or design of the machines that helped give rise to the working conditions in those factories. Tongue in cheek, he references the official accounts of dismal working conditions among the nation's "great industries" before the

introduction of legal regulations, thereby focusing on the conditions *produced by* the factory system, not the factory system itself; Green betrays no pretensions to Luddism, technophobia or anything close to a sustained critique of machine technology outside its effects on workers.

In fact, in the new social liberalism there was an even greater synthesis between the state and the machine as a metaphor for social control. As an intellectual successor of Green, the English liberal political theorist and sociologist Leonard Hobhouse made further innovations in the expression of social liberalism, though also did so through the use of mechanical rhetoric. To be sure, Hobhouse wrote convincingly of the common political interests linking the individual to society. In direct confrontation with earlier liberal thinkers,[14] He claims in his seminal work, *Liberalism* (1911), that there is "no essential antithesis between liberty and law. On the contrary, law is essential to liberty" (17). Because the law implicates all members of the community, Hobhouse argues, it liberates the individual from the fear of arbitrary subjection. It is also from this impartiality in the law that Hobhouse concludes, "Liberty in this respect implies equality," not merely between citizens but also between citizens, governments, and any other corporate entity that operates within the society (Ibid).

Looking back on the legislative disputes surrounding the Factory Acts, Hobhouse traces the disorientation of *laissez-faire* doctrine among members of parliament in the 1830s, a process that heralded "the decay and death of the older Liberalism" (48). Concerning contracts, for instance, a major tenet of classical liberalism had been the right to freely dispose of one's labor. At least since Locke, liberal theorists had consecrated the absolute right of a person over the labor of their body and the works of their hands. Hobhouse, however, associates the "rise of machine industry since 1760" with a growing admission of the need to protect children and adult laborers from

[14] E.g., Bentham, *Principles of Legislation:* "Every law is an evil, for every law is an infraction of liberty" (259).

exploitation in contractual relationships (46). Even as a fully capable adult, the laborer was also subject to the bargaining power of industrial managers, requiring the state to interfere with freedom of contract to establish a fair and just transaction. Moreover, the lack of industrial regulation increased the arbitrary power of industry owners over their dependent employees who, by economic necessity, placed themselves under the partial dominion of factory bosses in exchange for wages.

With his rejection of *laissez-faire* and individualism, Hobhouse represents one thread in a radical strand of liberal political thought. Though he advances nothing close to a cohesive theory of technology or technological change, Hobhouse and other social liberals introduced the concept of organicism to the theory of the liberal state.[15] Hobhouse claims society is "organic" in the sense that it is "made up of parts which are quite distinct from one another, but which are destroyed or vitally altered when they are removed from the whole" (67). In this thoroughly socialized conception of humanity, the identity of the individual means nothing in the absence of public life. Further, the organic view is conditioned on a vision of the body politic which seems to evoke images of the flesh, but which actually belongs within a tradition of mechanical political rhetoric. Locke invokes this tradition when he refers to god as a divine craftsman whose "workmanship" brought man into existence, though the metaphor extends much further, appearing in many different political orientations (Chap. II §6).

The 17th century philosopher Thomas Hobbes delivers one of the most poetic expressions of mechanical politics in his introduction to *Leviathan*, in which the motions of man and the state are reduced to their material and instrumental functions:

[15] See Jeannie Morefield, . "HEGELIAN ORGANICISM, BRITISH NEW LIBERALISM AND THE RETURN OF THE FAMILY STATE," for a detailed account of the way in which Hegelian ideas in the new liberalism served as a foil for their classical liberal alternatives.

> For what is the *Heart*, but a *Spring*; and the *Nerves*, but so many *Strings*; and the *Joynts*, but so many *Wheeles*, giving motion to the whole Body, such as was intended by the Artificer? *Art* goes yet further, imitating that Rationall and most excellent worke of Nature, *Man*. For by Art is created that great LEVIATHAN called a COMMON-WEALTH, or STATE, (in latine CIVITAS) which is but an Artificiall Man…" (7).

The parallelism of man and state thus rests on their shared status as the outcome of artificial design. Whether Hobbes was the first to propound such a mechanical interpretation of the state is doubtful, though subsequent theorists certainly owe a debt to his treatment of the subject. Hobhouse is included among these inheritors of machine discourse, deploying mechanical metaphors at various junctures in his political thought. He does so in the chastisement of individuals who take the state for granted, writing, "if everyone were to act as he does, the social machine would come to a stop" (79) and in the context of keeping paupers "away from the Poor Law machine" which had allegedly sapped individual initiative and lowered the average working wage (82).

The most revealing instance of machine rhetoric, however, appears in an argument for the right to a living wage. Hobhouse claims that, in any society where a capable individual cannot sustain himself by means of a decent profession, "[t]here is somewhere a defect in the social system, a hitch in the economic machine" (84). Hobhouse pursues the metaphor in his description of the worker who has no hope of fixing such a machine on his own; for one person to fix the machine, he argues, is an impossible task owing to the complexity of the economic mechanism in question. Nevertheless, in his view these considerations of feasibility should not abrogate the rights of the citizen. Though Hobhouse does not turn his attention to the process of technological change *per se*, he opens up the domain of government intervention to address the "complex mass of social forces" that can potentially endanger the free status of the individual in society, but which no

individual can hope to control: “They [social forces] can be controlled, if at all, by the organized action of the community, and therefore, by a just apportionment of responsibility, it is for the community to deal with them” (86-7). It is not so much of a leap, in my opinion, to posit technological changes as one of these social forces, even if this is ultimately not the language I embrace in describing the role of technologies in society.

Finally, it is one thing to designate collective responsibility for regulating social conditions, though quite another to probe into how those conditions came about. Among the many possible lines of inquiry, Hobhouse is not prepared to scrutinize the *design* of technology for its political content. By design, I mean not only the structure of machines, but within what overall plan for the society those machines fit. The same machines that the classical economists lauded for their efficiency—such as textile looms, the steam engine, and faster printing presses—had played a role in giving rise to social conditions that no one in particular had planned, but that were nevertheless the outcome of innumerable decisions that each finely altered the course of technological change. Unlike in the design of political constitutions in the liberal tradition, which supposedly involves careful planning and deliberation by all of the relevant stakeholders, the technological makeup of the society had taken shape without input from the majority of its would-be citizens. The question that began to occupy liberal thinkers at the turn of the 20th century was how to harness the social forces of technological change so they would serve the public good. In the next chapter, I turn my attention to the debates over technological change from the conclusion of the First World War, the first large-scale industrial war, to the challenges facing modern Internet societies.

Chapter 2.

Liberalism II: 20th century technological change

At the turn of the 20th century, new technologies of communication and production as well as advancements in science promised a higher quality of life for an increasing number of people. Among other factors, the ascendance of liberalism and the liberal state contributed to these developments in science and technology by setting up market institutions and property rights regimes that favored innovation and entrepreneurship. Along with their enthusiasm for technology, however, liberals also began to consider the various unintended consequences of these innovations. From a sociological perspective, many thinkers recognized that technological developments were having adverse effects on the material and psychological welfare of the population. Only a minority of them, however, acknowledged the gravity of these emerging issues.

The subject of technology, if approached at all, appeared mostly in the context of economics and industry; technology was concerning to the extent that it clearly violated laws, decreased social welfare or offended the established mores of a society. All things being equal, however, the steady march of industry in the preceding century made it seem all but certain that technological innovation would continue unabated. While classical liberals preferred letting the "natural" course of technology take hold, there were others who more readily critiqued the state of technology and advocated regulatory action from governments and civil society. In this chapter, I outline the major liberal attitudes and critical responses to the challenges of the technological society during this period of intense technological change.

The dominant variants of liberalism negate and build on each other at different junctures in the historical debates on politics and technology. Thinking through the contours of human-technology relations that appear in these debates reformulates the issues surrounding technological change as ones that implicate both the complexities of human affairs and of contemporary technology itself. The structure of my analysis happens to be chronological, if only to serve the purpose of illustrating a certain rhetorical trajectory contained in these ideas and languages of politics, the proponents of which seize upon historical developments as justification for their claims.

This part of my history begins with early efforts toward a "radical" liberal interpretation of economic and social life in the early 20th century. The optimistic belief in science and technology to solve social problems was embodied in the policies of liberal technocracy, whereas the attitudes of neoliberalism, anarcho-capitalism and cyber-libertarianism leaned on the free market as a tool to promote the ends of civilization. Coming to grips with this taxonomy of creatively enmeshed terms, however, is not the point of my analysis; in the absence of discourse (written and spoken communication) and praxis (the enactment of theory), these terms are emptied of meaning. My aim, rather, is to move through the paths of thought apparent in liberal theory to show their implications for political life. The net effect of the liberal domination of technics in the past century has been an accumulation of intertwined ideological, rhetorical and material justifications of accelerating technological change. In the following pages, I examine the premises that belie these justifications, as well as the technological conditions that sustain their normalization.

THE CONFLICT WITHIN LIBERALISM: NATURE AND PROGRESS

A key feature of most explanatory arguments for the progress of Western civilization is the unfettered advance of science and technology. New medical breakthroughs, more efficient production processes and bounties of consumer products foster confidence in the power of human

ingenuity, offering undeniable evidence of the benefits of these advances. For the most part, liberals have supported heavy investment in the fields of science and engineering, especially when they promise to make the nation safer, more prosperous, or more admired by international allies, and, conversely, feared by foreign enemies. Through a pseudo-utilitarian calculus, the benefits of technological change consistently outweigh the "costs", "risks" or "harms" that befall individual citizens and groups. Admittedly, the natural environment suffers, the masses stuff themselves into overcrowded cities and the complexities of the modern world multiply considerably, yet these downsides are never framed as unacceptable attacks on the supposed jewel of liberalism: *liberty*.

The reason for this lies in the liberal conceptions of liberty, the majority of which posit liberty as the absence of interference. Early modern social contract theory set the bar of liberty when its proponents emphasized what man in his natural state has to give up in order to live with others in the commonwealth. The stylized natural man, who lives in total, dangerous freedom, exchanges the commodity of his natural liberty for the security of life in political society. The good behavior of man *qua* citizen depends on whether this exchange still makes economic sense: do the costs of suffering interference in society still outweigh the benefit of mutual security? To keep the peace, governments should therefore err on the side of less intervention rather than more; too much intervention threatens to infringe on the sanctity of liberties the individual gains in society, such as freedom of speech, freedom of movement, freedom of thought, and countless others.

Social liberalism

The tradition of liberalism most inclined to deny this narrative of natural rights and the social contract is the "radical" tradition. As intellectual inheritors of 19th century social liberalism, the radicals deviated from the tenets of classical liberalism, embracing instead the causes of social justice and reform. They saw in classical liberalism a faulty conception of human nature that

obscured its essential mutability. The American philosopher John Dewey, commenting on the future of liberalism in 1935, wrote that classical liberals erred in holding natural laws and human nature as "absolute and eternal truths; good for all times and all places" (1935 p. 226). Dewey's charge was that classical liberals used these universalist ideas to consolidate their positions of power and influence over oppressed social groups. However, the entrenchment of liberal ideas could not sustain itself without the entrenchment of practices, ways of living, and patterns of conduct as well. Dewey was keenly aware of this, emphasizing the impact of "conditions, cultural and physical." (228). Included in these "physical" conditions were the rapidly changing landscapes of science and technology. With respect to the state of technology in the first third of the 20th century, Dewey was at once optimistic about the possibilities, yet pessimistic about the prevailing course of technological change.

When Dewey laments the reality of capitalist domination over the engineer, for example, he drifts quite far from Adam Smith's conjectures on innovation—in which free, self-interested entrepreneurs add to the sum of technological knowledge, benefiting all of humanity.

> the simple fact is that technological industry has not operated with any great degree of freedom. It has been confused and deflected at every point; it has never taken its own course.[16] The engineer has worked in subordination to the business manager whose primary concern is not with wealth but with the interests of property as worked out in the feudal and semi-feudal period. (*The Public and its Problems* 108)

According to Dewey, interference in the innovation process is not perpetuated by the unwieldy government, but the business manager. Because his propertied interests dominate the course of the

[16] If technological industry were to pursue its "own course" it would presumably be led by engineers rather than business managers. Dewey betrays a moral preference here for technical proficiency over the interests of property, if only because the makers of machines are cast as morally neutral compared to their self-interested managers.

industrial revolution, the business manager seeks to manipulate the direction of technological change for his own private gain. It is in this gradual, evolutionary way that the so-called industrial revolution failed to meaningfully lift up the poor and instead only succeeded in bestowing power unto the group of individuals who understood enough about the political and technological machines of the time to profit from their ascendance.

If we accept Dewey's claim that the material conditions in a given society are an important determinant of power relations, and thus political relations, what is the role of mere individuals? For proponents of classical liberalism, the individual is the primary agent of change. The individual pursues self-interest in economic exchange, deliberates freely with her peers, thinks her own thoughts, and casts her vote in the selection of elected officials. The individual is entrepreneurial, competent, and rational enough to take care of herself and her community.

This, however, is exactly the kind of naive individualism Dewey seeks to efface from the new liberalism. Still taking the individual as a point of reference, he clarifies the weakness of the average individual, weakened further due to his role as a cog in the industrial machine. The image of the freethinking individual, a paradigm of classical liberalism, is misleading because, "*What* he believes, hopes for and aims at is the outcome of association and intercourse" (25). The first evidence of the importance of association, Dewey informs us, is the elevation and education of children, whose pure helplessness, dependence and weakness resembles the most likely condition of the individual removed from social ties. It is, rather, in association with other humans that individuals have the power to effect change.

The mere awareness of others, however, is not sufficient to create more long-lasting associations, those which might mutate into the village, the city or the state. In each of these cases, the members of an association form a "public," constituted by "recognition of extensive and

enduring consequences of acts" (47). For comparison, the private domain is where the consequences of actions are limited to the individuals involved. If A mows the lawn of her neighbor, B, that is a private affair; A's generous gesture is of no consequence to the rest of the neighborhood. The public domain, on the other hand, arises when the consequences of an action extend beyond the immediate participants. If B starts using pesticides in her garden that cause a degenerative disease in other members of the community, B's use of pesticides becomes a public matter. "We take then our point of departure from the objective fact that human acts have consequences upon others, that some of the consequences are perceived, and that their perception leads to subsequent effort to control action so as to secure some consequences and avoid others" (12). This is not the place to fully explore Dewey's arguments concerning the origin of the state, though, in brief, he submits that between the intimate unity of the family and the disunity of peoples separated by great distances or barriers of communication lies the proper region for the state, not as an entity that grows of itself or is a logical consequence of family and village ties, but as a human-made institution created for the purpose of addressing itself to the public.

In the context of this functionalist theory of the state, Dewey describes how modern technology obscures the ability of individuals to perceive the consequences of their actions, while at the same time expanding and deepening the network of those possibly affected. With the increasing reliance on technological systems for the operation of key infrastructure, public health, agriculture, education, defense, and other items of government concern, matters of public deliberation are ceded to technical experts. Perhaps ironically, as the number of things relevant to public deliberation increased, so did the apathy of the individual citizen. Dewey calls this the "eclipse of the public," and elaborates its coming to fruition:

> the machine age has so enormously expanded, multiplied, intensified and complicated the scope of the indirect consequences, have [*sic*] formed such immense and consolidated unions in action, on an impersonal rather than a community basis, that the resultant public cannot identify and distinguish itself. And this discovery is obviously an antecedent condition of any effective organization on its part. (126)

When viewed through this lens, the end of politics is to allow people to be able to live together and address issues of common concern. Social progress, under this conception, is the improvement of the means to bring about this kind of change. It is clear, then, that in this case there is always a possible disconnect between technological progress and social progress. This begs the question: what is technological progress?

There is a word for technological progress that has become commonplace today, and that is *innovation*. Innovation requires that an existing artifact, process or practice is improved upon; made to be more efficient, useful or socially beneficial in some previously unexpected way. While innovation is not limited to technological progress, in the fledgling 21st century the discursive scope of innovation has related primarily to improvements in technology. To further draw out the significance of innovation for the early 20th century radical liberals, however, it is useful to look for instances in which the desirability of innovation is ambiguous. This usually occurs when innovation is ostensibly opposed to existing institutions that preserve the historical rights and privileges people have come to enjoy as a matter of course.

The law represents one such institution whose clashes with technology expose its fragility in the face of technological change. Indeed, new technologies often occasion entire new corpuses of law because of their propensity for social disruption. For example, Samuel Warren and Louis Brandeis's 1890 article "The right to privacy" represents the major point of departure for the

justification of protecting privacy rights in the face of technological change. At the time, the authors were particularly concerned with the introduction of new image and printing technologies that threatened to expose the private lives of individuals: "instantaneous photographs" as well as "numerous mechanical devices threatened to make good the prediction that 'what is whispered in the closet shall be proclaimed from the rooftops'" (195). Written in response to the enervation and mental distress caused by gossip columns whose writers used these technologies to surveil celebrities, the article includes an appeal for legal scholars to accept a general right to privacy derived from several sources of common law jurisprudence.

The common law tradition, Warren and Brandeis claim, has had a long history of protecting individual freedom. At first, this only meant protecting the individual from physical violence, then from the mere threat of physical violence, and finally against damages to and threats against his mental, emotional and spiritual well-being. For the authors, the very "advance of civilization" is correlated with this heightened sensitivity towards the well-being of the individual (Ibid). Working through principles from the legal regimes of property, tort and copyright, the authors differentiate a unique "right to one's personality," which differs from the private property rights extended to a person's private papers and effects (207). The invasion of privacy is, rather, a *legal injuria* to be compensated based on "the value of mental suffering" that the common law already acknowledges (213).

Later on, in his career as a Supreme Court Justice, Brandeis further elaborated this philosophy of reinforcing legal protections against abuses made possible by technology. In his dissenting opinion in *Olmstead v. United States* (1928), for example, Brandeis affirmed the possibility that technology can impinge on individual freedom in unprecedented ways, and that it is the duty of the government to respond in turn. The defendants had been charged with liquor trafficking during

prohibition. Federal agents discovered their operation after intercepting messages on a wiretap inserted into telephone lines off of the defendants' property. The issue before the court was whether the federal agents needed a warrant to tap the phone lines, and thus whether the evidence they gathered was admissible in court. Responding to the majority's conclusion that incriminating evidence collected without a warrant through a covert telephone wiretap did not violate the Fourth Amendment of the U.S. Constitution, Brandeis argued that the court relied on an overly literal construction of the Fourth Amendment, which protects Americans' rights against unreasonable search and seizure.[17] The majority interpreted the amendment as strictly protecting Americans' "*persons, houses, papers, and effects* against unreasonable searches and seizures [italics mine],": because information gleaned from a private telephone conversation did not fall squarely into one of these categories, it was not protected. This technicality, in Brandeis's view, missed the broader intention behind the Fourth Amendment, which serves as a protection against arbitrary, "unreasonable" government intrusions upon people's person or possessions. Brandeis recognized that the Constitution was not merely a document to be read and interpreted: it was the expression of general principles that would inform future generations of their rights and responsibilities, and a source of authority that would guide the outcome of political conflicts. The facts of the case showed there were already technologies undermining the *de jure* authority of the Constitution by virtue of *de facto* changes in the material conditions of daily life. In this nuanced understanding of technological change, every step made in the name of progress might also represent a possible retrogression of liberty:

[17] *U. S. Const.* amend. IV.: "The right of the people to be secure in their persons, houses, papers, and effects against unreasonable searches and seizures shall not be violated; and no warrants shall issue but upon probable cause, supported by oath or affirmation and particularly describing the place to be searched and the persons or things to be seized."

> "The progress of science in furnishing the Government with means of espionage is not likely to stop with wire-tapping. Ways may some day be developed by which the Government, without removing papers from secret drawers, can reproduce them in court, and by which it will be enabled to expose to a jury the most intimate occurrences of the home."

In Brandeis's view, the default attitude toward technology should be vigilance. Formerly outlined in *The Right to Privacy*, the "right to be let alone" is invoked again in defense of citizens' security in their material possessions as well as their mental, emotional and spiritual well-being. With this continued affirmation in mind, Brandeis proceeds to make a radical claim, that "every unjustifiable intrusion by the Government upon the privacy of the individual, whatever the means employed, must be deemed a violation of the Fourth Amendment." In specifically addressing the "means employed," Brandeis rejects the *a priori* legitimacy of technological instruments. It is said that the law must adapt to technology, but this is incomplete; technology that conflicts with the law occasions a struggle between them, a struggle whose outcome determines what respect people should have for the laws under which they live.

While the Supreme Court later vindicated the general ideas of Brandeis's *Olmstead* dissent in another case, *Katz v. United States* (1970), the U.S. government has never fully embraced the radicalism of this far-reaching interpretation of the Fourth Amendment. Most recently, the executive branch has engaged in extensive mass-surveillance programs since the 9/11 attacks on the World Trade Center, citing concerns of national security against criticism that its activity violates civil liberties. According to the *New York Times* article from Dec. 16, 2005 that broke the story, the executive orders signed by President George W. Bush in the wake of the attacks engendered broad-based authority to surveil telecommunications, foreign and domestic, without

obtaining a warrant from the Foreign Intelligence Surveillance Court, whose jurisdiction includes oversight of intelligence agencies and assent to specific instances of electronic surveillance for the purposes of gathering foreign intelligence (50 U.S. Code § 1803).

The political philosophy of radical liberalism, both in these early examples and in its resurgence during the American Civil Rights movement of the 1960s, and the global convulsions of 1968, is marked by a commitment to fundamental normative ideals. Dewey was a strong proponent of political democracy, likening its methods of discussion and deliberation to the scientific method; Warren and Brandeis were clear defenders of an expansive concept of individual freedom, equality, justice and due process before the law. Among the radical liberals, there is at least an acknowledgement of contingent outcomes in the process of technological change. Despite the pervasive equating of civilization and technology, and of scientific with ethical and political progress, these are couched with a frank recognition of the disadvantages related to changes in technological conditions. As I will describe in the next section, the interwar period and post-War boom saw a relapse into the choice between blind faith, ignorance and tacit acceptance of developments in science and technology. Especially on the subject of freedom, the three dominant liberal orientations toward technological change—liberal technocracy, neoliberalism and cyber-libertarianism—carried the liberal notion of liberty to its most perverse programs of implementation.

THE DOMINANT LIBERALISMS OF 20TH CENTURY TECHNOLOGY

Liberal technocracy

The word "technocracy" derives its meaning from the ancient Greek words *technē,* roughly meaning the useful arts, techniques, crafts and methods of making things, and *kratos,* "power" or "strength". Given these etymological roots, it might seem accurate to compare technocracy to the

other forms of government. Democracy, for instance, refers to a form of government in which political power resides with the people [*demos*]; similarly, oligarchy consists of rule by the few, aristocracy rule by the best, and monarchy rule by one. Technocracy, then, should be understood as rule by the technical experts, whose authority derives from their superior knowledge. In the interconnected world we live in today, literally linked across thousands of miles by undersea telephone and internet cables, it makes practical sense to entrust the government to experts who understand the system's inner workings better than anyone else.

However, though technocratic government might take on distinctive forms, technocrats view the problems facing society not first and foremost as objects of political debate and discussion, but as problems to be solved through their tools of analysis. Politics, if anything, is a source of inefficiency, the sworn enemy of any avowed technocrat. In fact, the writings of the early 20th century North American technocrats reveal a disdain for the activity of politics and a veneration of technical expertise. Especially in the wake of the First World War, the first "modern" war in terms of the widespread use of industrial methods of production and destruction, many thinkers became aware of the awesome power of industrial organization. The constant lament of the technocrats was that this power was in the wrong hands.

As one of the founders of the technocracy movement, the American economist and sociologist Thorstein Veblen elaborated this conviction that the ills of modern society—economic poverty, inequality and corruption—could be traced to mismanagement. Shortly after the conclusion of the war, Veblen argued in *The Engineers and the Price System* (1921) that the inefficient distribution of goods and services was the most pressing issue facing industrial nations. The key figures in his narrative of incompetent administration were the business manager and the statesman, both of whom sabotage the distribution of essential goods and services to consumers. The business

manager, especially, was guilty of sabotaging the national economy by means of the "conscientious withdrawal of efficiency": restricting production to avoid producing in excess, thereby increasing prices and letting essential goods go to waste. While there was a period in the middle of the 19th century when this practice made economic sense, Veblen describes an inflection point where, due to "[t]he unexampled advance of technology during the past one hundred and fifty years," the rate of industrial production exceeded the quantity that could be sold at a profitable price (28). The problem became that there was not enough consumption to meet the accelerating rate of production, and thus to preserve profits businesses artificially restricted supply.

Veblen characterizes the industrial system as a mechanism of complex interconnections, all of which depend on the sound functioning of the others. "It is an inclusive system drawn on a plan of strict and comprehensive interdependence, such that, in point of material welfare, all the civilized peoples have been drawn together by the state of the industrial arts into a single going concern" (53). The rhetoric of interconnectedness in this passage exposes an agreement between the technocrat and the social liberal concerning their understanding of the organic nature of a social mechanism, as well as a state of interdependence among nations that necessitates international cooperation. The industrial system, however, on which the whole civilization depends, is also extremely vulnerable to manipulation. Through tariffs, production restrictions, speculation and wastefulness, the colluding statesmen, captains of industry and financial interests threaten to bring the whole system to a state of ruin.

For Veblen, the defeat of the vested interests of business, capital and government requires the ascendance of a class of technical experts, whom he refers to as "the engineers," and their establishment of a new industrial order. Veblen does not merely want to reform the industrial system; rather, he envisions a comprehensive regime change from the current class of industrial

managers to a Soviet of Technicians. For even if the contemporary managers were virtuous, they are, "at the best to be rated as well-intentioned deaf-mute blind men" (147). Therefore, to say nothing of Veblen's view on the capacity of the common man, it is clear that the technocratic attitude proceeds from the claim that the engineers ought to have the authority to govern the industrial system. The problem of technological change is a problem of mismanagement; the harmful consequences of the industrial system are not to be attributed to the structure of the mechanism, but to the intellectual failings of a group of hopeless incompetents.

Thus, if there is any group who should enjoy the liberal ideal of freedom from interference in the technocratic polity, it is the technicians, who "must have a free hand, unhampered by commercial considerations and reservations; for the production of the goods and services needed by the community they neither need nor are they in any degree benefitted by any supervision or interference from the side of the owners" (69-70). The hand of the engineer seems to be a conceptual stand-in for the "invisible hand" of the free market, though what is remarkable here is the exclusive prerogative of the engineer. Veblen does not mention any checks on the power of the Soviet of Technicians over the industrial system, likely because this would represent the potentially disastrous influence of uninformed outsiders. Notably, there are no proposals to include the government or any regulatory bodies in the decision-making process, nor does Veblen care to elaborate the necessary changes to the political and legal institutions required to transfer what is essentially the executive power of the government to this new group of technical elites. It would not be too much to say that Veblen would refuse to talk about the legal and moral arguments his argument implicates, only that "the economic moralities wait on the economic necessities" (161).

It is, however, altogether too convenient that what Veblen clearly believes are the right policy prescriptions are also the ones borne out of economic necessity. The statement smacks of the same

naturalistic fallacy of which too many classical liberals were equally guilty: namely, that because the efficient allocation of goods and services is the natural outcome of the industrial system, and because the engineers are the only group capable of ensuring peak efficiency, engineers should have control of the industrial system. The argument is so uncannily correct that it distracts from the obvious tensions, readily acknowledged by most economists, between efficiency and equity. There is also the illiberal premise that one group should hold all the power over economic distribution, and while technocrats might defend this premise by clarifying that the group of engineers in question are acting in good faith, or that the other decisions not related to the economy are reserved for the government proper, it is strikingly clear that the engineers would be capable of wielding their power as leverage over other centers of political power if they wanted to. Veblen admits as much: "By themselves alone, the technicians can, in a few weeks, effectually incapacitate the country's productive industry sufficiently for the purpose"; the purpose, that is, of seizing governmental power in a Locke style rebellion (167).

Like many technocrats after him, Veblen fails to acknowledge that political power does not come free, nor does it come easily in countries used to living under a system of self-government. Further, although the technocrats derive their legitimate authority from their expertise, it is apparently still necessary to retain the "tolerant consent of the population at large," a formal vestige of liberal democracy within the new industrial order (Ibid).

The American political theorist Langdon Winner said of the writings of the liberal technocratic theorists that they "are interesting not only for what they say about the role of the new men of knowledge, but also what they do not say" (1977 p.170). In his critique of Don K. Price and John Kenneth Galbraith, both of whom were influenced by Veblen, Winner notes the absence of democracy, representative government and other traditional liberal commitments. Price, a political

scientist, conceived of a novel "unwritten constitution" composed of four estates: one political, one administrative, one professional and one scientific. Within this model of political interaction, democracy consists of the frictions between scientific knowledge, political power and private enterprise, the culmination of which is a pluralist consensus where each estate makes compromises and checks the others' influence.

John Kenneth Galbraith, an economist, held that the different members of society are in a quest for survival in a world of advanced technology. Rather than merely pursuing profit, businesses must adapt to new methods and machines of production, while the state struggles to draw the legal boundaries of the system. In the same manner as Veblen, however, Galbraith concludes in *The New Industrial State* that the experts of science and technology hold the key to reversing the dominance of market values: "Unlike members of the technostructure, the educational scientific estate is not handicapped in political action by being accustomed to function only as part of an organization. It gains power in a socially complex society from its capacity for social invention" (464).

Thus, though both of these theorists temper the technocratic obsession with efficiency with socially conscious goals, the means of achieving these goals are shaped in the interactions between centers of scientific knowledge and administrative control. The primary agents of change are group entities rather than individuals, though these entities, such as Price's estates, are fractured and dependent on each other, with technical personnel serving in the bureaucracy in order to add expert legitimacy to the decisions of politicians. Rather than the pure technocracy Veblen envisioned, where a dominant group of scientific and technical elites manages the national administration, the pluralist model assumes a polite give-and-take between the ascendant technocrats and the vestigial class of career politicians (Gunnell 394).

With few exceptions, the proponents of technocracy, are committed to the marriage of knowledge and power for the purpose of ordering the affairs of an industrial state. Only a small cadre of technical experts understand the economy and its inner workings, the technocrats argue, whereas politicians and, by extension, the voters cannot hope to comprehend its complexity. Unlike squabbling parliaments and tyrannical executives, the technocrats can make the economic machine work the way it is supposed to. Thus, the technocrats' legitimacy seems to be based on their expertise, but this is only the case when their applied knowledge happens to achieve the desired result. It should be no wonder that faith in technocracy can falter when glitches in the economic machine mutate into the spiraling decline of the entire system. Though technocracy is meant to function as the precursor to an end of ideological politics, what is of great concern to all is how technocratic government maintains its legitimacy in the midst of a protracted crisis.

Neoliberalism

Neoliberalism emerged after the collapse of the post-War economic order that proceeded slowly throughout the 1970s. Key economic shifts in industrial nations stretching back to the late 19th century solidified the Keynesian economic policies that had aided nations in their battered post-War condition. For instance, inspired by the coalescing of economic power in the industrial economy, in 1890 the United States passed the Sherman antitrust act outlawing the formation of monopolies and cartels; the first legislative attempt to preserve commercial competition in a capitalist economy. The experience of Western nations during the Great Depression of the 1930s also fueled enthusiasm for deficit spending, and during the Second World War the economic links between the government and business strengthened, especially among industries requiring high initial investment such as communications, transportation and defense.

During the 1970s, however, widespread anxieties about macroeconomic decline and fear of radical Left political movements found their articulation in the avowed renewal of the principles and practices of classical liberalism. From a historical perspective, this academic reformulation of classical liberalism began in the interwar period in Austria and Germany and caught on in the United States among economists at the University of Chicago. Along with a positive commitment to the principles of economic liberalism, neoliberal thinkers warned of liberal socialism as an ideological precursor to totalitarianism, or other equally menacing forms of political domination.

Because of its dominance in the past half-century, the social construction of neoliberalism, its various characterizations among different communities, has taken place in both sympathetic and critical camps; the neoliberal attitude towards technology, however, has received less attention than its treatment of social and economic policies more broadly. The story of neoliberalism's rise, so its critics suggest, has been coeval with nefarious processes such as the de-politicization of the social realm, the financialization of the economy, contributing to a permanent state of economic fragility, and the ironic loss of classical liberal commitments to justice, liberty, sovereignty and the balancing of interests. What we are concerned with is how neoliberal discourse and praxis pursued specific principles and types of technological forms that would complement its particular technology of government. What constitutive relation between technology and the polity did neoliberalism form, reform or dissolve throughout its ascendance?

On one view, the imperatives of the neoliberal economy provided a "habitat" for the development of the information society and data-intensive approaches to government and business. In her book *Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power,* the Harvard professor Shoshana Zuboff argues that the neoliberal habitat of the mid-1970s propelled the "radical free-market theory, political ideology, and pragmatic agenda" of the

likes of Hayek and Friedman and prepared the ground for surveillance capitalism, a form of the capitalist economic system that thrives off the accumulation, processing, sale and transfer of human behavioral data as a new form of capital (38). Taking Google, Inc. as the paradigmatic example, Zuboff draws a connection between the freedom from regulation that Google and other digital media companies enjoyed in their early existence and the antagonism toward government interference that neoliberal economists and politicians helped to foster. Armed with the positive freedom to engage in new business practices, Google founders Larry Page and Sergey Brin traded their "passionate and public opposition to advertising" for a system of matching advertisements with individuals through the use of data collected from their activity interacting with Google's search engine:

> The raw materials that had been solely used to improve the quality of search results would now also be put to use in the service of targeting advertising to individual users. Some data would continue to be applied to service improvement, but the growing stores of collateral signals would be repurposed to improve the profitability of ads for both Google and its advertisers. These behavioral data available for uses *beyond* service improvement constituted a surplus, and it was on the strength of this *behavioral surplus* that the young company would find its way to the "sustained and exponential profits" that would be necessary for survival. (75)

As a framework for the critique of the contemporary data-driven economy, surveillance capitalism offers something much more substantial than merely dwelling on the right to privacy or the impacts on economic competition, issues that fail to capture the scope of technologically mediated domination. However, the considerable insights of Zuboff's work are balanced against her hyperbolic claims against the strategies of legitimation neoliberalism provided for future forms of

technology. For example: “Hayek and his ideological brethren insisted on a capitalism stripped down to its raw core, unimpeded by any other force and impervious to any external authority.” While there are certainly individuals and groups who actively promoted this genre of anarcho-capitalism, neoliberal thinkers, especially Hayek, proposed a more subtle role for governments in the post-industrial economy. Zuboff finely accents the macroeconomic changes that bring surveillance capitalism to the fore, though her analysis of the fate of the individual bears consistent reference to the loss of control over a “human future” in the face of surveillance capital’s anti-democratic vision of society. She rightly criticizes neoliberalism’s philosophy of individualism and pathological fear of governmental interference, though her description of the neoliberal habitat is more of a caricature than a critique.

As is the case with many of the theorists I consider, there is a fundamental interplay in Zuboff’s analysis between the concepts of power, technology, knowledge and the individual which is again worth examining. Zuboff perceives a cruel weakening of the individual that the logic of surveillance capitalism effectuates; the digital economy based on the data extraction model introduces new asymmetries of knowledge that translate into unforeseen modes of manipulation and control on the part of surveillance capitalists over individuals. By extension, there is a “coup from above, not an overthrow of the state but rather an overthrow of the people’s sovereignty and a prominent force in the perilous drift toward democratic deconsolidation that now threatens Western liberal democracies” (21).

Within this dual concern for the individual and the ideal of political democracy lies a fundamental agreement between Zuboff and the neoliberal theorists she criticizes. Their common enemy is a group of elites who use technical knowledge to quietly gain the means to direct and control the economy and society, usurping the sanctity of the human person. For Hayek, however,

it was the new generation of well-intentioned socialist planners who constituted a threat to individual liberty. And like Zuboff, he seeks to challenge the claims of technological inevitability that seemed to necessitate technocratic forms of governance. Referring to the imperatives of surveillance capitalism, Zuboff cites a decision from the European Union Court of Justice that she deems "claimed the future for the human way, rejecting the inevitability of Google's search-engine technology… recognizing instead that search results are the contingent products of the specific economic interests that drive the action from within the belly of the machine." Similarly, Hayek highlights in *The Road to Serfdom* the corrosive "myth" of inevitability that helped give rise to collusion between private monopolies and the state, a myth in which "we are embarking on the new course not our of free will but because competition is spontaneously eliminated by technological changes" (91).

The mutual emphasis on non-inevitability is a significant one, though not quite as significant as its corollary of restoring individual autonomy. If the course of technological change is inevitable, as some suggest, then all individual resistance is futile; however, if it is indeed the case that individual human agency can prevail over the dominant order, then it is worthwhile to insist on revolutionary change. Despite these parallels of social liberalism and its more conservative counterparts, the concept of autonomy is also where these different traditions of liberal thought diverge most dramatically with regard to the influence of technology on the distribution of power.

It is common practice to critique neoliberalism as a creed that extends the institution of the market to all spheres of life, or as one that transforms all persons into human capitals; and indeed, there is often substance to these claims. It is a much more delicate task to challenge the neoliberal commitment to liberty, a commitment which is no more fanatical than the social liberal's claim to defend democracy, justice or equality. Hayek, for his part, is uncompromising on the subject of

liberty in *Law, Legislation and Liberty*: "A successful defence of freedom must therefore be dogmatic and make no concessions to expediency, even where it is not possible to show that, besides the known beneficial effects, some particular harmful result would also follow from its infringement. Freedom will prevail only if it is accepted as a general principle whose application to particular instances requires no justification" (61). But what is the meaning of freedom Hayek evokes here that makes it such a prized ideal? Interestingly, it is not the positive, liberal Kantian concepts of autonomy, sovereignty and self-rule, that are so dear to Zuboff, Wendy Brown and other critics of neoliberalism. In *Surveillance Capitalism*, for instance, Zuboff treats autonomy and democracy as an almost inseparable pair, and in *Undoing the Demos*, Brown claims that neoliberal reason undermines "the fundamental liberal democratic promise since Locke, that popular and individual sovereignty secure one another" (Brown 109).

For Brown, whose critique of neoliberal political rationality is grounded in an extensive examination of the major ideas and trends of Western political theory, the "central paradox" of neoliberalism is that "the neoliberal revolution takes place in the name of freedom—free markets, free countries, free men—but tears up freedom's grounding in sovereignty for states and subjects alike" (108). This claim, however, as well as the entire preoccupation with positive liberty among thinkers in the liberal tradition since the time of T.H. Green conceals the radically different foundation of liberty which informed Hayek and his intellectual successors.

In his article "Hayek's neo-Roman liberalism," historian Sean Irving argues convincingly that Hayek, in the same manner as later neo-Roman republican theorists like Quentin Skinner and Philip Pettit, advocated the concept of liberty as the absence of domination, or, as Hayek puts it in *The Constitution of Liberty,* "independence of the arbitrary will of another" (12). Freedom as non-domination differs from the philosophical "freedom of the will," psychological freedom of choice,

freedom from poverty or biological necessity, and finally the "political freedom" which ensures citizens the right to participate in the choice of their government, politics and legislation. It is an ultimate ideal, while political democracy, for the neo-Roman republicans as for many neoliberals, is a device, albeit an important one, for the maintenance of liberty. This is a crucial anomaly within the cartography of liberal of ideas; that the avowedly democratic-minded neo-republican theorists share the same root concept of liberty with one of the most influential theorists of free-market economic liberalism. Irving reckons with Pettit that the distinction to be made is that Hayek was concerned solely with *imperium*, the public power of the state, whereas the neorepublicans seek to examine *imperium* as well as *dominium*, the private power relations between individuals and groups in their private capacities: for example, as employees and employers, husbands and wives, or landlords and tenants (564).

The essential relationship between power and freedom implicates in no uncertain terms the advent of new technologies, though for the various schools of neoliberalism, including the post-Walrasian school, the Chicago school, the Austrians and the German ordo-liberals, the question of freedom passes through a process of "economization" wherein the power dynamics of economic transactions between the state and its legal and political institutions, markets and individuals take center stage (Madra and Adaman 2011). Economization is associated with a transformation of how individuals relate to one another, positing them as rational, self-interested agents, and thus aims at restructuring the society along non-political lines; Madra and Adaman explain that the "epistemic shift" of neoliberal reason contributes to the parallel processes of economization and de-politicization of the social realm (693). *Homo oeconomicus* reemerges as the dominant model of individual behavior and serves as a policymaking tool for considering the incentives of private actors. However, while economists are comfortable analyzing transactions between economic

agents, there is considerably less guidance on how to interpret these transactions as dynamics of power, interference or domination. Further, what is the relation between *homo oeconomicus* and *machina,* "machine"; how can human-technology relations figure into the economic analysis of neoliberal reason? As a matter of discourse and practice, neoliberalism does not offer much in the way of an immediate answer to these questions. While there is much reading between the lines to be done on the subject, I move now to another active strand of liberalism that more expresses explicit links between government, technology and individual liberty.

Cyber-libertarianism

While elements of technocratic management and neoliberal marketisation have guided the legislation and architecture of technology, the most formidable discourse of technological politics in the past half-century has been articulated by libertarian thinkers and activists who applied their beliefs concerning individual freedom and limited government to the exciting new technology of the Internet. The discourse of cyber-libertarianism refers to the recurring patterns of written and spoken language employed to legitimate the claims of the much less cohesive "ideology," or, even less, the "theory" of cyber-libertarianism. The strong focus within cyber-libertarian circles on Internet exceptionalism, the claim that the Internet is unprecedented and structurally resistant to government intervention, reflects the recurring elaboration of an Internet mythology that continues to play a prominent role in academic and popular discussions on this relatively recent technological development.

Within the historical development of liberalism, however, cyber-libertarianism is a unique current of ideas and rhetoric because of its strict association with a particular technology. Unlike liberal technocracy and neoliberalism, the first public articulations of cyber-libertarianism occurred among journalists, activists and lawyers who expressed optimism about the Internet's

potential for liberation. Perhaps the most well-known of them was John Perry Barlow, founder of the Electronic Frontier Foundation (EFF), who in 1996 published "A Declaration of the Independence of Cyberspace." In the Declaration, Barlow envisions the Internet as a virtual community of complete freedom, in which people could shed their physical identities and enter "the new home of Mind."

There are two central claims of the Declaration: (1) government regulation of the Internet is unnatural, and (2) government regulation of the Internet is immoral. The first has to do with the structure of the Internet; the second with the moral rectitude of the nation-state. To be clear, Barlow was not an engineer, and thus was not tuned into the Internet architecture *per se*, but he nevertheless committed to the claim that there would be intractable problems surrounding enforcing existing legal regimes online: "Your legal concepts of property, expression, identity, movement, and context do not apply to us. They are all based on matter, and there is no matter here." However, there is also a different set of appeals regarding the ethical and political innovations of the new cyber community: "We believe that from ethics, enlightened self-interest, and the commonweal, our governance will emerge." Similar expressions of rational idealism among the cyber-libertarians sustained the image of an ascendant technological revolution that promised to maintain open, collaborative, apolitical online communities, accelerating the demise of outdated systems of nation-state regulation.

It is tempting to dismiss the Declaration as hyperbolic, and indeed, Barlow was incorrect concerning the first set of claims for the impossibility of legal enforcement (Goldsmith and Wu 2006). However, the Declaration still serves as a popular point of reference for subsequent rhetorical developments, and thus as a document on which future Internet imaginaries drew inspiration. Barlow advocates a litany of freedoms, a few of which I want to address for their

location within liberal schema of liberty. There are first many positive freedoms, such as the freedom of Internet users to govern themselves, speak and assemble; these mirror the classical liberal impulse for political democracy, coupled with civil liberties already protected in the United States. The negative freedoms, however, are somewhat more engaging. We should not be surprised by the desire for freedom from government, though let it be noted too that freedom from government is a credible threat from Barlow's perspective, given the alleged exceptional nature of the Internet. Additionally, the Internet promises to achieve the universal liberal values that have been only true *de jure* since their production in the 18th century; that is, universal freedom in the form of life, liberty and the pursuit of happiness. On the one hand Barlow outlines a deterministic view of the Internet—a space of liberation by virtue of its natural characteristics. On the other, he tacitly recognizes the legal authority of the government to alter the structure of this space and import existing forms of oppression. After all, why would it be necessary to declare Independence, to constitute Internet freedom, if the government were powerless to prevent the natural self-organization Barlow supports?

Drawing on an international political sociology framework, Jean-Marie Chenou (2014) argues that even though Internet exceptionalism and its counterpart, multi-stakeholderism, featured prominently in the debates about Internet governance, the institutionalization of the Internet proceeded according to the plans of four main elite groups: the technical/scientific, corporate, U.S. political and non-U.S. political elites. Despite their differences, the four elite groups built consensus around the cyber-libertarian concept of Internet exceptionalism. Indeed, Internet exceptionalism served as a basic assumption in a series of policy documents produced as overarching plans for the structure of the Internet, as well as institutions such as the Internet Corporation for Assigned Names and Numbers (ICANN), a private corporation without official

oversight from national or supranational governments. While the Internet engineers, Clinton Administration, private corporations and multinational corporations had sharp disagreements, they each wanted to suppress discourses from the Sovereigntist and critical technology camps. These and other marginalized groups held positions that were untenable in the neoliberal habitat: government control of networks and restrictions on online commercial activity, to name a few (215). Internet exceptionalism was one of the most powerful "discursive tools" these elites employed to suppress criticism and engender a hegemonic discourse (218).[18]

Despite the dominant tenure of cyber-libertarian discourse during the 1990s, key historical events at the turn of the century dampened popular enthusiasm for the Internet. Lincoln Dahlberg (2010) notes the decline of cyberlibertarian rhetoric due to state regulation, rapid commercialization and the "dot.com bust" of the early 2000s occasioned by excessive financial speculation over the rising share prices of Internet-based companies (333). However, cyber-libertarianism made a comeback associated with the rise of "Web 2.0", a suite of content production and social networking sites such as YouTube, Myspace, Facebook, etc., as well as the resurgence of digital media companies such as Yahoo and Google (339). "Cyber-libertarianism 2.0" as Dahlberg terms it, relies on much of the same rhetoric of safeguarding individual liberty against repressive governments, and of equating democracy with "the liberty of individuals to satisfy private interests through technologically mediated networking with (disembodied, abstracted) others." (333). Because of the increasing use of the Internet, however, this re-articulated cyber-libertarianism gained a wider following outside of popular science and business, changing the language of the Internet in academia and the mass media as well (Ibid).

[18] See esp. the "Draft Postel" on the controversial subject of distribution of Internet domain names: Jon Postel, "New Registries and the Delegation of International Top Level Domains", IETF, June 1996, https://tools.ietf.org/html/draft-postel-iana-itld-admin-01.

A variety of sources constitute the discourse of cyber-libertarianism; not just self-avowed cyber-libertarians, but journalists, scholars and corporate actors who would not necessarily identify with the cyber-libertarian moniker. Whether intentional or not, the repetition of certain statements and signifiers, including "democratization", '"digital networking", "DIY," "citizen-consumer/prosumer," "choice," "freedom/liberty," "transcendence," and "post-(antagonistic politics"' links together constituent elements of a new discourse around the politics of Internet governance (337). The usage of these terms across marketing campaigns, academic talks and social media comment sections serves to legitimize additional corporate capture and colonization of the Internet.

Like its predecessor, cyber-libertarianism 2.0 continued to emphasize a notion of individual liberty based on consumption, production, participation and consent. Yochai Benkler in *The Wealth of Networks* (2006), for instance, claims that the emerging networked information environment would provide individuals with new opportunities for cultural production, increasing their autonomy and reducing their dependence on information produced by media companies or governments. In his view, the structure of mass media created a passive, one-way relationship between the individual information consumer and the corporate information producer; distributed platforms, on the other hand, featured content generated by users, for users. The new possibilities for self-organized production on distributed online platforms thus represented an augmentation of freedom; the same person sitting on their couch watching television finds in digital technology the key to their creativity; they are suddenly inspired to make YouTube videos or edit Wikipedia articles, joining communities of like-minded people just like them acting out of enlightened self-interest.

To support the flourishing of cultural production in networked information environments, Benkler argues for a substantive interpretation of autonomy to guide Internet policy, one that emphasizes "how law and policy actually affect whatever capacity we have to be the authors of our own life choices in some meaningful sense" (140). While Benkler does not present himself as a libertarian, his vision of the techno-individual ideal and lack of regard for the positive role of the state contributes to what is essentially a libertarian view of individuals' relationship to the government. He admits that what he proposes in *The Wealth of Networks* may "seem more of a libertarian or an anarchistic thesis than a liberal one" however he subsequently explains the empirical justification for this disregard of traditional government:

> what is special about our moment is the rising efficacy of individuals and loose, nonmarket affiliations as agents of political economy. Just like the market, the state will have to adjust to this new emerging modality of human action. Liberal political theory must first recognize and understand it before it can begin to renegotiate its agenda for the liberal state, progressive or otherwise. (16)

The focus on individual liberty in cyber-libertarian discourse, however, comes into conflict with the freedom from government control when the government finds itself in the ideal position to secure individuals against infringements on their liberty. Electronic surveillance, for example, is an issue that implicates government interference both in the executive capacity to surveil and the legislative duty to restrict surveillance. The issue for libertarians is that individuals' reliance on Privacy Enhancing Technologies (PETs) and other private protections against government surveillance are likely to catalyze a tit for tat between surveillance techniques and PETs; the illegality of electronic surveillance should, on its own, spur libertarians to call for legislative intervention. One of Benkler's preferred examples demonstrating the collaborative prospects of

the internet is Wikipedia, the online crowd-generated encyclopedia; however, Penny (2016) documents the "chilling effects" on traffic to certain Wikipedia articles after public reporting in 2013 of NSA/PRISM surveillance on the website. In that case, individuals were substantively free to visit any article they liked, fulfilling the substantive notion of libertarian autonomy, though the fear of government surveillance impacted their behavior nonetheless. US Congressional legislation on data protection would help to address the infringement of individual privacy by the NSA, but this might also represent increased control of federal and state governments over the internet. The libertarian EFF, too, has made privacy one of its central issues, focusing on the increasing threat to individual privacy that has accompanied the accelerating pace of technological change. New technologies in their view liberate the individual, but the new opportunities for free association have to be weighed against the competing interests of government and private industry.

Finally, cyber-libertarians also think of the process of technological innovation as a problem of economic freedom. The liberal notion that the introduction of new techniques, production practices and machines, is always an affair best left to individual entrepreneurs and private industry is at least as old as the classical liberal economists; in the last chapter I explained the trenchant views of Adam Smith and Jean-Baptiste Say on similar questions concerning the tension between technological change and the protection of freedom of contract and property rights for entrepreneurs. The cyber-libertarian position holds parallel assumptions to that of classical economists concerning the beneficence of new technologies and the association between the market economy of minimal regulation and the possibilities for human flourishing.

Contemporary advocates of pro-innovation policies, however, have a new language with which to outline the benefits of accelerating technological change associated with the digital revolution. More than in the 18th century debates, there is now a sustained focus on the growing amount of

information available to people all around the world with which they can educate and empower themselves without the aid of government. Adam Thierer, a pro-innovation scholar and recurring figure in a number of American conservative think-tanks, articulates the concept of "permissionless innovation" as the guiding regulatory principle for the digital age.[19] Permissionless innovation refers to the idea that companies should not have to ask permission of public officials to develop new technologies, except in the case where those officials demonstrate with a high degree of probability that the harms from a technology would be "tangible, immediate, irreversible, catastrophic" (34). In Thierer's view, thinking and preparing for the worst-case scenario stifles innovation because it inhibits the risk-loving attitude of entrepreneurs. "Permissionless innovation is about the creativity of the human mind to run wild in its inherent curiosity and inventiveness. In other words, permissionless innovation is about freedom" (9). This is a notion of positive liberty *par excellence*, though the human mind also has to be free *from* both government intervention and cautious thinking more generally. The entrepreneur, Thierer argues, should be absolved of ethical reflection on the possible consequences of their product, lest the potential harm to others prematurely cancel the potential benefits.

Thierer also argues for a strict consequentialist approach to evaluating public policies, which should "never be judged by intentions but rather by their actual real-world results" (13). The opposite of this consequentialist position is the "precautionary principle," which engineers and public officials can employ to think through all of the possible consequences of deploying a new technology or legalizing it for consumption. Permissionless innovation, however, is about

[19] See Adam Thierer, *Permissionless Innovation: The Continuing Case for Comprehensive Technological Change, 2nd ed.* Mercatus Center, George Mason University (2016).

removing restrictions on the freedom of corporations and entrepreneurs to invent new technologies, which on balance will always end up empowering the idealized prosumer-citizen.[20]

CONCLUSION

From analyzing key moments of intellectual production for 20th century social liberalism, liberal technocracy, neoliberalism and cyber-libertarianism, I have sketched the views of major thinkers from these traditions on the intersection of freedom, technology and the law. In truth, there is a diversity even within sub-traditions, and my intention has not been to write a definitive account. However, even with the simplifications I have made, there are essential disagreements between the discursive and practical claims of the different traditions. For example, the social liberals generally agree with liberal technocrats that self-interested politicians and businessmen impede social progress, whereas the neoliberals and cyber-libertarians espouse the virtues of individual entrepreneurship and market-based interaction; each tradition holds varying conceptions of negative and positive liberty, with the social liberals holding the most progressive views on maintaining safeguards for mental and emotional well-being, whereas neoliberals tend to view individual liberty as the capacity to participate freely in consumption and production. There are many other points of intersection and conflict between these strains of liberal thought, but for now I would like to focus on what I think is the central assumption on the subject of freedom and technology shared to a large extent by each of them.

Whether the idea is framed in terms of autonomy, participation or production, the central assumption of liberal interpretations of technological change is that the process of technological innovation enlarges the scope of individual freedom. Maintaining the natural course of

[20] The futurist writer Alvin Toeffler coined the portmanteau term "prosumer" (*producer* and *consumer*) to describe the blending of production and consumption roles of the individual thanks to new technologies. (Dahlberg 332)

technological progress is a necessary condition for the continued flourishing of humanity; if technology ever poses a threat to the health, safety or psychological well-being of individuals, it is the responsibility of society as a whole to redesign human behavior, legal institutions and social mores to adapt to the exogenous evolution of technology.

To be clear, while individual technologies might engender new forms of interference, the natural attitude of many liberal thinkers is to conceive of these as unfortunate by-products of an ultimately virtuous, rectilinear progression of civilization. It is rare indeed for a thinker writing within the cadre of liberalism to express methodological neutrality on the question of technological change. The rectilinear mode of thought finds its expression in contexts emphasizing the evolution of technology, but this is not the only spatiotemporal representation of technology's movement in the heyday of liberalism. The liberal world, in fact, has been in a constant state of industrial revolution since the mid-18th century, a revolution whose continued kinetic output represents an engine of intellectual achievement, economic growth and, most importantly, individual and social liberation; why would one not want to add fuel to the flame?

In the following chapters, I dislodge the central assumptions of liberalism with a question: can technological innovation create, establish and sustain relations of domination? In my view, the answer is a resounding yes, and the affirmation of this question then leads to the unsettling realization of the moral contingency of technological change. Technological changes fall along a spectrum of liberation and domination, and the accumulation of these changes can represent near irretrievable impingements on liberty, understood in its most robust sense as the absence of domination. Drawing on neorepublicanism and phenomenology, I articulate a non-domination approach towards analyzing the effects of new and existing technologies on social relations, as well as the relations of domination between humans and technology itself. Finally, the problems

of technological domination cannot be mediated only on the scale of the individual; rather, politics regains its position as the context in which community discussions and action on power relations takes place, and political theory the context in which scholars analyze, synthesize and interpret these debates from a critical perspective.

Chapter 3.

Non-domination and technology

In this chapter, I advance an original approach to thinking how technology impinges on liberty, both in the sense of individual liberty and the liberty of the polity. The approach derives its originality and, in my view, its wide scope of application from the synthesis of two traditions of thought that have hardly ever interacted with each other: republican political theory and phenomenology. The purpose of integrating the republican notion of freedom as non-domination into the phenomenological tradition is to provide a framework for investigating and evaluating the technologically mediated relations between people, as well as the relations between humans and technologies themselves. A central premise of this synthetic approach is the relationality of human beings, technological artifacts, and technological systems of varying size and complexity. It is often easier to write as if there is one overarching "problem" of technology or technological change, though the approach I sketch here is to be applied rather to "problems of technology," involving context-dependent relations between different beings (Ihde 1993 p.67). Thus, unlike a majority of liberal approaches to technology that assume in advance the virtue of technological progress, the republican approach begins from an ambivalent attitude toward the moral status of technologies, though one that is also ever sensitive to relations of domination.

To outline the implications of integrating non-domination into a phenomenological framework, first I elaborate the principle of non-domination as it appears in republican political theory, its basic formulation and the attendant theoretical concerns. Second, I sketch the emerging

postphenomenological tradition and the theory of technological mediation. Third, I defend this seemingly esoteric pairing and explain the concrete value of such an approach to ground political theorizing and analysis of technology at its intersections with the major constructions of human affairs. Despite their relative obscurity, especially in American academies, republicanism and phenomenology represent two traditions of thought with a strong grounding in experience and, at the same time, awareness of the potential for imagining alternatives to the status quo. The approach I sketch here thus diverges from degenerative liberal notions of linear progress and the perpetual cycle of innovation, opening new directions for conceiving of the relationship between technology, freedom and law.

THE NON-DOMINATION APPROACH

Freedom as non-domination: foundations

The notion of freedom as independence from the arbitrary interference of another has its roots in ancient Roman law and political philosophy, so the standard account goes. For Roman jurists and statesmen, the paradigmatic image of liberty was that of the *liber*, the free citizen who could participate in the public life of the city; on the other hand, the freedom of the *liber* was held in opposition to the slavery of the *servus*, the person whose condition of servitude rendered them private, obedient and conforming to the will of the master (Pettit 2012 p.17). In his historical study of notions of liberty from ancient Rome to early modern Europe, Quentin Skinner notes that Seneca in *De Beneficiis* claims the bodies of slaves are "*obnoxia*, at the mercy of the masters to whom they are ascribed" (qtd. in Skinner 1998 p.43). Thus, though slaves may escape corporal punishment as a result of their cunning, flattering, or via the goodwill of their masters, what makes the slave unfree is the condition of slavery which attaches itself to the body. Even if he is not subject to violence at a given time, he is acutely aware of the potential for violent abuse and other

affronts to his humanity. Similarly, an entire community of persons may be subject to the arbitrary will of a king or a foreign power who is not responsive to their well-being; thus, there is a parallel between the slavery of individuals and the slavery of nations which is not based on the harshness of treatment, but on the matter-of-fact condition of being subject to the whims of the dominating power.

From a historiographical perspective, we owe this standard account of Roman liberty to recent scholarship that has sought to resuscitate this notion and prop it up against the dominant liberal notion of freedom as non-interference. Historians affiliated with the Cambridge school of intellectual history—including Skinner, J.G.A Pocock, James Tully, Peter Laslett, etc.—emphasize the importance of understanding the meaning of ideas within their own historical context. Rather than viewing concepts such as "liberty" as having roughly the same meaning across centuries of debate, the Cambridge historians have engaged in something of an archaeology of ideas, pulling socially and historically-contingent ideas from different, albeit mostly European, historical contexts; freedom as non-domination, then, can be viewed as the product of interpreting the discourse of freedom in ancient Rome, Renaissance Italian city-states, 17th century commonwealth Britain and the early American republic in a historicist light; it is the result of successive archaeological excursions into an idea that has since fallen into obscurity both in academic and popular debates.

And indeed, there is a rich historical tradition associated with freedom as non-domination that continues to inform its modern articulation. For example, Niccolò Machiavelli in *The Discourses*, his commentary on the first ten books of Livy's history of Rome, argued that the strength of the early Roman republic rested on the conflict between the plebeians and the Senate. Machiavelli places the value of this conflict not merely in the political institutions of Rome, such as the tribunes

of the lower-class plebeians, but in the fundamental desire of the plebeians to *not be dominated*. For him, it was better to make the plebeians the guardians of liberty rather than the upper classes, since "it is reasonable to suppose they will take more care of it, and that, since it is impossible for them to usurp power, they will not permit others to do so" (I.5 116). Though the vigilance of the populace in defending its liberty was often a cause of disorder, short bursts of disorder contributed to a dynamic equilibrium that was beneficial, not harmful to political liberty. The liberty of the populace, furthermore, depended on the constitution of Rome, its distinctive form of government, which included the establishment of institutions mediating the exercise of power between the plebeians and the upper-class.

Freedom as non-domination, then, has always associated itself with the establishment of a mixed constitution and effective legal institutions, the kinds of which would later compel the English republican James Harrington to write that the commonwealth is "an empire of laws and not of men" (20). Whereas on a non-interference account of liberty any law the state imposes on its people is an interference, and thus an infringement on liberty, there is no such problem for non-domination so long as the laws apply equally to each citizen and are not imposed on an arbitrary basis. However, historical pedigree is not itself an indicator of the normative worth of a concept, and in the rest of this chapter I outline the application of freedom as non-domination to modern problems concerning the interaction between humans and technology.

Modern republican freedom

The contemporary account of non-domination has been worked out most extensively by Philip Pettit in many articles and two major works, *Republicanism: A Theory of Freedom and Government* (1997) and *On the People's Terms: A Republican Theory and Model of Democracy* (2012). For Pettit, a relation of domination consists of one agent having the power to interfere with

another on an arbitrary basis "in certain choices that the other is in a position to make" (1997 p.52). Republicans are thus concerned with invasion of the practical range of choices available to a person over which they have the power to choose a course of action. Interference represents an alteration of the range of choices that present themselves as available to an agent, whether it occurs by way of physical coercion, violence, intimidation, punishment, threat, covert manipulation or, finally, "agenda-fixing, the deceptive or non-rational shaping of people's beliefs or desires, or the rigging of the consequences of people's actions" (53). Furthermore, republican freedom as non-domination in Pettit's view is separate from philosophical freedom of the will and similar psychological notions whose preoccupation is with the authentic formation of desires on the part of the subject; republicans are also not chiefly preoccupied in defending positive freedom, autonomy, self-legislation, or similar notions of democratic self-rule. "Our concern is solely with social free will or, in effect, political freedom: that is, with what is required for it to be the case that however imperfectly formed your will may be, you are in a position to make your choice, without vitiation or invasion, according to that will" (2012 p.49).

Pettit is thus concerned with the *revealed will* of the political subject. Similar to the concept of "revealed preference" in economics, the revealed will may not necessarily represent the "true" or real will of the subject, however that may be defined. In today's technological context, for instance, there is a growing awareness among consumers of the addictiveness of social media platforms, which then raises the question; is it really *my* will to use this technology, or, alternatively, is it my *real* will? These are pressing psychological and philosophical questions but are not of the first order when it comes to the politics of technology. [21] It is misguided, on a republican approach, to

[21] There are strong links between freedom and self-realization, for example, in many Marxian political philosophies (See Che Guevara's treatment of "The Institutionalization of the Revolution" in *Socialism and Man in Cuba*, from

enlist the state as a public psychologist that aims to awaken the authentic desires of its citizens; with Pettit, I bracket these questions of positive freedom for now, though I return later in the chapter to the question of whether securing non-domination is prior to positive freedom in the realm of politics.

The foil of non-domination, however, is not positive freedom but the negative freedom attributed to the liberal tradition of political thought. The most cited exponent of liberal liberty is Isaiah Berlin, who in *Two Concepts of Liberty* asserts that interference alone constitutes invasion of freedom, and consequently subjection to the will of another. However, on Pettit's account, interference alone does not necessarily mean an infringement of freedom. For him, domination is the enemy of freedom, not mere interference.

Interference without domination occurs when acts of interference track the interests of the interfered, or, in the case of the free democratic polity, when the *demos* (the "people" or "populace") set the terms of interfering activities such as legislation or taxation. The relationship between a coercive republican government and the people is similar, Pettit argues, to that of two friends, one of whom, A, hands over the keys of his alcohol cupboard to the other, B, in an effort to restrict his own alcohol consumption. If A sets the terms of the agreement such that B returns the keys only on 24 hours' notice, then even if B refuses an immediate handover, he is acting on A's prior instructions: "I refuse the key only because your instructions require me to do so… I interfere with you, but only on your terms" (2012 p.57). This example involving individuals can be applied to the legitimate relationship that must hold between the republican state and the populace, where the state interferes only on the people's terms, as the title of Pettit's work suggests.

The Che Reader, Ocean Press 2005, retrieved from https://www.marxists.org/archive/guevara/1965/03/man-socialism.htm). However, to engage with this vast literature is beyond the scope of this current chapter.

In contrast, there are relationships of domination without interference which are unacceptable to republican political theorists. In the case of domination without interference, the potential of arbitrary interference is a constant, credible threat. The recurring examples Pettit refers to are the slave who relies on his own cunning or the goodwill of his master to avoid interference, the wife in a patriarchal society whose husband happens to not be abusive, and the worker in an unregulated economy who manages to avoid arbitrary abuse from the manager (cf. Anderson 2017). As mentioned in the last chapter, these are examples of *dominium*, the exercise of private power, rather than *imperium*, the power of the state.

In sum, while most liberal theorists want to maximize liberty as non-interference, republicans want to instead promote the ideal of liberty as non-domination. The central difference becomes clear when we consider what is required among the two traditions for a relationship to be considered free (see Table 3-1).

	Interference Domination	Interference No domination	No interference Domination	No interference No domination
Liberalism	Not free	Not free	Free	Free
Republicanism	Not free	Free	Not free	Free

Table 3-1 Prevailing interpretations of liberty according to standard liberal and republican accounts (cf. Pettit 1997 p.24).

The trajectory of republican political thought, then—much like postcolonial, feminist, Marxian or critical theoretic approaches—is to extend the analysis of power relations into settings that are not explicitly "political" in the mainstream, liberal sense of the term. And while the republican focus has mainly centered on traditional problems related to the state, citizenship, democracy and

authority, there have been some cursory attempts to transpose republican thinking into the domain of emerging technologies.

In the 2004 article "Trust, Reliance, and the Internet," for example, Pettit provides a counterpoint to unfettered optimism of new collaborative democracies forming on digital platforms. The crux of his critique is an analysis of trust and how trust is fostered in social relationships. Pettit describes two bases on which a person forms a judgment of the trustworthiness of another: the "primary" basis derives from rational beliefs about the stable dispositions of persons toward loyalty, virtue and prudence, whereas the "secondary" basis forms in the absence of this rational belief, but on the assumption that other persons have a meta-disposition toward displaying behaviors that earn the trust of others (117). On this second basis, one may make an overture, a preliminary act of trust that tests the other's inclination to at least act in a trustworthy manner.

Pettit does not deny the possibility that a relationship of trust can form online among people who already interact at some level offline, though he does claim that "pure Internet contact" alone is not sufficient for two people to foster a robust, well-informed relationship of mutual trust (120). More than splitting hairs, Pettit's distinction of the different bases for trust-based relationships allows him to accumulate evidence for the importance of bodily presence in forging trust (118). The same bodily presence cyber-libertarians abjure as a constraint on free expression is framed here as a necessary condition for establishing evidence of *at least* the rationality of mere reliability on someone else, as well as more demanding virtues such as loyalty, honesty and the like. The matter of reading facial expressions, interpreting another person's social interactions and maintaining our own conscious record of their behavior, was either difficult or impossible in the (now seemingly archaic) contexts of email, chat rooms and online discussion boards of the mid

2000s Internet on which Pettit bases his analysis. And just as I am constrained in making informed judgments about the trustworthiness of virtual others, (the kind that would make me comfortable, say, meeting them alone, in-person) others are equally constrained in making these judgments about me.

Pettit does not employ a non-domination lens in his article on trust, but the attempt to describe in some detail the moral qualities of actual relations on the Internet beyond cyber-libertarian discourse provides an avenue into how we can apply non-domination to the types of relations engendered by technologies. The "eyeball test," for example, is another one of Pettit's claims for the importance of mutual regard in politics. The eyeball test is a heuristic for determining whether or not someone enjoys political freedom, and Pettit describes the eyeball test as follows, saying that people enjoy freedom if they "can look others in the eye without reason for the fear or deference that a power of interference might inspire; they can walk tall and assume the public status, objective and subjective, of being equal in this regard with the best" (2012 p.84). In the language of subject and object, two people passing the eyeball test see each other as subjects—as humans, worthy of equal treatment and respect—recognizing each other's subjectivity despite the objective thingness of the other. Relationships on the early commercial Internet were thus impeded because sensory deprivation degraded the possibility of mutual regard: the recognition of the other and of oneself as free and equal. Free because of their mutual equality; equal because of their mutual freedom.

Initial approach for a republican theory of technics

With respect to the relation between freedom and technology, a republican critique could start from the constitution of freedom by legal structures and institutions, and then move on to describe how technologies either impinge or alter these legal protections. Following Pettit, I argue that the

laws of a polity do not cause freedom, but that the people are free by virtue of the laws. I am questioning whether there are *technological* constraints on liberty, and if so, how these constraints support or conflict with existing legal structures.

Critical approaches to law that accent the relational character of legal problems, such as that of the legal scholar Roger Brownsword in the article, "Law, Liberty, and Technology," are of great assistance in the analysis of the role of technology in politics. Under an "umbrella conception of liberty," Brownsword evaluates new technologies based on their impact on normative legal relationships between agents and the practical possibility of carrying out a given action. Writing in terms of legal relationships, Brownsword relies on the framework developed by Wesley Newcomb Hohfeld on the qualities of liberty-rights and claim-rights, where liberty-rights derive from the absence of a duty to others and claim-rights derive from someone other than the right-bearer having a duty to perform a given action.

In the Hohfeldian framework, given a body of positive law, an agent A has the liberty to do some action, x, if relative to some other agent, B, the act, x, is neither required nor prohibited by law (Brownsword 1997 p.2). An agent, A, might also have a claim-right against another, B, for B to do x, if and only if B has a duty to A to do x. Each of these normative relations represents what Brownsword calls a "paper option," the *de jure* rights of citizens, which conflict in at least some instances with their *de facto* capacity to carry out certain actions (8).

Brownsword's essential contribution to the law and technology literature is an illuminating description of the impacts of "technological management" on practical liberty. I quote at length the definition of technological management Brownsword provides:

> technological management — typically involving the design of products or places, or the automation of processes — seeks to exclude (i) the possibility of certain actions which, in

the absence of this strategy, might be subject only to rule regulation or (ii) human agents who otherwise would be implicated in the regulated activities. (11)

One of the significant impacts of technological management is its replacement of legal and moral constraints on action. In Hohfeld's terms, technological management can either reinforce existing legal prohibitions or practically prohibit the exercise of a liberty-right or claim-right in the absence of formal legal constraint. To illustrate this dynamic of technological management, I will refer to a real-world example of technological constraints in the domain of urban transportation: the turnstile.

Those familiar with riding underground trains in urban environments might have encountered the temptation to not pay the fare, which might consist of jumping over or otherwise evading a technical object called a turnstile.

Figure 3-1. (Left) A typical waist-high turnstile ["tourniquet"] *in the Paris Metro at the Station Chaussée d'Antin with a slot for paper tickets, a place to scan the Navigo pass and a security gate after the turnstile. (Right) Full-height Anti-fraud gates* ["Portiques anti-fraudes"] *installed at Gare Saint-Lazare, Paris, with two high glass panes opening in the French-door style (Photo: Floréal Hernandez, 20 Minutes).*

There are some cities whose public transit systems have no turnstiles of any kind to verify if riders are paying the fare. The metro system in the city of Helsinki, Finland, for example, does not have gates or turnstiles in its stations. Instead, there are card-reader machines at station

entrances that scan tickets and metro passes; the penalty for not having a valid ticket is 80 euros (€) plus the price of the ticket.[22] Human ticket enforcement officials are responsible for assigning these penalties, though their presence is scattered throughout the system. For a given metro trip in Helsinki, it would be unlikely that one would encounter a team of officials, but still possible.[23]

To figure out whether dodging the fare makes economic sense, rational fare-dodgers in the guise of *homo oeconomicus* can make an impressionistic calculation of the expected probability of running into an enforcement official on a given ride, multiply that by the expected fine, 80 € plus the cost of a ticket (2,80 € to 5,70 € depending on what zones—A, B, C and D— are needed for the ride), and finally compare that value, their expected punishment, to the price of a single ticket. Under these rudimentary assumptions, a rider would feel comfortable dodging the fare if they held the subjective belief that the probability of running into enforcement on a single metro ride is less than five percent.[24]

[22] All information from Helsinki Region Transport Authority, https://www.hsl.fi/en/tickets-and-fares/penalty-fare.

[23] This is similar to the ancient Roman practice of "decimating" that Machiavelli describes in the *Discorsi*, where every tenth man in an army would be executed for a crime committed collectively. Machiavelli describes the psychological effect of this practice, saying "by killing the tenth part, chosen by lot, when all are guilty, he who is punished bewails his lot, and he who is not punished is afraid to do wrong lest on some other occasion the lot should not spare him" (III. 49 p.527).

[24] Expected probability of enforcement · Expected fine = Expected punishment, expressed in euros (€). We are therefore interested in the inequality: Expected punishment < Cost of single-ride ticket. In this example I make the (unrealistic) assumptions that Helsinki residents are rational, utility-maximizing agents who are chiefly concerned with minimizing the economic cost of riding the metro, that they buy single-ride tickets and that in the case of equality they would be indifferent among dodging and paying the fare. I also assume that the punishment equals the monetary penalty, though the introduction of criminal penalties, for repeat offenders, for example, would surely introduce discontinuities in the disutility of punishment.

For the sake of the example, let us assume that a majority of Helsinki residents begin to estimate the probability of enforcement as approximately zero. As a result, revenues from metro fares incur a significant decrease. If the Helsinki Region Transport authority wanted to reduce the number of riders dodging the fare, they could employ a variety of tactics for doing so. A non-technological approach might involve threatening larger fines or criminal penalties for fare-dodgers or hiring security officers to enforce the restrictions at more consistent intervals. Technological management, however, might involve installing the same kinds of three-arm, waist-high turnstiles that exist in many other cities, prominent CCTV surveillance cameras to deter jumpers, equipped perhaps with facial recognition software, or, in the most extreme case, replacing waist-high turnstiles with full-height turnstiles that would eliminate the problem of fare-dodging altogether, though likely at considerable cost.

The methods of enforcement above are designed to (a) increase the expected probability of enforcement, thereby increasing the expected punishment, (b) physically impede fare-dodging, or (c) both. They either change the economic calculus or take choices off the table; what I am interested in is how technical solutions operate at the level of human experience, especially if they significantly alter human behavior. At first glance, the metro turnstile is a mere technical object; it is instrumental for pedestrians to use the system of public transport. Its imputed functions are to process payments, prevent fraud and manage the flow of riders into the subway system. However, if one steps back from these assumptions regarding its supposed functions, one can ask how the turnstile effects changes to human interaction.

The metro rider has a particular form of interaction with the turnstile that reflects “using” the machine by passing through it. Upon entering the train station, the turnstile stands between the (prospective) rider, and the train platform where she would like to go. From the perspective

of enforcement officials overlooking the morning rush-hour, there is a proper way to engage with these objects: the rider must approach the turnstile; if there is a payment to be made, she pays, either with cash, a ticket bought at a kiosk or a ticket machine, or a pre-loaded subway card; finally, the turnstile mechanism determines for how long the stile will unlock itself and allow her to pass through. Jumping over the turnstile is an "incorrect" manner of engagement; the engineers did not design the turnstile to be jumped over.

However, it is at this juncture that the moral and political outlines of heretofore benign technical objects should become visible. The idea that there are right and wrong ways to engage with a technical object presupposes a moral dimension of technology. According to our intuitions about the function of the turnstile, the turnstile-jumper has done something wrong, an act of "fraud" in the language of transit authorities. Increasing the technical security features of turnstiles is one way of preventing fraud, though not by appealing to the moral sentiment of the individual or fear of legal repercussions; rather, the removal of the possibility of fraud constitutes a moral imposition by way of a technical object.

Commenting on the moral character of technological management, Brownsword argues that a community with "moral aspirations" should not preclude its members from exercising their judgement, nor render it impossible for citizens to engage in civil disobedience (57). When a technological object removes the possibility of doing the wrong thing, authentic moral performance becomes impossible because the agent does not freely do the right thing. Technology can remove the possibility of what Pettit calls "contestability," referring to the permanent, institutionally guarded capacity of the populace to contest the power of the state. Rather than accepting the liberal claim that a legitimate agreement involves the consent of all relevant parties, republicans go further, arguing that preserving the freedom of all requires that

each party can effectively challenge the terms and change those terms if the challenge is sustained (61-3). Such a requirement implies that the stronger party—the government, in this instance—tracks the interests of the public good, or else it can face a legitimate, credible challenge to its position of authority.

If it is correct, as I have attempted to demonstrate, that technological management can hinder the capacity of individuals to act according to their will, and thus alter the relationship of contestability between the governors and the governed, then the domain of technology and the domain of liberty incur substantial overlaps. The problem for republican political thought is to what extent these technological power relations (those that risk devolving into relations of domination) are intelligible in terms of its existing frames of description and analysis. While there have been attempts to reckon with the role of modern technology in contemporary politics, to date no republican theorist has taken up an extended description or critique of the relationship between non-domination and technology. It is only recently that republicans have ventured outside analysis of public *imperium* and into private *dominium*: the relatively closed world of family, business, religion and other facets of the private sphere. Technological domination is a late arrival, and one of the reasons for this has been the lack of a framework of description for the indefinite variations of human-technology relations. In the next section, I argue that phenomenology offers a suitable descriptive framework from which republicans can derive the substance for normative critique of technological artifacts and systems.

PHENOMENOLOGY

Phenomenological foundation

The principal task of phenomenology is to directly engage the phenomena of experience. As a philosophical activity, engaging the phenomena of experience first requires describing the

range of things that appear on the level of our awareness. The phenomenological description is, then, a systematic description of the objects of experience that aims not at definitions or explanations so much as detailed accounts of the qualities of things, or phenomena, the ensemble of which comprise the world. The phenomenologist does not want to explain the essence of things as they exist behind a subjective veil of appearance; their activity, rather, denies the metaphysical separation of appearance and reality in favor of close examination of reality as it appears. In the words of Don Ihde, whose method of phenomenological description I draw on extensively in this chapter, in phenomenological description "Careful looking precedes classification and systematization, and systematization and classification are made to follow what the phenomenon shows" (*Experimental Phenomenology (EP)* 17). Unlike philosophies that begin from a set of axioms, then, or an indubitable Truth, phenomenology begins with no prior commitments other than to occupy oneself with what is present to experience as it presents itself.

Describing the entire field of experience, however, is not a feasible project, given that everything from the sensations of perception, to mental representations, to material objects are part of the totality of what is experienced. It is much more pragmatic to reduce the field of experience before proceeding to the analysis. To that end, Ihde outlines a list of five phenomenological reductions which elaborate the sort of approach one must take to engage in good description. The first three of these relate to correct attitudes and methodological choices; the last two specify how phenomenology is to present the results of its practice:

(1) Attend to the phenomena of experience as they appear (18-20)

(2) Describe, don't explain phenomena (18-20)

(3) Horizontalize all phenomena (20-22)

(4) Seek out structural or invariant features of phenomena (22-24)

(5) Correlational rule: maintain the intentional and reflexive relation between the experiencer and what is experienced (24-34)

Ihde provides detailed descriptions of each of these steps in the text, though for my purposes it will be necessary only to elaborate a number of key points. I have already touched on the first two steps, the function of which is to delimit the field of inquiry and guide the subject's preliminary excursions of phenomenological looking. The third step, "Horizontalize all phenomena," is the last of these negative steps. To horizontalize phenomena is to "not assume an initial hierarchy of 'realities,'" i.e., to temporarily suspend one's convictions of what the essence of the phenomenon in question actually is (20). If this step seems counterproductive—if it seems silly, for example, to resist defining familiar things in familiar terms at the outset—it is precisely because horizontalizing phenomena helps in distancing oneself from presuppositions that might skew a rich description of the thing experienced. When I move on to a phenomenology of technics, it will become clear that this step is key to recognizing the ambiguous quality of technologies that tends to escape the natural attitude with which we treat the objects of daily experience.

Steps four and five serve to assist in reporting the results of systematic description. Another term Ihde uses for the reductions is *hermeneutic rules*, where *hermeneutic* refers to the interpretation of things as they appear.[25] The end of phenomenology is to offer such interpretations as accounts of experience, and the hermeneutic rules structure these accounts. The invariant

[25] "Hermeneutics is derived from the Greek verb *hermeneuein*, which means to say or interpret; the noun *hermeneia*, which is the utterance or explication of thought; and the name *hermeneus*, which refers to the playful, mischievous, 'trickster' Hermes." From Nancy J. Moules, "Hermeneutic Inquiry: Paying Heed to History and Hermes An Ancestral, Substantive, and Methodological Tale," *International Journal of Qualitative Methods*, Sept. 2002, pp. 1–21, doi:10.1177/160940690200100301.

features of a phenomenon are its aspects that tend to remain stable across the variations of its appearance, or across the different interpretations of its essence or function. For example, suppose I am observing a pair of wired headphones; while what this object is and does might be immediately obvious to me, these immediate assumptions do not exhaust the possibilities of the headphone's essence or function. My knee-jerk reaction might be to say, "these are headphones, they are for listening to music," but there are other things one can listen to like podcasts, the news, or someone else's voice on a phone call. In addition, headphones might also be a mere accessory to wear around one's neck, like a scarf, or even a means of achieving the absence of noise, silence, as is the case with noise-cancelling headphones. "Variations 'possibilize' phenomena," and even with the few variations of this familiar object we have moved from the simple definition of "something with which one listens to music" to the acceptance of a wide variety of uses, the invariant character of which is not immediately clear (23).

Finally, the correlational rule is a reminder of what Edmund Husserl, father of modern phenomenology, thought to be the invariant structure of experience (25). Experience is always experience *of* something; experience only defines itself in relation to the objects of experience. Ihde notes the significance of this fundamental relationality of experience from the subject-object divide of Cartesian metaphysics. "Husserl transformed this distinction into a correlation of what is experienced with its mode of being experienced. He termed the correlation itself *intentionality*" (Ibid). Thus, while experiencing is directed towards things, the correlation implies what can be termed a two-way relation between the subject, "I," and the world. Self-constitution, the capacity to identify myself as a self, only happens reflexively; only in relation to a world I interpret as outside myself, but nevertheless in which I inextricably belong.

I ⟶ world

(I)—experiencing ⇄ world

Figure 3-2. The essential phenomenological relation of the subject (I) and the world, (the totality of phenomena as they appear). The mode of experiencing varies according to context.

There is nothing intelligible outside experience because nothing outside of experience is intelligible. If it were, we would be capable of taking a bird's eye, or better, an omniscient God's eye view of experience, a possibility that phenomenologists cannot entertain. To illustrate the impossibility of viewing experience from an external position, one can turn to the suggestive metaphor of the Archimedean point. The Archimedean point was first posited by the Greek natural philosopher Archimedes, who, so the story goes, claimed he could move the Earth with a large lever if only he were able to outside of it. If only one could stand outside of experience, she would be capable of seeing the ensemble of phenomena in its totality. And yet it is one thing to strive for the Archimedean point in one's quest for knowledge, quite another to affirm that one has already arrived. To avoid this methodological pitfall altogether, phenomenological description begins with the admission that positioning oneself outside of experience is futile. Even the transcendental "I" that is able to reflect on experience, and therefore seemingly exists above it, is ultimately compelled to regard its reflections too as percepts (*EP* 27-28). Rather than an admission of defeat, however, acknowledging the limitations of philosophical inquiry is the point of departure for a serious study of the phenomena of experience. The republican theory of technics *must* begin from this place of methodological humility, lest we discard the structure of co-constitution that has always accompanied humanity and its technologies.

The phenomenology of technics

If it is correct that the invariant structure of experience is referential, (I–experience–world), then we have a firm base from which to question the role technology plays in our experience of reality. In *Existential Technics*, Ihde makes the case that technological instruments *mediate* the subjective experience of reality as well as the intersubjective communications between humans. The mediation of experience in Ihde's phenomenological framework finds its parallel in the mediation of *praxis*: how humans act upon and in relation to the world. In the context of communications technologies, for example, the telephone serves as a medium of communication between two people; however, the most direct manner of communication between them would be "face-to-face," talking with each other without any immediate obstacles of space or time (47). In terms of sense perception, face-to-face communication provides the richest possible sensual experience, combining mixtures of at least sight, and sound, but potentially much more, including sense of smell, touch, space and the intangible "mood" of the situation. The medium of human communication influences mutual comprehension; it is more difficult to detect irony or sarcasm, for instance, in an e-mail than in an embodied conversation, where a sense of irony can be heightened by changes in the pitch of voice, facial expression, hand gestures, etc.

The sign of a good technology in this instance is not felt in the presence of the technological medium but in its partial withdrawal from awareness, or "transparency" (50). Telephonic communication from its inception has strived for sensory identity with the paradigmatic "face to face" situation; major improvements in audio quality from the first generation of telephones to the modern smartphone, and the introduction of video calling, have brought calls closer to what Ihde calls the *perfectly transparent* situation where the technological instrument itself recedes, at least temporarily, from the awareness of its user (51). Paradoxically, then, the hypothetical perfect

technology aims to mirror the absence of technological mediation; in order to better approximate unmediated communication, future improvements to video call services might come in the form of 3-D holograms such as those in Star Wars, or virtual reality headsets that allow interlocutors to see not only each other's faces but virtual representations of their full bodies.

Essential to a preliminary understanding of technics, too, is the non-neutrality of technology. The telephone's impact on communication is ambiguous because telephonic conversations contain characteristics of both amplification and reduction: the telephone extends the range of communication across the entire span of the globe, and even into outer space; however, a conversation over the phone also lacks the perceptual richness of a similar conversation if it had occurred in real-life, in a non-mediated context (*Existential Technics* 54). For Ihde and the postphenomenologists, the notion that technologies themselves are neutral objects, and the parallel idea that autonomous human agents should assume all responsibility for their potential consequences, is misguided because of how technologies transform human interactions.

Instead of thinking about technologies in terms of neutrality, we should rather place them in a state of essential ambiguity. The ambiguous character of technology is derived in part from Ihde's concept of *multistability*, which refers to the idea that a singular object holds an indefinite number of perceptual variations. Some of Ihde's favorite examples of multistable objects are the kinds of gestalt illustrations used in psychoanalysis, or geometric figures that conform to a variety of spatial orientations (see Fig 3.).

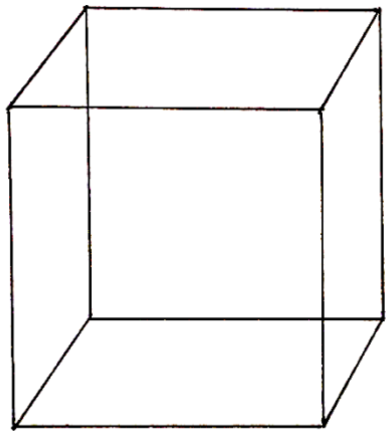

Figure 3-3. The Necker Cube, an example of a multistable geometric figure that reveals different perceptual orientations. One method for bringing forth the bistability of the figure is to focus on its "near" and "far" corners. See Ihde's Experimental Phenomenology for a detailed account of the Necker Cube and its perceptual variations.

Ihde's material hermeneutics is an extension of an interpretive approach to technological artifacts and systems. Technologies, just like objects of perception, are subject to an indefinite number of interpretations concerning their status and function. The function of a technology, for instance, is not limited to the specifications of its designers; once the technology becomes public, its use-cases may multiply indefinitely according to a wide variety of personal and cultural factors. Here the phenomenological approach links up with empirical approaches in the Social Construction of Technology (SCOT) that draw many of their assumptions and methodologies from the diverse literatures of the sociology of knowledge, sociology of science and Science and Technology Studies. For example, in their article on the early development of the bicycle in the late 19th century, Pinch and Bijker (1984) examine the "interpretive flexibility" of technological artifacts (33). Their study highlights the variation in interpretations of technological artifacts as well as the contingent character of the design process connected to the process of social construction. For example, the interplay between social discussion about the design aspects of bicycles and the proliferation of different models of the bicycle resulted in events of *closure* and *stabilization* of

both discourse and artifact; the pneumatic tire, was initially ridiculed by both racers and the general public alike, but soon became a stable component of the bicycle after numerous demonstrations of how rubber tires increased the average speed of riders (39).

Acknowledging the ambiguity of technological artifacts is the starting point for an ethics of technology outside of uncritical liberal interpretations of technics. While liberalism is a broad political and economic affiliation, the majority of liberal thinkers believe technology always augments freedom in the long run; technology in general enjoys a privileged position in liberal discourse that biases the evaluation of individual technologies. There certainly have been liberals who critiqued the unintended consequences of technological change on certain members of society, notable examples being the social liberals such as Dewey and Brandeis. However, the dominant liberal attitude is a tacit acceptance of technological innovation and, importantly, promotion of the process of technological change as reflecting a natural evolutionary order.

On the other hand, there has also been a long line of pessimists who see in technology the root of many debilitating social ills. One of the first of these techno-pessimists was Jean-Jacques Rousseau, who defended a controversial thesis in the *The Discourse on the Arts and Sciences* that the renewed interest in the arts and sciences had a corrupting effect on the public morals in European civilization. It is common in contemporary discussions on technology to praise the virtue of human ingenuity out of which we regard the products of innovation; Rousseau inverts this belief, arguing that the arts and sciences, which includes the manufacture of technological instruments, were actually borne of the vices of pride, greed, avarice, idleness and misanthropic scorn of humankind. Rousseau inspired future generations of romantic and humanist critics of the technological society whose impact on both philosophical and popular discourse cannot be understated.

The moral significance of technology

My aim here, however, is not to delve into an extended discussion of the techno-optimist and pessimist positions. Rather, I would like to trace a promising middle path between these two extremes, already partly established in the ethical theory of technological mediation that Verbeek elaborates in his writings on technology and morality. Eschewing moral presumption as well as the traditional subject-object divide in Western metaphysics, in his book *Moralizing Technology: Understanding and Designing the Morality of Things*, Verbeek advances the thesis that "ethics should be approached as a matter of human-technological associations," in which technologies play an active role in the shaping of moral decisions by human agents (13). Verbeek launches a critique against humanist ethical theories that take the autonomous individual as the locus of moral decision-making and reflection. The technological society has, in his view, made clear the limits of this humanist view because of its ignorance of the moral significance of technological mediation. Technological artifacts have never been merely passive and instrumental. Instead, they exert an active influence over the initial framing and range of options available to the individual *qua* moral agent. The recurring example to which Verbeek turns throughout his book is obstetric imaging technologies which allow expecting parents to view a technologically mediated image of a fetus, their soon-to-be newborn child. An ultrasound, however, is "never a neutral peek into the womb" (38). Rather, the ultrasound reveals the fetus both as an *individual person* lacking representational unity with its mother, floating in undefined image-space, and as a *patient* (24-25). Since the ultrasound is capable of revealing the risk of certain congenital diseases before birth, expecting parents are thus placed into the (potentially unwanted) role of choosing whether, given the results of the scan, they want to deliver this child into the world or not. Even if they do not want to consider this choice at all, however, deciding not to not undergo an ultrasound, or deciding

to have specific information from the ultrasound withheld, still constitutes a choice of moral significance. With this example, Verbeek wants to convey the salience of technologically mediated morality, as well as the impossibility of escaping the moral questions technological mediations force upon us.

Technological mediation and freedom

For Verbeek, technological mediation is also not necessarily a threat to freedom despite the apparent interference of technological artifacts and systems into situations of moral significance. The concept of freedom Verbeek adopts in order to resolve the conflict between technology and human agency borrow from the reflections of Foucault on the nature of power and the ethics of self-interpretation. The liberal ideal of liberty is the absence of interference, and on this account of liberty technological mediation of human actions presents a violation of non-interference because of how technologies alter the choices available to the human subject.

Foucault, however, conceived of liberty in his ethical writings and lectures as an expression of self-realization, as having the capacity to configure one's relations with different focal points of power in society such as the state, the church, the educational system, the family, etc. (85). Power relations within this schema of freedom are not necessarily dominating, Verbeek explains, but constitutive of the subject, and therefore ethics becomes not a series of moral decisions but a practice of engaging with power in a positive manner.

While the Foucauldian concept of positive freedom is itself liberating, Verbeek's reinterpretation underestimates the role of domination and its negation of the power relations that constitute freedom. In an interview, Foucault clarified his position on the relationship between freedom and power: "I am sometimes asked: 'But if power is everywhere, there is no freedom.' I answer that if there are relations of power in every social field, this is because there is freedom

everywhere" (1997 p.292). This is an illiberal notion of freedom because it assumes that freedom is borne of the interference people experience in their social relationships. Power is present in all social relations; Foucault even says that he prefers not to talk of "power" on its own, but rather "relations of power" (Ibid 291). On Verbeek's account of freedom, the individual enters into a relationship with technologies and engages in a playful shaping of that relationship which is a sign of their freedom. There is, however, a dark side to power: that of domination, or what American psychologist Timothy O'Leary refers to as the "perversion of power" (2002 p.158). And indeed, Foucault stipulates that if one were "completely at the other's disposal and became his thing, an object on which he could wreak boundless and limitless violence, there wouldn't be any relations of power," and therefore no possibility of freedom (1997b p.292). The project of identifying these "states of domination" and examining what means of resistance are available to the dominated should be of prior concern to the political philosopher (Ibid). And although the project of reconstituting relations of power presupposes the return of a confident, capable subject in the guise of positive freedom, we can draw a distinction between self-liberation, the act of freeing oneself, and freedom, the lasting condition of living in the absence of domination. It is this conditional sense of freedom that risks being lost in the positive notion.

Conversely, Verbeek argues in his writings on Foucault that the appropriate conception of freedom for an analysis of human-technology is freedom as self-constitution: "In terms of Isaiah Berlin: we should move away from the idea of *negative freedom* (freedom-from, the absence of constraints on individual acts) toward an idea of positive freedom (freedom-to, the ability to pursue one's aims), freedom that is positively directed at its environment" (2020 p.146). However, apart from giving the definitions of the two concepts of liberty, there is no subsequent effort to address Berlin's critique of positive freedom. Verbeek appropriates Berlin's language of freedom without

acknowledging the profound disagreement they would have on the political consequences of embracing either negative or positive freedom. Namely, Berlin expresses his practical preference for political freedom understood as "the 'negative' goal of warding off interference," of protecting the individual against hindrances of his will, no matter how "noble" or "benevolent the motives" of those in power may be (1967 p.158). According to Berlin, this conception of liberty has played a role in protecting the most precious rights of the individual.

Positive liberty, on the other hand—the notion of liberty Verbeek promotes—risks justifying forms of coercion on the basis of realizing the "true" self. Verbeek and his readers (Selinger et al. 2012; Bas de Boer et al. 2018) acknowledge the definition of positive liberty as freedom *to* rather than freedom *from* and interpret the sense of activity latent in this definition as appropriate for a relationship with technology. However, to engage further with Berlin's critique of positive liberty is to consider the "monstrous impersonation, which consists in equating what X would choose if he were something he is not, or at least not yet, with what X actually seeks and chooses, [which] is at the heart of all political theories of self-realization" (162). If the self is not autonomous, as Verbeek suggests, but heteronomous with regard to ethical behavior, there is the danger of wanting to raise others to a higher degree of freedom against their will and feeling justified in doing so because of the supreme value of reaching the true self.

It is possible to dismiss this challenge to positive liberty on libertarian grounds; one could argue that every individual should have the right to craft their own free relations with technological power with the caveat that they do not interfere with others. But here we have regressed to the libertarian reductionism that posits technologies as instruments of individual liberation. These discursive links with cyber-libertarianism are, in my view, another weakness of the prevailing trajectory of postphenomenology.

The cryptocurrency movement, for example, has co-opted a libertarian worldview to justify digital payment systems that fall outside the domain of government regulation. In 2009, the pseudonymous Satoshi Nakamoto published a paper that outlined a digital platform for currency exchange that would bypass the third-party mediation of financial institutions. “What is needed is an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party” (Nakamoto 2009 1). Because of its radical break with state institutions and trust-based social cooperation, cryptocurrency advocates have found moral justification in the political philosophy of libertarianism (Sotirakopoulos 2018). Nikos Sotirakopoulos draws parallels between cryptomarkets’ efforts to escape government oversight and the “counter-conducts” Foucault advocated against the repressive regimes of pastoral power and neoliberal governmentality (199). The spirit of individual rights encoded in these virtual communities indeed comes into conflict with the neoliberal state that Foucault addresses in his ethics.[26] The free relation Verbeek constitutes between humans and technology is contingent on the operant notion of freedom, and this is where a non-domination approach must break from the trajectory of postphenomenological politics.

THE REPUBLICAN THEORY OF TECHNICS

The normative aims of a republican theory of technics are to secure free relations between technology and the polity and free and equal relations between citizens. These normative aims

[26] Cryptocurrencies represent an interesting problem for a non-domination approach. Depending on the *imperium* of financial regulation, they might actually represent an improvement in freedom. However, as it currently stands, cryptocurrency exchanges still suffer from high barriers to entry and are unavailable to groups without equal access to technological resources and literacy.

would be acceptable to similar frameworks for the interpretation of human-technology relations, such as the postphenomenological approach, however there are clear differences between how these and other approaches interpret the central concept of freedom. What further complicates the field is the promiscuous oscillations of liberal theorists between promoting freedom as non-interference, substantive autonomy and self-realization, especially in the context of extolling the liberatory potential of new technologies. Modern republican political thought, on the other hand, has directed its efforts towards combating a particularly egregious political state of affairs: the relation of domination. Recalling Pettit's notion of domination, where I am dominated to the extent that someone else can impose their will on me on an arbitrary basis, a next step would be to ask how technologies mediate the power dynamics that have the propensity to constitute relations of domination; either in the case technological mediation between humans, or in relations between humans and technologies themselves.

This project should not provoke major objections from either republicans or phenomenologists. The trend of republicanism, as I have explained, has been to look for political interaction in an increasingly wide variety of contexts. Verbeek and the postphenomenologists, too, have already recognized the absence of domination as an essential condition of freedom, even if freedom itself is defined in the terms of ethical "practices of freedom" (Verbeek "Subject to technology" 41). The question is whether the two approaches can coalesce around a common goal of engaging technological phenomena as political phenomena, which in the end is a question of colliding frames of analysis and critique.

S.D. Reese provides a working definition of frames as "organizing principles that are socially shared and persistent over time, that work symbolically to meaningfully structure the social world" (Reese 11). Whether the field of inquiry contains the individual subject "I"–experiencing–world,

or the intersubjective sedimentation of beliefs within a culture, the idea of a pure perception or interpretation of phenomena must give way to the recognition of how previous experiences and beliefs structure perception and interpretation. Ihde, questioning whether there are dominant orders of perception for the variations of multistable objects, notes the function of narratives and perceptual rules in bringing out different variations of objects (*EP* 61). For example, the famous duck-rabbit illustration from Wittgenstein's *Philosophical Investigations*, originally from the psychologist Joseph Jastrow, is an example of a bi-stable image. Considering hermeneutic frames, we might not be surprised if a rabbit-hunter interprets the picture as depicting a rabbit before a duck, and vice versa for the duck-hunter.

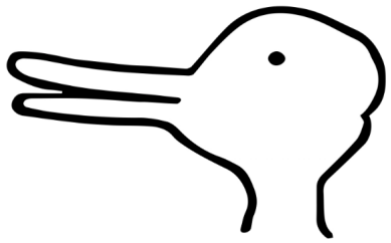

Figure 3-4. Wittgenstein's simplified "duck-rabbit" image (PI 194).

Despite the apparent limited application of perceptual multistability to political theory, I have yet to examine the implication that technologies, and therefore technological mediations of political power, are subject to hermeneutic frames. In an earlier section I proposed a primitive phenomenological outline of the metro turnstile, one technological artifact of many populating contemporary cities. Especially with the growing discourse and implementation of "smart city" projects around the world, the urban environment is rife with multistable objects that frame the possibilities of action and the overall schema of interpretation for the citizens who live there.

In *Callous Objects: Designs Against the Homeless,* Robert Rosenberger provides a critique of urban technologies designed to police and punish homeless populations.[27] These include benches in parks and in public transportation stations with dividers, ledges with spikes and tilted seats that prevent people from sleeping on their surfaces. In the language of Brownsword, these are examples of technological management; technical "solutions" to problems that might be unsavory or even unconstitutional to implement as a matter of law.[28] Anti-sleeping benches are everywhere in urban environments; and though it might make no difference to a housed person whether they can lie down while waiting for the bus (for them, the bench presents itself as a temporary seat), to a homeless person the bench appears as a place above ground to spend the night. If it is not pointed out to the housed bus rider, the bench-as-bed stability may never appear. Rosenberger writes: "there is a political dimension to what gets noticed and what goes unseen. There is a politics to perception itself."

Republicans are sensitive to domination in the sense that domination provides an initial hermeneutic frame for the analysis of power dynamics and other aspects of human affairs, including human-technology relations. The republican approach is therefore biased only to the extent that all viewing occurs within perceptual or hermeneutic frames. Framing affects the order of appearance of multistable phenomena, but it does not necessarily preclude a rich description of the field of inquiry or the possibilization of phenomena that is required to bring out their essential structures. In addition, my synthetic approach combines the phenomenological concern for

[27] Robert Rosenberger, "Callous Objects: Designs Against the Homeless," *University of Minnesota Press*, 2017, doi:https://doi.org/10.5749/9781452958538. [no page numbers were available for the online format].

[28] Rosenberger points out that the U.S. Department of Justice ruled anti-camping and outdoor sleeping ordinances violations of the 8th amendment of the Constitution's provision against "cruel and unusual punishment," because homeless people are often punished for doing so when no alternatives are available.

intersubjectivity with the republican concern for mutual regard. It is here that the republican notion of non-domination must be laid bare in its relationship with communication, for it is partly in human communication or lack thereof that structures of domination are sedimented. Pettit describes how a mutual awareness of domination serves to reinforce the relation of domination:

> Domination is generally going to involve the awareness of control on the part of the powerful, the awareness of vulnerability on the part of the powerless, and the mutual awareness—indeed, the common awareness among all the parties to the relationship—of this consciousness on each side. (61)

The final consequence of this common awareness is the materialization of the master-slave scenario; Pettit, however, does not probe more deeply into the existential consequences of domination. I had written earlier that the passing of a mutual regard is an essential moment of recognition between persons. But what is being recognized? What is the object of recognition? In the perversion of the dominating regard, it is the objective reality of domination occurring in an intersubjective manner. The dominating regard belongs to what Husserl referred to as "the intersubjective world," where the perceptual manifolds of individuals are shared in a higher-order objective reality encompassing "an indefinite plurality of subjects that stand in a relation of 'mutual understanding'" (420). Included among these higher-order realities are the various socially constructed institutions, of which Husserl takes care to name the State, the Church, the laws, to which I would add that technological systems, too, constitute higher-order realities that are nevertheless grounded in present-to-experience material reality (422). And if the state can dominate its citizens, why would technological systems not be able to dominate the humans situated within them? To be sure, the government of a state is populated by human actors who represent the loci of dominating power, but until technological systems of security, surveillance,

policing, etc. are fully autonomous, there is no reason why technologies would pose a less salient threat to freedom than the state, the church, the prison or any such other abstraction of political power on the grounds that human agents are not ostensibly making the day-to-day decisions that govern people's lives. If anything, submitting oneself to a digital process risks even greater exposure to arbitrariness on the direct part of algorithms rather than humans.

Regardless, the dehumanization that characterizes most relations of domination threatens to engulf a technological society in which human communication is everywhere reduced to mere interaction with technologies. Can we begin to understand the solipsism of a society in which most peoples' engagement with one another happens by means of telephone, screen or hologram? Such a society preserves better than any other the separation between pure subject and pure object. The discovery of the other remains impossible without the body; it is the shared experience of embodiment, of consciousness that has a body, that allows me to recognize something of myself in the other. Consciousness, the awareness of the self, is an opening toward intersubjectivity, as Maurice Merleau-Ponty explains in *Phenomenology and Perception*:

> With regard to consciousness, we must no longer conceive of it as a constituting consciousness and as a pure being-for-itself, but rather as a perceptual consciousness, as the subject of a behavior, as being in the world or existence, for only in this way will another person appear in control of his phenomenal body and receive a sort of 'place'." (367)

Frantz Fanon expressed a similar sentiment when he argued for the eventual dislocation of racial categories in the reconstruction of a world for all humanity: "Supériorité? Infériorité ? / Pourquoi tout simplement ne pas essayer de toucher l'autre, de sentir l'autre, de me révéler l'autre ? / Ma liberté ne m'est-elle donc pas donnée pour édifier le monde de *Toi ?*" (188).[29] Indeed, what this

[29] "Superiority? Inferiority? / Why not the simple attempt to touch the other, to feel the other, to reveal the other to myself? / Was my liberty not given to me in order to build the world of *You*?" [My translation].

general approach to intersubjectivity suggests is the importance of empathy in bridging the alterity relation. For Fanon, however, the contexts of the decolonial struggle against white imperial domination held evidence for how the inhumanity of colonialism had immediate and severe material consequences for the Black laborers working in the cane fields of Martinique or living under the thumb of French police violence in Algeria. Especially in the optics of racism and racial oppression, history is flooded with examples of how technological management picked up the slack when explicitly racist statutes become untenable. Deborah Archer, writing on the construction of the inter-state highway system in the mid-century United States, details how "[i]n states around the country, highways disproportionately displaced Black households and cut the heart and soul out of thriving Black communities as homes, churches, schools, and businesses were destroyed… In some cases, entire Black communities were leveled" (1265). In the absence of bald-faced *de jure* segregation, the highways accomplished what legal means could not: the destruction of Black lives and livelihoods, and the effective ostracization of Black people from downtown areas filled with law-abiding whites. The "perceived genius" of constructing highways to reinforce racial inequality was that they were likely to materially support existing legislation that supported segregation and resist future efforts at integration (1275). The consequences of technological management are indefinite and tend towards sedimentation, with little leeway for deconstruction and reconstruction once the structures are finally in place.

CONCLUSION

In this chapter, I have presented a synthetic approach to technological politics. Republicanism provides a language, a set of discursive tools, for articulating the challenges facing a polity as well as the normative aims that guide its government and politics. The associated historical tradition of republican theory, similarly, contains extensive accounts of how different social and political

groups valorized and engaged in struggles for freedom, the central concept of republicanism. However, until recently, considerations of how technological artifacts and systems impact power relations has remained scant. The phenomenology of technics in turn provides inroads for republican theorists to consider at length the mediating role of technology in human affairs.

The next chapter features a more focused treatment of how to constitute a free relation between technology and the polity in the republican state. Remaining moored to the subject of regulating technological change, I will investigate the possible legal constraints on technological power within the tradition of republican constitutional thought. Therefore, in the following chapter there will be more of what would count as traditional political theory, but I want to emphasize that the brief phenomenological excursions I have made in this chapter continue to structure the approach. What I affirm with both the phenomenological and the republican traditions is the fundamental desire to acknowledge and be acknowledge by others; to confirm with others the freedom and equality that are only possible in association.

Chapter 4.

The constitution of technology

In this chapter, I turn toward the possibility of a republican model for political engagement with technology. The republican aspects of the model benefit from the fundamental insight that humans are technologically mediated rather than purely autonomous moral subjects. Consequently, the goal of an ethics of technology is to examine the relationship of co-constitution between humans and technology and to shape that relationship according to the conclusions of ethical reflection. What the theory of technological mediation is still negotiating, however, is an application to politics; one that stresses the relationships of co-constitution between political institutions, technologies and the public. On the one hand, Verbeek has demonstrated some of the promising features of what he terms "the political hermeneutics of technology," including the ways in which hermeneutic description can reveal the political significance of individual technologies and the non-neutral, technologically mediated character of political interaction (2020 p.152). On the other hand, there have been fewer forays into the establishment of political institutions and practices that aim to promote a free relationship between technologies and the political community. These considerations recall a conception of politics as the design of institutions, and of political theory as a space for reflection on the public provisions for supporting an ethics of the good life. For its political application, then, I argue postphenomenology should begin to integrate greater reflection and experimentation with the themes of legislation and constitution.

Drawing on the constitutional thought of Philip Pettit and other republican theorists, in this chapter I argue for the virtue of constitutional thinking in the philosophy of technology and propose an alternate conception of democratic influence over the process of technological change. To that end, the argument proceeds in three parts. First, I show on the basis of a postphenomenological account of technics that democratic republics should transition from Technology Assessment (TA) to a co-constitution model of technology regulation. Second, I describe and critique Langdon Winner's notion of "regimes of instrumentality" in the context of technologies *qua* legislation and constitution. Third and last, I outline the republican constitutional commitments to dispersion of power, representation and deliberation and a contestation approach to democratic control.

FROM TECHNOLOGY ASSESSMENT TO CO-CONSTITUTION

The employment of scientific research and deliberative methods to assess the social, economic, environmental and political impacts of new technologies first gained prominence in the United States during the 1960s. Along with a general awareness of the increasing influence of science and technology in society, several prominent critics—such as Rachel Carson, writing on the impact of pesticides on the environment in her popular book *Silent Spring*—rallied public support around limiting the development of certain technologies that threatened peoples' health and safety (van Est and Brom 306). The growing critical discourse around science and technology became law with the establishment of the Office of Technology Assessment (OTA) in 1972; this was an important event for democracy in the United States, too, because it promised to address the imbalance of knowledge and control of technological change between the legislative and comparatively stronger executive branches of the government (Ibid 310).

TA in its initial stages relied on the testimony of scientific experts to inform legislators and regulators on the contingent outcomes of technological change. Although this form of "Classical

TA" excluded stakeholders outside of government and academia, it still constituted a challenge to paradigms of technological regulation that left the process of technological change untouched (Ibid). Practitioners of Classical TA conducted research on technologies in order to anticipate their possible impacts; as a practice, the OTA presented research on technologies to members of Congress and proposed alternatives to the dominant plan. While the regulatory doctrine at the time had been to engage only in *ex post* management of accidents and large-scale failures of implementation, TA encouraged legislators to become better informed about technologies during their initial stages of development.

In addition to Classical TA, van Est and Brom (2012) address three other paradigms of technology assessment: Participatory TA, Argumentative TA and Constructive TA (308). Each of these paradigms politicizes the practice of examining the social impacts of technologies in a slightly different way. Participatory TA goes beyond informing politicians to involving business, civil society and citizens in the debate on emerging technologies; Argumentative TA also broadens the debate but places a greater emphasis on interrogating the presuppositions and overarching belief systems of its entrants; and finally, Constructive TA (CTA) aims to open the design process itself to public scrutiny and debate. More than Participatory and Argumentative TA approaches, "CTA redefines technology assessment as an active contribution to the process of design as opposed to an independent analysis of the impacts of technology" (317). Finally, one could also add the nascent efforts at ethical TA and ethical CTA (eCTA), which aim to overcome a "normative deficit" of TA approaches to this growing list of assessment paradigms (Bas de Boer et al. 302).

As a result of its turn toward the co-construction of technology and society, CTA seems to subvert the notion that technology can be assessed from a neutral perspective. This implicit

abandonment of assessment in favor of intentional engagement with the process of technological change corresponds to the hermeneutic position that humans and technology co-constitute each other. Indeed, Verbeek proposes that technological mediation can "augment" CTA by introducing its practitioners to the mediating role of technologies in moral decision-making (2011 p. 102). In his view, CTA succeeds as a methodology for democratizing technological change in the design-context but does not pay sufficient attention to how technologies mediate interactions in the use-context (Ibid). To bring out the possible mediating variations of a technological artifact, Verbeek proposes the systematic production of scenarios and simulations, along with a kind of stakeholder analysis that seeks to take into account a sufficient quantity of perspectives regarding the technologies' possible real-world relationships with human actors.

Although Verbeek presents technological mediation as an augmentation of existing TA approaches, the existential implications of human-technology relations make the mere application of mediation a stunted enterprise. Bas de Boer et al. argue that on a weak reading of technological mediation, phenomenological description of the different ways technologies shape moral decision-making is taken as an invitation to question those meditations on the basis of existing ethical frameworks; however, on a strong reading of technological mediation, the subject who begins by assessing whether a particular technology is "good" or "bad" ends up asking ethical questions about their notions of an ideal present and future self (310) The strong reading explicitly links the results of phenomenological description to existential questions that implicate the human subject and their moral judgments of present and future selves. "Rather than anticipating the future workings of technologies, the strong view suggests that through making potential mediations explicit, we face our own possible future" (Ibid). Technological mediation, then, disrupts the central TA assumptions of an external and anticipatory position with respect to the process of

technological change. Human relatedness to technology implies a relatedness to the self, and moreover, a relatedness to established technological artifacts and systems, not simply to those of the near to distant future.[30]

This hermeneutic transformation of TA undermines many of the core assumptions of assessment methodology, but what is less clear is how it could change the practice of supranational, national and municipal TA institutions, as well as the discourse in civil society and citizens' groups. It is not immediately clear, in other words, how the ethical theory of technological mediation can be applied to political institutions.

The movement from ethics to politics therefore admits of some reflection if it is to be achieved with any degree of success. Verbeek and the postphenomenologists have embraced Aristotelian virtue ethics, the ethics of the good life, as the ethical framework to steer technological mediation into normative discussions about the morality of technologies. Resuscitating virtue ethics, however, also calls to mind the question of an appropriate political philosophy of technology, and whether this, too, can be found among the Greeks. Though I am skeptical of this possibility, I think further engagement with Aristotle's theory of constitution could lead the way to a more refined understanding of the relation between morals and politics.

Aristotle in the concluding chapter of the *Nicomachean Ethics* transitions from ethical to political reflection, citing the necessity of teaching good habits to the populace by means of legislation. In Aristotle's view, the virtuous life is a difficult one to cultivate, and while a select

[30] Verbeek uses the term "technological accompaniment" to emphasize the relatedness, even companionship of humans and technology (2011 p.164). Bas de Boer et al. address the etymological root of "accompany," which is the Old French *accompaigner,* "to take as companion," in contrast to the Medieval Italian *assessare,* "the fixing of the amount of taxes and fines (2018 p. 311). I continue to employ the term "co-constitution" because of its more active connotations, as well as its resonance within political theory.

few are able to live virtuously of their own accord, this cannot be expected of those who make up the majority of society. To promote the good life at higher levels of organization, then, the state must have good laws, "for most people obey necessity rather than argument, and punishments rather than the sense of what is noble" (1180a 11-12). The legislator is a figure whose primary interest is in helping people learn how to be good, and legislation is the means of incarnating this vision of the good life into law. Legislation continues to play an important role in *The Politics*; however, the focus in that work shifts to a discussion of the best forms of government, both in general and with respect to particular contingent circumstances. The discussion therefore amounts to a comparative study of political constitutions, which Aristotle defines as follows:

> A constitution is the organization of offices in a state, and determines what is to be the governing body, and what is the end of each community. But laws are not to be confounded with the principles of the constitution; they are the rules according to which the magistrates should administer the state and proceed against offenders.[31] (1289a 15-22)

From the Aristotelian doctrine of the four causes, the constitution is the formal cause [*causa formalis*] of the state. The constitution of a state—which need not be materially inscribed, but embodied in certain institutions, norms and practices—is its form, on account of which the state can be subject to normative judgment. The form of government in a democracy, for instance, differs from that of an oligarchy or a monarchy, and each of these contains advantages and disadvantages that must conform to the local conditions. These local conditions are the material cause [*causa materialis*] "out of which" the state comes into being and include the people as well as the endowments of the natural environment. However, the above definition of a constitution also indicates the state's primary agent of change, the governing body, as an efficient cause [*causa*

[31] Aristotle defines the constitution [*politeia*] at multiple points in *The Politics.* (Cf. III.1. 1274b 32-41).

efficiens], and the end of the community as a final cause [*causa finalis*], "for the sake of which," which can be interpreted as the highest good to which the political community can aspire. The normative evaluation of a constitution, then, reflects a hermeneutics of the state that aims at a rich description of its governmental form as it is present to the observer. The co-constitution at hand is that of the virtue of the citizens and of the laws, the ethical and existential implications being the type of people we want to be expressed through the legal provisions under the constitution.

If the theory of technological mediation holds, one implication is that technologies exert a similar influence on the citizens as legislation. However, it does not follow from the state's legitimate right to create and enforce its own laws that the state must have a similar control over technologies, nor is such a level of control feasible. However, if there are institutional implications emanating from the claim that technologies play an active, rather than a neutral role in moral decision-making, then political theorists have a challenge in determining the context-dependent appropriateness of state control over technologies. This challenge should also be a potential cause for concern among postphenomenologists, for it exposes the possibility that the *praxis* implied in technological mediation could be politically impractical. The moral status of technological artifacts, for example, might not matter in the assignment of legal liability. In his response to Verbeek's *Moralizing Technology*, Martin Peterson critiques the moral relevance of technological mediation by noting that, even if a gun shapes moral-decision making, in the event of a shooting the human is held legally responsible, not the gun. While Verbeek aims to attach moral agency to the "the-assembly-of-the-gun-and-the-person-shooting," Peterson argues that the attempt fails because of the conflation of the gun-person assembly and the person-shooting in the act of shooting, which is, in the end, the only morally relevant actor.

The crux of Peterson's critique is the denial of the moral relevance of technological artifacts due to their lack of agency. Technologies lack moral agency, in his view, because they lack "intentionality" in the normal sense of "the ability to form intentions" (Verbeek p. 55 qtd. in Selinger 620). However, while it is manifest that contemporary technologies cannot form intentions of their own, they retain moral relevance because of the relationship of co-constitution between humans and technology. The relevant sense of "intentionality" here is not moral, but phenomenological, related to the directedness of human experience towards the world.[32] Bas de Boer et al. affirm that, in the case of the gun, we indeed hold the shooter responsible, though the action of shooting arises out of a relation that posits the human as a killer and the gun as a murder weapon (311). The existential difference between the human shooter and the gun is that the "human self is always relating to its technological relatedness, i.e., it takes heed of its being in the world through technologies," whereas the gun has no such capacity for self-reflection (Ibid). Nevertheless, part of relating to one's technological relatedness is the awareness that engagement with technologies is also an engagement with the self. The question of whether it is morally permissible to buy a gun is different from the broader question of how gun ownership transforms the horizon of morally relevant decisions and provokes ethical reflection on the moral status of the newly constituted gun-person. For political thought, this matter of existentialist self-constitution is enlarged to include the normative deliberations of the community.

[32] Peterson's objection to the casual comparison of moral and phenomenological intentionality is warranted, and in individual passages Verbeek seems to be guilty of making this comparison (See Verbeek 2011 p.16). What is not warranted, however, is the claim that Verbeek locates moral agency in artifacts in-themselves; their moral relevance, rather, reveals itself only in relation with human actors who can be held responsible for their actions.

THE CRITIQUE OF TECHNĒ AND POLITEIA

In the political theory of technology, the ethical implications of technological mediation correspond to an existing approach developed by Langdon Winner that emphasizes the political relevance of technological artifacts as well as the political forms embedded in technological systems. For a constitutional interpretation of technological change, the latter is of primary importance, but dwelling on Winner's initial writings on "technology as legislation" will preserve the logical movement from legislation to constitution established by Aristotle in *The Nicomachean Ethics.*

Winner sets the groundwork for technology as legislation in *Autonomous Technology: Technics out of Control as a Theme in Political Thought,* in which he offers a history of modern technological change and its interpretation among critics from science, sociology, philosophy and political thought. Earlier, I commented on Winner's discussion of Technocracy from the fifth chapter of that work in the context of early 20th century liberal technocratic thought. However, the central rhetorical movement of the book occurs at the beginning of chapter six, where Winner shifts focus from describing how technocratic elites and hegemonic groups control technological development for their benefit, to questioning if there are "conditions, constraints, necessities, requirements, or imperatives effectively governing how an advanced technological society operates?" (173). The nature of such a question, Winner claims, is to ask after *what* governs? and not *who* governs? (Ibid). Such a question immediately challenges the intuitive notion that human beings can gain control of technological systems, the fundamental premise of Veblen's Soviet of Engineers and the early TA movement.

Rather than merely designing technological means to suit our ends, humans in modern societies exhibit a tendency for *reverse adaptation* — "the adjustment of human ends to match the character

of available means" — with respect to technology (229). Effectively, humankind is adapting to the specifications of technology, reversing the causal relationship we typically associate with the use of tools. From a regulatory perspective, the increasing complexity of technical systems has diffused technical knowledge such that ordinary people understand "less and less about the fundamental structures and processes sustaining them" (295).

With this groundwork underfoot, Winner introduces the fundamental notion of technology as legislation, resting on the awareness that "modern technics, much more than politics as conventionally understood, now legislates the conditions of human existence" (324). Here, technology acts alongside the legislator as a lawgiver, harkening back to the role of the Latin *legis-lator* ["law-giver/bearer"]. Winner compares this nascent notion of technological politics to the usual social reaction of legislating against technological change, which consists of constructing a structure of legal regulation to maximize the utility and minimize the damages of emerging technologies.

Legislating against technology, Winner argues, is characteristic of both the expert risk and cost-benefit calculations of the economic field and the equally well-intentioned programs of "the ecology movement, Naderism, technology assessment, and public interest science" (319). In his view, all of these groups share the externalist position with regard to technological change. They look to effect changes in developing future technologies, without considering how politics is embedded in technological systems. Thus, the matters of interest in considering the right implementation of technological systems are not limited to health and safety, but also fundamental political ends.

Recalling from Aristotle the claim that laws conform to a constitution, not vice versa, we can then ask how individual technologies conform to a technological constitution of society. Winner

takes up the theme of legislation again in his collection of essays *The Whale and the Reactor (WR)* and applies the ideas of constitutionalism to technology in the chapter entitled "Technē and Politeia." The central claim he makes here is essentially identical to the one made in *Autonomous Technology*, that technologies themselves should be treated as a matter of political inquiry and debate. The history of constitutional thinking, exemplified in Winner's account by the contributions of the architects of the U.S. Constitution, leads him to draw a parallel between political constitutions and the *regimes of instrumentality* contained in technological systems: "Just as Plato and Aristotle posed the question, what is the best form of political society? an age of high technology ought to ask, what forms of technology are compatible with the kind of society we want to build?" (52). To illustrate this question, Winner explores the example of energy production technologies, comparing the political regimes contained in nuclear energy production, requiring centralization, high security and expert management, to the "soft energy paths" of photovoltaic solar power managed at the level of neighborhood governance (53).[33] Thinking of technological forms also threatens to upset the economic commitment to efficiency, and the liberal commitments to maximize social utility based on these economic considerations. The premise of efficiency, Winner argues, is an important one, though it has become the object of a reductive approach to government regulation: "putting Btus or kilowatt-hours in the numerator and dollars in the denominator and worshipping the resulting ratio as gospel" (53).

The upshot offered in this chapter resembles a variation on the common refrain of democratizing the process of technological change. Because this general refrain is so common, having entered the territory of an empty signifier, the utmost care is required to understand

[33] Winner uses the description of different modes of energy production from Amory B. Lovins, *Soft Energy Paths*, Harper Collins, 1979.

Winner's position on democracy and technology. To that end, I quote two passages from "Technē and Politeia" at length. The first concerns the mostly descriptive issue of how to locate technologies of interest in the democratic polity:

> If we were to identify and characterize all of the sociotechnical systems in our society, all of our regimes of instrumentality and their complex interconnections, we would have a clear picture of the second constitution I mentioned earlier, [*See p. 47*] one that stands parallel to and occasionally overlaps the constitution of political society as such. (55)

The second passage concerns the subjection of technological change to democratic control:

> Faced with any proposal for a new technological system, citizens or their representatives would examine the social contract implied by building that system in a particular form. They would ask, How well do the proposed conditions match our best sense of who we are and what we want this society to be? Who gains and who loses power in the proposed change? Are the conditions produced by the change compatible with equality, social justice, and the common good? To nurture this process would require building institutions in which the claims of technical expertise and those of a democratic citizenry would regularly meet face to face. Here the crucial deliberations would take place, revealing the substance of each person's arguments and interests. The heretofore concealed importance of technological choices would become a matter for explicit study and debate. (Ibid)

At first blush, the descriptive claims made in the first passage are consonant with the classical ideal of constitutional thinking that seeks to compare different regimes on the basis of their revealed form. However, it would be an incredible undertaking to describe in detail all of the relevant artifacts and systems. This project is made even more difficult by the fact that the forms of technologies are also subject to the dynamic process of technological change. From a hermeneutic

perspective, there are also concerns about positioning oneself outside of technologies in order to get the "clear picture" of the whole that Winner describes (Ibid). It is important to recognize, then, that this passage is a conditional statement of the form "If p then q". However, Winner does not express any doubt here about the likelihood of p, our capacity to "identify and characterize all of the sociotechnical systems in our society," even though previously he had emphasized how technological systems were becoming increasingly unintelligible even to the engineers who took part in constructing them (Ibid).[34]

These two passages confirm that Winner has in mind a model of democracy that combines elements of interest-group pluralism and consensus decision-making. The pluralist elements appear in the emphasis on "building institutions in which the claims of technical expertise and those of a democratic citizenry would regularly meet face to face," an attempt to include two major pillars of legitimacy in decision-making: the technical community and the non-technical populace (Ibid). Engineers, programmers and other possible members of the technical community thus do not count first as citizens, but as technicians. Citizens, then, are the newcomers on the decision-making scene. Winner evidently thinks citizen participation represents an important source of legitimacy; however, on this matter contradicts he himself. In the first sentence of the second passage, he states that citizens or their representatives should debate the constitutional merits of a given technical proposal. The statement is disjunctive, implying an awkward symmetry between citizens and representatives that Winner does not acknowledge. From a practical perspective, legislators spend their time in politics debating proposals, whereas the image of the engaged

[34] Cf. *Autonomous Technology*, Ch. 7 "Complexity and the Loss of Agency" (pp. 279–305).

E.g., "The gap between the realities of the world and the pictures individuals have of that world grows ever greater. For this reason, the possibility of directing technological systems toward clearly perceived, consciously chosen, widely-shared aims becomes an increasingly dubious matter" (295).

citizen, especially in the United States, is mostly a fiction. Winner does not deconstruct the political ontology of the citizen in this chapter, leaving the pool of participants in municipal, regional, national and international deliberations over technology open to interpretation and, thus, to biases that could compromise the statistical representativeness of the citizenry as an interest-group.

Furthermore, Winner relies on a vague notion of consensus decision-making to support his conjectures about the kinds of questions that would arise in deliberations over technology. He claims that the form of "things" should reflect "deliberately articulated, widely shared" social notions; such a procedure that aims at cultivating "widely shared" notions must therefore exceed the requirements of strict majoritarianism, while still retaining a neutral position about which social ends are valuable (Ibid). The consensus that Winner aims to build, then, is characteristically relativistic with regard to final ends within the boundaries of acceptability for social liberalism. Among the "key political ends" Winner explicitly lists in the vicinity of these passages, for example, are "freedom" and "social justice," as well as "equality, social justice, and the common good" (55; 56). There seems to be an issue of commitment here, and I think there are two main ways of reading this enumeration of ends and the peculiar repetition of "social justice" across the two lists: either Winner chose these ends carefully, and therefore thought that "freedom" and "social justice" are appropriate ends for technical regimes (55), and the other three ends, "equality, social justice, and the common good" (56) for technological change, or he did not choose them carefully, and merely chose words that signaled a sufficient smattering of normative values. I am partial to the latter interpretation, given that there is no justification for examining the role of freedom in the context of technical regimes, but strictly not in the context of technological change. Perhaps Winner merely wants to avoid constraining himself in order to provide rhetorical support for democratic decision-making, though the normative charge of this and other examples of his

work remains ambiguous. The only normative end that is articulated in any substance is communitarianism tempered with a strong dose of procedural democracy. The major problem with the process of technological change, then, is that it is not democratic enough, with democracy conforming to an astroturf conception of community-based political participation. Winner reinforces this unqualified community sentiment in the chapter with the liberal use of "we" and "our" rhetoric addressed to his readers, a pathological appeal on the basis of a common struggle against technological domination.

Thus, I conclude that Winner's project to examine the technical constitution of society lacks sufficient prescriptive substance to guide a future for constitutional thinking on the subject of technology. While his proposals are generally acceptable to the average left-leaning person living in a modern liberal democracy, this is because they combine the enlightenment optimism of the founding fathers with the generic ends of freedom, social justice and equality. These ends, while often mutually supportive, can also come into conflict with each other. The establishment of property rights, for example, often involves considerations of economic freedoms against the social inequalities that might result from the creation of a market; this was the case in the debates surrounding the establishment of the Domain Name System on the commercial Internet in the 1990s.[35] The deliberative institutions Winner envisions obscure the conflicts of technological change and present deliberation as a benign process where "we" cultivate a "widely shared" notion of what is good, just, free, and equal.

[35] E.g., the conflict between preserving copyrights and trademarks vs. permitting freedom of speech. See Bradshaw and Denardis, "The Politicization of the Internet's Domain Name System: Implications for Internet Security, Universality, and Freedom." *New Media and Society*, for a detailed study on the political debates surrounding domain names.

There is, however, a more robust notion of democracy that has not yet figured prominently in the discourse surrounding the regulation of technological change. This is the notion of democracy supported by contemporary republican political theorists, and its fundamental difference lies in an emphasis on the instrumental role of democratic institutions in promoting freedom as non-domination. It is democracy not as mere consensus-building, but as the people's effective capacity to contest the actions of governing bodies.

THE REPUBLICAN CONSTITUTION OF TECHNOLOGY

While I do not think it necessary to define and defend democracy as a political idea every time it is mentioned for the simple reason that most people in democratic societies share some basic assumptions about the importance of elections, representation and accountability, and so on, I briefly do so here as a reminder that democracy can indeed hold contingent meanings, and that each of these will hold a different set of implications for the kind of culture and institutions fostered in a democratic society. Democracy, then, is restated here as an ideal in which the people [*demos*] have control or power [*kratos*] over the government of their community. The notion that the people control the government, however, does not presuppose that it is the people who govern. Perhaps that is the ideal of direct democracy, where an assembly including all the people in a community makes the laws. But the people's assembly in a direct democracy is an overly demanding and often disastrous institutional requirement when taken as the only seat of decision-making power in a community. In any case, it is my contention that direct democracy is not actually the best or most perfect form of democratic government; or, better, direct democracy is not sufficient from the perspective of non-domination because it is without balance. In the event that *at least one* person does not have a fair shot of influencing the assembly, of having their voice heard, that person is subject to the combined will of the rest of the assembly's members. What the democratic assembly

lacks is something to keep it accountable, a counterforce, which is not something to be worried about when everyone has an equal chance to participate but becomes a matter of salient concern for the political community which vests political power in an elected group of representatives, as is the case in most modern democratic societies.

Alexander D. Lindsay, Scottish democratic theorist of the early 20th century, argues in *The Essentials of Democracy* that the essence of democracy implies a constitutional arrangement that endows each person with an equal opportunity to set the agenda for public decision-making; the ideal of democracy, argues Lindsay, is not the massive public meeting (analogous to a Yes or No referendum), but the dispersion of democratic deliberation across all levels of society. The representative assembly in this arrangement serves as "chairman for the multifarious informal discussion of the nation as a whole, and the measure of the successful working of democracy is the extent to which the voting of the ordinary man and woman has been informed by this widely diffused public discussion" (qtd. in Cohen 546). Thus, voting continues to play an essential role in democratic government, though for Lindsay it is not sufficient to gain the consent of the governed in any old way. The strength of democracy lies not in the rubber-stamping of an uninformed electorate, a nameless mass of so-called citizens, but in the "free give and take of discussion" that occurs among equals, where each can seize the opportunity to contribute what they can to the discussion (544). Voting is an efficient way to field public opinion, but it does not embody the democratic ideal of discussion. Lindsay's view also echoes that of other political theorists, such as Hannah Arendt, who argue that discussion among equals is a source of dialogical thinking, a particular way of finding things out: "The root of the matter is that if the discussion is at all successful, we discover something which could not have been discovered in any other way" (545).

Contemporary calls to "democratize" technology have in mind a particular vision of democracy and assign to democracy a particular normative weight. I have attempted here to present a notion of democracy as a means to an end, albeit a means that is compelling enough—regrettably, in my view—to rise to the status of an end-in-itself. Democracy, in the sense of popular control of government, is a means in two relevant ways in the present application of popular control of technological change. First, democracy is a means of political decision-making that reflects the practice of dialectical reasoning. Second, however, democracy is a means to attaining the end of non-domination. This is the role of democracy in republican forms of government, where democratic processes serve as an opposition to the actions of other centers of power. Republican government, in the way Pettit describes, is government "on the people's terms," such that the actions of the government are subject to public scrutiny and the members of the public play their role in resisting policies that tend toward domination. Posturing democracy as a means to secure non-domination implies that the constitution of the state arranges for a democratic system "that follows deliberative patterns of decision-making, that includes all the major voices difference within the community, and that responds appropriately to the contestations raised against it" (Pettit 1997 p.200).

Even if popular control over technologies is not feasible, it is an ideal to work towards that exerts a demand on the effective capacity of citizens to resist the dominating technologies of their everyday lives. Therefore, from a constitutional perspective, the link between democracy and technological change requires more than establishing spaces for deliberation; it also requires structuring the technological agenda such that the development of certain technologies is "off the table" in the absence of broad public discussion about what the introduction of these technologies means for the body politic, and further, it requires structuring political interaction such that a

person *qua* citizen is able to have a fair hearing of their complaint related to technology, especially if their complaint seems at first blush to have grave implications for the non-dominated status of themselves or others. Any political system that respects the average person's capacity to make basic normative judgments—that is, any democratic republic worth its salt—ought to open the substantive debate on issues related to technology to this person and persons like them. On the basis of the foregoing description in Chapter three of how technologies structure the movement of citizens through an underground metro system, technology shows itself to be a matter of public concern of similar weight to legislation, even though the legislation of technology often occurs outside of the legislative powers of government.

What is an example of a republican institution that can come into contact with technology? In the last part of this chapter, I will briefly present on two such institutions that represent the core of popular control of technology: the legislative body and the citizens' committee. Recalling the postphenomenological claim that technology assessment must not stand outside the process of technological change, each of these institutions is ideally engaged in an eclectic interaction with the centers of imagining, designing, building, testing, evaluating and living with the relevant technological forms. Although it is rare to think this way in political theory, the people within these institutions are thus subject to existential provocations in their interactions with certain technologies, provocations that lead to reflection and discussion on the ramifications of technological change both in the future and in the present moment.

Rather than design technologies themselves, which political institutions are not likely to do, these "types" of institutions facilitate reflection on technological mediations. The structure of this regulatory regime is thus directed towards technologies, but equally concerned with how the technologies embedded in society frame social relationships.

Note that here I do not pretend to a complete "ecosystem" of actors related to the dynamic process of technological change. I am aware that it is important to include all of the relevant stakeholders in a discussion about the implementation of a technology, or the drafting of a regulatory (legal) regime around it. The list of such stakeholders inevitably contains government, industry, financial interests, academia, the technical and scientific community, consumers, the media etc. For example, there can be no fair discussion on what to do about the rising levels of CO_2 in the atmosphere, so argue the proponents of multi stakeholderism, without including the polluters along with those affected most directly by pollution. The conceit of multi-stakeholderism, however, is to downplay the imbalances in power that these different parties bring to the table. Especially when the table plays host to a negotiation, rather than a democratic discussion or debate, the hegemony of groups with greater bargaining power is assured. What perverts the economic logic of bargaining as a mechanism of social ordering is not transaction costs, but the belief that private self-interest should prevail over communal deliberation.

To promote non-domination as a political ideal requires robust political institutions. It is possible, of course, that most traditional stakeholders have no intention to dominate the others. However, in a republic, the people are the ultimate stakeholders. The republican state is *res publica*, a "public thing," and the republican government thus serves as a trustee of the people. It is the people who wish not to be dominated. To an even greater extent, minorities and marginalized groups within the populace risk not having their voices heard in an environment where dominant stakeholders can operate with impunity.

The following discussion is therefore focused on the institutions that are positioned to represent the public interest in the most direct manner, at the cost of bracketing the stakeholders who represent their own private interests. It is aimed at bringing out the contours of a community whose

adoption of technologies is based on a practice of dialectical deliberation both within and between these institutions. That the instigators of technological change do not engender relations of domination is its immediate project; that these instigators also to treat people as humans first—and only then as customers, consumers, users, employees, or even citizens—is its silent object and perhaps the most difficult to achieve in an instrumental culture such as my own.

The legislative body

First, I consider the role of the legislative body in a state with respect to promoting technological non-domination. In a mixed constitution, the political body that holds the power of making legislation derives its legitimacy from the people. Locke articulates a still-persistent attitude toward the legislative power when he writes in the *Second Treatise* that the "*Legislative* is not only *the supream power* of the Common-wealth, but sacred and unalterable in the hands where the Community have once placed it" (§ 134 9-11 p.356). That the legislative power did not act via arbitrary decree or hand its power to a third-party was a validation of consent, "*the consent of the Society,*" which for Locke was the principal requirement of legitimate government. With respect to other governmental bodies—traditionally the executive, judicial, etc.—the legislative is thus responsible for the generation of public law and, in Locke's common-wealth model, derives its legitimate right from the consent of the governed.

Republican government, by contrast, treats contestability rather than consent as the validation of political legitimacy, requiring that individuals enjoy a degree of influence and direction over government. Pettit's discussion of the ideal form of assembly in *On the People's Terms* reveals that a requirement on such national representative assemblies is that they are responsive to the people's dispositions. The method of electing these representatives, however, does not form the bulk of his considerations, so much as their dependence on the good will of constituents. The

periodic election of representatives reinforces basic civil liberties such as freedom of speech, assembly and movement in the short term, and in the long term the floor of the assembly allows a space to continually refresh the political agenda (201). Pettit contrasts the elected assembly with an indicative assembly, usually chosen by lot or sampled to be statistically representative according to the proportion of different social groups; the elected assembly, he argues, performs better on a non-domination account because it requires the reinforcement of the above liberties during election season and attaches itself to the people's will. Popular influence over the composition of the legislature and the legislative agenda is a basic constitutional feature, but it must be complemented by a mechanism that allows statistical minorities and marginalized groups to challenge legislation on grounds of discrimination. Pettit argues that religious and cultural minorities ought to have such opportunities to contest public policy and to have access to an impartial hearing of their case (214). It is essential, on this view, that three institutional requirements regarding the legislative process are met: (1) *transparency* with regard to what legislation is on the agenda, (2) *contestability* with regard to the ability to challenge legislation and (3) *impartiality* with regard to the opportunity to have one's case heard by an impartial judge (215). The legislative power of a social majority is therefore tempered in this system by the presence of strong institutional checks against political domination. Having this standard view of the representative legislative branch of government in mind, I now turn to the question of how this body should approach the process of technological change in a constitutional and regulatory capacity.

The co-constitution of technology and society presents legislative bodies with an imperative for action, especially when it becomes clear that technologies—including, but not limited to new instruments, machines and software—are mediating existing relations of domination or fashioning

entirely new ones. There is a bounty of historical examples to illustrate this point; in chapter one, I pointed to the shift in social policy from laissez-faire to stronger regulatory regimes as legislators responded to the increasing consciousness of the general public of the dominance of capitalist industrial owners over workers. More recently, the advent of algorithmic decision-making has sparked a growing public debate about the discrimination from software that reproduces existing biases of socially constructed categories such as race, class and gender. For example, the African American Studies scholar Ruha Benjamin provides compelling evidence of encoded racial discrimination in a recidivism prediction algorithm, discrimination that had its origin in the survey data on which the algorithm was built:

> [T]he survey given to prospective parolees to forecast the likelihood that they will recidivate includes questions about their criminal history, education and employment history, financial history, and neighborhood characteristics (among many other factors). As all these variables are structured by racial domination – from job market discrimination to ghettoization – the survey measures the extent to which an individual's life chances have been impacted by racism without ever asking an individual's race.[36] (55)

The above variables are disproportionately associated with the depressed social and economic condition of Black people in the United States because of systemic racism of the kind that has existed since the founding of the country. If one accepts the premise that racial discrimination still persists on a systemic level—that is, that discriminatory practices are embedded in legal structures and social mores—then it is not such a huge leap to accept the premise that racial domination can also persist within the technical constitution of a society. Winner on this point is rather obtuse

[36] See Ruha Benjamin. *Race after Technology: Abolitionist Tools for the New Jim Code*, Polity Press, 2019.

about the history of the American political constitution, praising the "wise political craftsmanship" of the founders, the proof being that "[t]he results of their work include two centuries of relatively stable government in the United States, a sign that they practiced their craft well" (*WR* 49). That "relatively" hopefully refers to the rupture in American history that was the Civil War (1860 – 1865), a conflict that saw the secession of eleven Southern states who sought to preserve the institution of plantation slavery against Northern legislators and the new President of the Republic, Abraham Lincoln. There were, in fact, constitutional provisions that buttressed the institution of slavery written in the original constitution of 1789:

- *Article I Section 2* counts enslaved people ["all other Persons"] as three fifths of free men in the apportionment of representatives and direct taxes.
- *Article I Section 9* forbids Congress from imposing a limit on the "Importation of such Persons as any of the States now existing shall think proper to admit" until the year 1808, though allows for a tax of up to ten dollars per person.
- *Article V* forbids Congress from amending the first and fourth clauses of Art. 1 Sec. 9 before the year 1808.
- *Article IV Section 2*, "the fugitive slave clause," I quote in its entirety [italics mine]:

  No Person held to Service or Labour [*no slave*] in one State, under the Laws thereof, escaping into another, shall, in Consequence of any Law or Regulation therein, be discharged from such Service or Labour, but shall be delivered up on Claim of the Party to whom such Service or Labour may be due.

Despite the Civil War Amendments—13, 14 and 15—that effectively annulled the institution of slavery in the United States, it is important to note that the above provisions constitute a still-existing layer of the legal and technical sediment of the nation's history. The protection of slavery

embedded in the U.S. Constitution exposes at the same time a massive design failure and a long-term necessity of constitutional government. The design failure, of course, was the inclusion of rules that arranged for domination on a national scale, sending the nation down a path that both exterminated millions of African slaves and their descendants and plunged the country into civil war due to a fundamental, irreconcilable contradiction. Systemic defects of an arrangement, such as the encoding of plantation slavery, are liable to arise over the long-term. Constitutions, then, which are arrangements of government, must therefore remain open to rearrangement. Even though we call these rearrangements "amendments," connoting a change of gradual weight, the content of a given rearrangement might be more revolutionary, a violent upheaval of the system, than merely gradual and reformist.

Because the constitution forms the backbone of the polity, however there must be compelling reasons to bend it out of shape. During the period of American Reconstruction, directly after the Civil War, the establishment of constitutional guarantees of due process and equal protection under the law, as well as against slave labor and disenfranchisement, represented compelling reasons for the legislature to do violence, to violate and therefore to alter the Constitution from its original form. The 14th Amendment, for example, associated with due process and equal protection under the law, provides for "privileges and immunities" whose exercise contradicts the original proslavery provisions; out of this contradiction, there is an implied deconstruction of practices tied to the institution of slavery, and of the ways of life this institution engendered. It was indeed in Article V, the same article that forbade Congress from limiting the import of slaves, that provided for the undoing of *legal* slavery, if not for the material forms of racial domination that have persisted since the formal end of slave labor.

The legislature is also responsible for regulatory decisions in the short term, though I have purposefully not touched on these short-term considerations to highlight the long-term, historical role the legislature plays in sometimes affirming, sometimes modifying, and sometimes completely altering the basic structure of things. A constitutional interpretation of technological change has to take this possibility into account; that the technological structure of society is liable to be reinforce relations of domination, and that therefore it must always be effectively open to the deconstructive and reconstructive acts of government.

The technologies that open themselves most readily to systematic restructuring of this sort are the kinds that span the entire domain of regulation. These technologies are most likely to be large-scale, ubiquitous, interconnected and integrated; they are likely to resemble systems rather than individual instances and are thus open to systematic thinking of their political consequences. While a single interface of predictive policing like the one Benjamin writes does not fulfill the criteria, a network of algorithmic policing practices probably would. In the event that the public identifies such a network as a possible site of domination, the technology itself, its form, as well as its material effect on communities should be open to public scrutiny. Representatives of the public will, who have the interests of *all* people at heart, can then render a judgment on the constitutionality of this technology. If the technology engenders or exacerbates a relation of domination, then authorities order an injunction of that technology in its dominating form.[37] For

[37] There is a school of economic analysis that draws on the framework of Coasean bargaining (See R. H. Coase "The Problem of Social Cost." *The Journal of Law & Economics*, vol. 3, no. Oct. 1960, pp. 1–44.) to argue that the assignment of damages represents a more efficient resolution of property and liability disputes than injunctions. For example, suppose that a predictive policing algorithm that calculates where drug deals are likely to occur in Los Angeles leads an officer, Peter, to wrongfully arrest an innocent bystander, Melissa, on suspicion of drug possession. If the city were to place an injunction on the use of the algorithmic software because it was a proximate cause of the wrongful arrest, the economic cost of the injunction would likely be high for the Police Department, and Melissa

such a technology to return to market, or otherwise resume implementation, it must take on an improved mediating role. The details of these matters are to be applied on a case-by-case basis, but the point of the preceding discussion has been to suggest that, when individual cases of domination multiply and constitute a veritable social pattern, it is for the legislature to respond as a trustee of the public interest.

The citizens' committee

I objected to the facile way Winner referred to citizen participation in shaping the technical constitution, though there are some paradigmatic cases of local citizen-led government that he cites as instructive examples. Referring to the political ideology of decentralism, he cites "The New England Town meeting, Spanish anarchist communities, and political practices of the *sans-culottes* in the French Revolution," which, in his view, "express a desire to involve citizens in public deliberations through direct democratic roles" (89). Winner is also committed to the thesis that, contrary to the hopes of liberal theorists like Yochai Benkler, Internet forums for public deliberation contribute to the dissolution of political discourse. Taking his rhetorical cues from public sphere theorists such as Arendt and Jurgen Habermas, Winner valorizes face-to-face deliberation as an essential component of democracy, dismissing the so-called democratizing effects of networked technologies:

---

would not receive any relief for being wronged by Peter. Assuming transaction costs are low, the assignment of monetary damages is a more efficient solution because the Police Department can bargain with Melissa to cover the subjective costs of a wrongful arrest (physical, social, psychological, etc.) while its officers are still able to use the software. Furthermore, if predictive software positions police officers to engage in a pattern of wrongful arrests over time, the efficiency of Coasean bargaining multiplies in like proportion. To what extent, however, should we consider the tradeoff of economic efficiency and police domination over the communities these algorithms happen to target?

> The vitality of democratic politics depends upon people's willingness to act together in pursuit of their common ends. It requires that on occasion members of a community appear before each other in person, speak their minds, deliberate on paths of action, and decide what they will do. This is considerably different from the model now upheld as a breakthrough for democracy: logging onto one's computer, receiving the latest information, and sending back an instantaneous digitized response. (*WR* 111)

The Second Edition of *The Whale and the Reactor* features a similar lament of the death of the town meeting, initiated by the founding fathers with the centralization of the American state in 1789 and later accelerated by the invention of the personal computer:

> Thus, the ultimate treasure of the revolution—the immediate, lived experience of public life—was lost… The general lack of town meetings and similar citizen councils as a feature of national government is evident each day as people go on the Internet and tune in to what they believe to be forums for public deliberation and debate. They may not notice what is missing from this pseudopublic realm and how that yawning absence helps generate wave after wave of toxic discourse along with distressing patterns of oligarchical rule, incipient authoritarianism, and governance by phonies and confidence men. (*WR* 192)

The above passages disclose an ideal image of discursive citizens who are periodically called upon to engage in a spirited public debate with their peers. There are a number of theoretical assumptions that allow such model citizens to participate in a model citizen council: The council to which these citizens belong is presumed to have some degree of decision-making power that motivates their desire to work things out on a community level; there is no political *bête noire*, no immediate threat of domination imposing its will on this idealized group of community members; at the proper time, the citizens devote their full attention to the discussion; perhaps they are compensated for

the time spent deliberating, perhaps not; and finally, deliberation alone is the primary method of working out issues of shared concern, assuming that each citizen is sufficiently educated on the topic of discussion to have an equal chance of making their contribution.

Not working out the details is a fine choice to make as a political theorist, but the above assumptions are strong, and not exhaustive of the requirements on citizens who would have the chance of participating in the public affairs of their communities. Furthermore, though "citizens" are all taken to be of the same political status, there are often cleavages in identity that play a role in deliberation among citizens and exclude those who do not qualify as such. For much of its history, the New England town meeting disenfranchised "'paupers', 'minors, idiots, women, lunatics, and aliens" and created significant hierarchies within the group of participants itself, with property-owning men enjoying privileges and offices unavailable to non-propertied men (DeWolf 1890 qtd. in Cossart and Felicetti 2018 p. 250). Institutions of deliberation, then, add an ambiguous dimension to a non-domination account of political relations. It is not enough that citizens deliberate over certain proposals affecting their communities; to preserve their liberty against other human and technological actors, groups of citizens must seize for themselves, the kind of control over decision-making that tends toward self-government and away from dependence on the arbitrary will of another person, or the mediated domination of technologies.

Republican constitutional government, with its checks and balances and dispersion of power, effects structural change over the long-term. As the seat of legislative power, representative assemblies hold a particularly important role in structuring legal regimes around technologies that continue to protect the rights of citizens against unprecedented situations of domination. What, however, is the role of individual citizens in regulating technological change?

In the following discussion of citizens' interventions in the process of technological change, I work from a notion of citizenship that situates citizens as actors in their local communities. There are other notions of citizenship, to be sure, but for my purpose of highlighting the self-government of technological change, I am chiefly concerned with how the majority of people experience citizenship: as active participation in the management of local civic institutions. Rather than identification with a nation-state, then, I focus on citizens' interactions with each other in common places and, more importantly, their common control of the construction and mediations of technologies in these places.

This place-centered notion of citizenship leads me to consider a stronger notion of participation than that of Winner and his predecessors; one grounded in the experience and political struggles of the urban poor and marginalized communities. The motivation for citizen control of local institutions, rather than mere participation, comes from the desires of marginalized communities to free themselves from the domination of private corporations and technocratic elites. Non-domination is a well-suited theoretical lens for the purpose of studying how urban communities can govern the process of technological change, given that private and public actors often make decisions of urban investment and technological development without the meaningful input of dominated groups. Although these actors might be well-meaning—trying to elevate the health, well-being and socioeconomic outcomes of the urban poor—if they lack an experiential knowledge of the communities' problems and the ability to listen carefully to the communities' concerns, not to mention the will to implement more expensive aspects that will increase access to shared resources, then these actors risk perpetuating existing problems rather than alleviating them.

The sociologist Sherry Arnstein (1969) analyzed the degrees of citizen participation in her paper, "A Ladder of Citizen Participation," developing a heuristic device to describe the

genuineness of citizen input on a given project that would affect their local communities. Unlike treatments of citizen participation in much of Western philosophy which tend to cast citizens as homogenous actors living in a homogenous community, Arnstein claims that the very notion of "participation" is diluted so as to remove agency from communities, especially communities of color:

> Participation of the governed in their government is, in theory, the cornerstone of democracy—a revered idea that is vigorously applauded by virtually everyone. The applause is reduced to polite handclaps, however, when this principle is advocated by the have-not blacks, Mexican Americans, Puerto Ricans, Indians, Eskimos, and whites. And when the have-nots define participation as redistribution of power, the American consensus on the fundamental principle explodes into many shades of outright racial, ethnic, ideological, and political opposition. (216)

Arnstein probes deeply here, reminding us that the redistribution of political power from the "haves" to the "have-nots" is a rare occurrence. The procedural ritual of participation gives powerful actors an air of legitimacy without requiring them to cede any significant power. Therefore, despite our democratic intuitions that participation and the deliberations that might feature in participation are good, the deconstructed notion of participation also shows itself to be a possible technique of domination.

For Arnstein, genuine citizen participation is the redistribution of power from the haves to the have-nots; the consequence of redistribution is community control of local projects and policies. The ladder of citizen participation is a typology that measures the degrees of so-called efforts at citizen participation (See Fig. 1). It has eight "rungs," and as one ascends the ladder the level of citizen control becomes more pronounced and reflective of self-government of the citizens, by the citizens and for the citizens. The bottom rungs of the ladder describe efforts of powerholders to

stage mock committees, distort information and deflect from the important issues of concern; conversely, the top rungs of the ladder feature delegated decision-making authority where citizens hold a majority of seats on planning committees, or even the complete managerial control over schools, food cooperatives, economic development committees and other similar community-based organizations. There are a number of models associated with the highest rung of "citizen control," and Arnstein remarks that the model of the "neighborhood corporation" funded on grants from U.S. Office of Economic Opportunity, defunct since 1981 but quite active at the time Arnstein wrote her article, had already showed positive results; although one such model of community control of a school in New York City caused a particular stir, "less publicized experiments are demonstrating that the have-nots can indeed improve their lot by handling the entire job of planning, policy-making, and managing a program" (223).

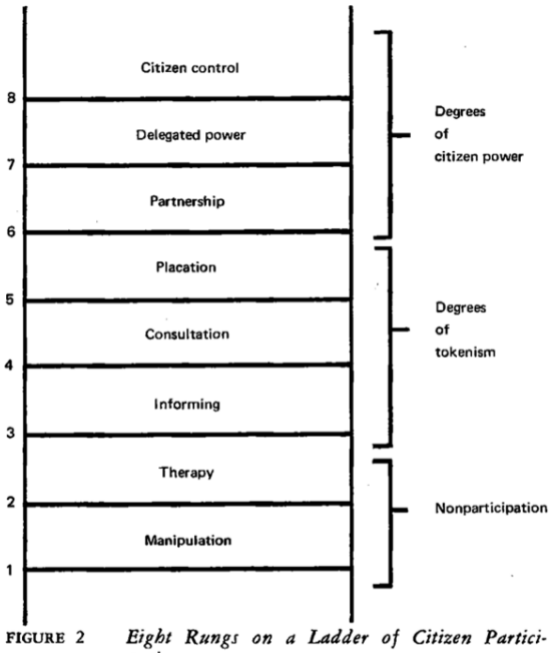

FIGURE 2 *Eight Rungs on a Ladder of Citizen Participation*

Figure 4-1. Arnstein's Ladder of Citizen Participation (217)

The impulse for self-government in the republican tradition has its origins in the defense of liberty; on a non-domination account, this impulse has its parallel in citizens' demands for greater political autonomy. Transferring decision-making authority to a foreign power—or, in modern business terms, a third party—was not regrettable as long as the power remained with the people; this third-party was authorized to make decisions on the part of the original actor, like a trustee, but their performance was subject to contract. For a contemporary citizens' committee, engaging in a similar relationship of trustor and trustee would be fundamentally different from the forms of rubber-stamping and placation that prevail in situations where private companies are tasked with fielding public opinion.

The corporate leadership of "smart cities" projects in recent decades has incorporated much of the bottom-rung practices of citizen participation. The notion of a "smart city" refers to efforts at introducing digital technologies into urban environments that collect massive amounts of data and thereby automate the city's public services. As part of the broader revolution in Information and Communication Technologies, the smart city has emerged as a dominant paradigm for this kind of technological development, one that combines the increasing capacity of software with the capacity of integrating software into the hardware of urban environments.

Drawing on Arnstein's article, Paolo Cardullo and Rob Kitchin (2018) create a "scaffold" of citizen participation based on their research of the smart city projects in Dublin, Ireland. Their scaffold is much more comprehensive than the ladder, positing consumerism as its own (very low) degree of participation and providing graphical representation of what roles the citizens play in these forms of participation, how their participation is framed and whether a level represents more elements of top-down technocratic planning or experimental, autonomous citizen-controlled planning (5). However, even though the analysis is expanded, the basic approach is much the same:

citizen participation is far from a unified concept and can be used in either mostly empowering or mostly degrading ways with respect to citizens' involvements in smart city management. What sets Cardullo and Kitchin's analysis apart from Arnstein's is, unfortunately, the rise of neoliberalism and the tendency of its practitioners to reduce humans to the status of consumers and rational agents while deploying a pro-consumer discourse of legitimation. Additionally, the technology-first attitude of smart city development prioritizes the technocratic elements of planning by-design; this is what might make it unattractive for citizens to contribute to smart city projects or lead their own projects, given that community organizations tend "to organize their activities and activism around addressing social and environmental issues through political and policy solutions rather than technological ones" (9-10). Cardullo and Kitchin conclude from this observation that there is a misalignment between the means and ends of community organizations and those of private corporations pushing the smart city agenda. Furthermore, the neoliberal ideology behind smart cities tends to frame citizen participation "in a post-political way that provides feedback, negotiation, participation and creation, but within an instrumental rather than normative or political frame" (10). Neoliberal smart citizens are therefore no more than unpaid consultants whose demonstration of participation serves the purpose of legitimating the enterprise of dominant groups. Of the alternatives to this corporate-driven model, community control of technological implementation will be key to establishing relationships of non-domination in an increasingly technologically mediated urban environment.

Cities, the ancestral home of the citizen, will serve as a focal point in the ideological struggle between notions of citizenship based on community control and those based on the dominant role of the citizen pro-sumer. The struggle will also play out on a material level, where the group that decides what is built and how will dictate the technical constitution of urban environments over

the long term. However, even if marginalized communities within cities manage to seize control of a significant share of power, the threat of technological domination does not pass. Even if the structure of technological implementation is intentional, that does not preclude the possibility that communities will be duped by the prospects of an exciting new technological advancement or fail to consider in-depth the potential mediations of technologies they aim to integrate into their experience.

This, I think, is where the dialectical method of community deliberation reenters the politics of technology. Community control and deliberation are complements in the process of deciding which technologies to adopt, how to adopt them and how to otherwise live with them as citizens must live with each other. Self-government, of course, places a higher level of responsibility on the citizens' committee; and it might be necessary to provide funding for a citizens' sabbatical to serve on the local Municipal Technology Commission so that its members can take the necessary time to reflect; in many cases, citizens' committees would do well to hire technical, legal or industry experts to work on their citizen-led projects, or to hire a full-time staff. What must not be lost in the process of this institutionalization, however, is the means of communicating with one another. To provide places for citizens to stand with each other on an equal footing and hash things out is a requirement of republican government. This might take place in a structured way, drawing on the imaginative variations of technological mediation Verbeek describes in *Moralizing Technology*, but ultimately these analytic modes of conversation give way to the more natural conversations of a frankness that comes with speaking one's own language, rather than the language of phenomenology, republicanism, liberalism or any other such theory of philosophical or political thought that does not necessarily align with the local conditions of first importance.

CONCLUSION

In this chapter, I have worked through a number of attempts to reframe the analysis and design of technologies, especially from the perspective of political institutions. The dominant method and institutional expression of technology regulation is Technology Assessment (TA), which is characterized by a diverse range of approaches to anticipating the possible consequences of such and such technology on society. Most of the TA approaches, I argued, were unsatisfactory on a phenomenological approach because of their treatment of technological change as an exogenous process, rather than one which implicates every member of society in an existential relationship with the technologies of the present as well as the technologies to come.

Of the alternative approaches to TA, I offered a critique of Verbeek's project of "augmenting" TA with postphenomenological mediation analysis, as well as an extended critique of Langdon Winner's dueling concepts of regimes of instrumentality and the technical constitution of society. While Winner does well to highlight the political significance of the *forms* of technologies, his solution of employing deliberative democracy to uncover widely shared views about technology lacks a basis in the empirical struggle over power, either because of a simplification or an oversight on the part of the philosopher.

Centering the non-domination approach, I discuss two complementary arms of popular control of technological change in democratic republics: the legislative body and the citizens' committee. Far from an attempt at a complete typology, my goal in highlighting these two types of institutions was to show how they complement each other in global and local thinking about technological futures, as well as among different levels of institutional control. Over the long-term, the legislature in constitutional government takes on the important role of acting in a universal manner to protect the liberty of citizens against domination by means of technology. The citizens'

committee, for its part, is grounded in the everyday experiences of its members, including their experiences with technology. In a democratic society, we would like to be reasonable in placing our trust in the average person to judge the normative significance of certain decisions and patterns thereof; among these is the technological constitution of the city, the place where people come together and experience mutual regard.

Beyond this Arendtian ideal of the city, however, lies the experiences of the dominated within its environs. And if there is but one dominated person in the community, then, on a republican view, that community cannot be called free. The broad condition of liberty requires that the laws have a general application and that they preserve, to the greatest extent possible, the non-dominated status of the citizenry. It is not much of a leap to then affirm that technology, too, should serve this role, even if the society's determination of its technological constitution is quite unrefined compared to its direction of the political constitution.

Ultimately, the constitution does not impose a particular form on the community, nor the community on the constitution. There is, rather, a constant interactive flux between them. This relationship of co-constitution between technology and humanity defies causality, though not intentionality. It challenges moral subjects to embrace ambiguity, and act all the same.

Bibliography

Alam, Jafar Raza, et al. “A Review on the Role of Big Data in Business.” *International Journal of Computer Science and Mobile Computing*, vol. 34, no. 4, 2014, pp. 446–53.

Allam, Zaheer, and Zaynah A. Dhunny. “On Big Data, Artificial Intelligence and Smart Cities.” *Cities*, vol. 89, no. November 2018, 2019, pp. 80–91, doi:10.1016/j.cities.2019.01.032.

Anderson, Elizabeth. *Private Government: How Employers Rule Our Lives and Why We Don’t Talk about It*. Princeton UP, 2017.

Archer, Deborah N. “‘White Men’s Roads Through Black Men’s Homes’*: Advancing Racial Equity Through Highway Reconstruction.” *Vanderbilt Law Review*, vol. 73, no. 5, 2020, pp. 1259–330.

Aristotle. “The Politics.” *The Basic Works of Aristotle*, edited by Richard Mckeon and translated by Benjamin Jowett, Modern Library, 2001.

Arnstein, Sherry R. “A Ladder of Citizen Participation.” *Journal of the American Planning Association*, vol. 35, no. 4, 1969, pp. 216–24, doi:10.1080/01944366908977225.

Barlow, John Perry. “A Declaration of the Independence of Cyberspace.” *The Electronic Frontier Foundation*, 1996, https://www.eff.org/cyberspace-independence.

Benjamin, Ruha. “Default Discrimination Is the Glitch Systemic?” *Race after Technology: Abolitionist Tools for the New Jim Code*, 2019, pp. 53–66.

Benkler, Yochai. *The Wealth of Networks: How Social Production Transforms Markets and Freedom*. Yale UP, 2006.

Bentham, Jeremy. *Panopticon: Or The Inspection House*. Thomas Byrne, 1791.

Bentham, Jeremy. *Principles of Legislation*. Edited by M. Dumont and John Neal, 2nd ed., Wells and Lilly, 1830.

Berlin, Isaiah. “Two Concepts of Liberty.” *Political Philosophy*, edited by A. Quinton, Oxford UP, 1967, pp. 141–52.

Blaug, Mark. “The Classical Economists and the Factory Acts--A Re-Examination.” *The Quarterly Journal of Economics*, vol. 72, no. 2, 1958, pp. 211–26.

Bradshaw, Samantha, and Laura DeNardis. “The Politicization of the Internet’s Domain Name System: Implications for Internet Security, Universality, and Freedom.” *New Media and Society*, vol. 20, no. 1, 2018, pp. 332–50, doi:10.1177/1461444816662932.

Brown, Wendy. *Undoing the Demos: Neoliberalism’s Stealth Revolution*. Zone Books, 2015.

Brownsword, Roger. “Law, Liberty, and Technology.” *The Oxford Handbook of Law, Regulation and Technology*, no. April, 2017, pp. 1–28, doi:10.1093/oxfordhb/9780199680832.013.2.

Cardullo, Paolo, and Rob Kitchin. “Being a ‘Citizen’ in the Smart City: Up and down the Scaffold of Smart Citizen Participation in Dublin, Ireland.” *GeoJournal*, vol. 84, no. 1, Springer Netherlands, 2019, pp. 1–13, doi:10.1007/s10708-018-9845-8.

Carson, Rachel. *Silent Spring*. Houghton Mifflin Company, 1962.

Chen, Hsinchun, et al. “Business Intelligence and Analytics: From Big Data to Big Impact Author(S):” *MIS Quarterly*, vol. 36, no. 4, 2012, pp. 1165–88.

Chenou, Jean Marie. “From Cyber-Libertarianism to Neoliberalism: Internet Exceptionalism, Multi-Stakeholderism, and the Institutionalisation of Internet Governance in the 1990s.” *Globalizations*, vol. 11, no. 2, Taylor & Francis, 2014, pp. 205–23, doi:10.1080/14747731.2014.887387.

Coase, R. H. “The Problem of Social Cost.” *The Journal of Law & Economics*, vol. 3, no. Oct., 1960, pp. 1–44.

Cohen, Carl (The University of Michigan), editor. *Communism, Fascism and Democracy: The Theoretical Foundations*. 2nd ed., Random House, 1962.

Cossart, Paula, and Andrea Felicetti. “Sociological History of New England Town Meetings: The Question of Their Deliberative Culture.” *European Journal of Cultural and Political Sociology*, vol. 5, no. 3, Taylor & Francis, 2018, pp. 242–65, doi:10.1080/23254823.2017.1351883.

Dahlberg, Lincoln. *Cyber-Libertarianism 2.0: A Discourse Theory/Critical Political Economy Examination*. no. 3, 2010, pp. 331–56.

de Boer, Bas, et al. “Can the Technological Mediation Approach Improve Technology Assessment? A Critical View from ‘within’*.” *Journal of Responsible Innovation*, vol. 5, no. 3, Taylor & Francis, 2018, pp. 299–315, doi:10.1080/23299460.2018.1495029.

Dewey, John. *The Public and Its Problems*. Swallow Press, 1927.

Dewey, John. “The Future of Liberalism.” *The Journal of Philosophy*, vol. 32, no. 9, 1935, pp. 225–30.

Fanon, Frantz. *Peau noire, masques blancs*. Éditions du Seuil, 1952.

Foucault, Michel. *Ethics: Subjectivity and Truth*. Edited by Paul Rabinow, Trans. by Robert Hurley and others, The New Press, 1997.

Foucault, Michel. "'Panopticism' from Discipline & Punish: The Birth of the Prison." *Race/Ethnicity: Multidisciplinary Global Contexts*, vol. 2, no. 1, 2008, pp. 1–12.

Galbraith, James K. *The New Industrial State*. Princeton UP, 1967.

Galič, Maša, et al. "Bentham, Deleuze and Beyond: An Overview of Surveillance Theories from the Panopticon to Participation." *Philosophy and Technology*, vol. 30, no. 1, 2017, pp. 9–37, doi:10.1007/s13347-016-0219-1.

Goldsmith, Jack, and Tim Wu. *Who Controls the Internet?: Illusions of a Borderless World*. Oxford UP, 2006.

Green, Thomas Hill. "Lecture on 'Liberal Legislation and Freedom of Contract.'" *Works of Thomas Hill Green, Vol. 3*, 2015, pp. 365–86, doi:10.1017/cbo9781139095044.022.

Guevara, Che. "Socialism and Man in Cuba." *The Che Reader*, Ocean Press, 2005.

Gunnell, John G. "The Technocratic Image and the Theory of Technocracy." *Technology and Culture*, vol. 23, no. 3, 1982, pp. 392–416.

Hayek, F. A. *The Road to Serfdom: Text and Documents*. Edited by Bruce Caldwell, University of Chicago Press, 1944.

Hayek, F. A. *Law, Legislation and Liberty: A New Statement of the Liberal Principles of Justice and Political Economy*. Routledge, 1982.

Hayek, F. A. *The Constitution of Liberty*. University of Chicago Press, 1960.

Hobbes, Thomas. *Leviathan*. Penguin Books, 1651.

Hobhouse, L. T. *Liberalism*. Cambridge UP, 1964.

Husserl, Edmund. *Ideas: General Introduction to Pure Phenomenology*. Trans. by W.R. Boyce Gibson, Martino Fine Books, 2017.

Ihde, Don. *Philosophy of Technology: An Introduction*. Paragon House, 1993.

Ihde, Don. *Experimental Phenomenology*. 2nd ed., SUNY Press, 2012.

Ihde, Don. *Existential Technics*. SUNY Press, 1983.

Irving, Sean. “Hayek’s Neo-Roman Liberalism.” *European Journal of Political Theory*, vol. 19, no. 4, 2020, pp. 553–70, doi:10.1177/1474885117718370.

Locke, John. *Two Treatises of Government*. Edited by Peter Laslett, Cambridge UP, 1988.

Lovins, Amory B. *Soft Energy Paths*. Harper Collins, 1979.

Machiavelli, Niccolò. *The Discourses*. Edited by Bernard Crick, Penguin Books, 1970.

Madra, Yahya M., and Fikret Adaman. “Neoliberal Reason and Its Forms: De-Politicisation through Economisation.” *Antipode*, vol. 46, no. 3, 2014, pp. 691–716, doi:10.1111/anti.12065.

Merleau-Ponty, Maurice. *Phenomenology of Perception*. Trans. by Donald A. Landes, Routledge, 2012.

Mill, John Stuart. *On Liberty and Other Essays*. Edited by John Gray, Oxford UP, 1998.

Miller, Glen, and Ashely Shew. *Reimagining Philosophy and Technology, Reinventing Ihde*. 2020, http://link.springer.com/10.1007/978-3-030-35967-6.

Nakamoto, Satoshi. *Bitcoin: A Peer-to-Peer Electronic Cash System*. 2008, pp. 1–8, doi:10.1162/ARTL_a_00247.

O’Leary, Timothy. *Foucault and the Art of Ethics*. Continuum, 2002.

Olmstead v. United States. Vol. 277 U.S., no. 438, 1928, https://scholar.google.com/scholar_case?case=5577544660194763070&hl=en&as_sdt=2&as_vis=1&oi=scholarr.

“Penalty Fare.” *Helsinki Region Transport Authority (HSL)*, https://www.hsl.fi/en/tickets-and-fares/penalty-fare.

Penny, Jonathan W. “Chilling Effects: Online Surveillance and Wikipedia Use.” *Berkeley Technology Law Journal*, vol. 31, no. 1, 2016, pp. 117–82.

Pettit, Philip. *Republicanism: A Theory of Freedom and Government*. Oxford UP, 1999, doi:10.1093/0198296428.001.0001.

Pettit, Philip. *On the People’s Terms: A Republican Theory and Model of Democracy*. Cambridge UP, 2012.

Pettit, Philip. “Trust, Reliance, and the Internet.” *Information Technology and Moral Philosophy*, 2008, pp. 161–74, doi:10.1017/CBO9780511498725.010.

Pinch, Trevor J., and Wiebe E. Bijker. "The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other." *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, edited by Wiebe E. Bijker et al., MIT Press, 2012.

Postel, Jon. "New Registries and the Delegation of International Top Level Domains." *Internet Engineering Task Force*, 1996, https://tools.ietf.org/html/draft-postel-iana-itld-admin-01.

Rosenberger, Robert. "Callous Objects: Designs Against the Homeless." *University of Minnesota Press*, 2017, doi:https://doi.org/10.5749/9781452958538.

Safaei, Sajjad. "Foucault's Bentham : Fact or Fiction ?" *International Journal of Politics, Culture, and Society*, 2020, pp. 1–20, doi:https://doi.org/10.1007/s10767-019-09342-7.

Say (1767-1832), Jean Baptiste. *Traité D'économie Politique: Ou Simple Exposition De La Manière Dont Se Forment, Se Distribuent Et Se Consomment Les Richesses; 5. Éd., Augmentée D'un Volume, Et à Laquelle Se Trouvent Joints Un Épitome Des Principes Fondamentaux De L'économie Politique,* . Fifth ed., Rapilly, 1826.

Schofield, Phillip. *Bentham: A Guide for the Perplexed*. Bloomsbury Publishing, 2009.

Selinger, Evan, et al. "Erratum: Book Symposium on Peter Paul Verbeek's Moralizing Technology: Understanding and Designing the Morality of Things. Chicago: University of Chicago Press, 2011 (Philosophy and Technology DOI: 10.1007/S13347-011-0054-3)." *Philosophy and Technology*, vol. 25, no. 4, 2012, pp. 605–31, doi:10.1007/s13347-011-0058-z.

Skinner, Quentin. *Liberty before Liberalism*. Cambridge UP, 1998.

Smith, Adam. *An Inquiry into the Nature and Causes of the Wealth of Nations*. Edited by Edwin Canaan, Modern Library [Random House], 1994.

Smith, Philip. *Punishment and Culture*. University of Chicago Press, 2009.

Sotirakopoulos, Nikos. "Cryptomarkets as a Libertarian Counter-Conduct of Resistance." *European Journal of Social Theory*, vol. 21, no. 2, 2018, pp. 189–206, doi:10.1177/1368431017718534.

Thierer, Adam. *Permissionless Innovation: The Continuous Case for Comprehensive Technological Freedom*. Mercatus Center at George Mason University, 2013.

Tversky, Amos, and Daniel Kahneman. "Judgment under Uncertainty: Heuristics and Biases." *Science*, vol. 185, no. 4157, 1974, pp. 1124–31.

van Est, R., and F. Brom. *Technology Assessment, Analytic and Democratic Practice*. Edited by Ruth B T - Encyclopedia of Applied Ethics (Second Edition) Chadwick, Academic Press, 2012, pp. 306–20, doi:https://doi.org/10.1016/B978-0-12-373932-2.00010-7.

Veblen, Thorstein. *The Engineers and the Price System*. Viking Press, 1921.

Verbeek, Peter Paul. *Moralizing Technology: Understanding and Designing the Morality of Things*. University of Chicago Press, 2011.

Verbeek, Peter Paul. "Subject to Technology: On Autonomic Computing and Human Autonomy." *Law, Human Agency and Autonomic Computing: The Philosophy of Law Meets the Philosophy of Technology*, edited by Mireille Hildebrandt and Antoinette Rouvroy, Taylor & Francis Group, 2011, pp. 27–45, doi:10.4324/9780203828342.

Verbeek, Peter-Paul. "Politicizing Postphenomenology." *Reimagining Philosophy and Technology, Reinventing Ihde*, edited by Glen Miller and Ashely Shew, Springer, 2020.

Walker, Kenneth O. "The Classical Economists and the Factory Acts." *The Journal of Economic History*, vol. 1, no. 2, 1941, pp. 168–77, https://www.jstor.org/stable/2113471.

Warren, Samuel D., and Louis D. Brandeis. "The Right to Privacy Today." *Harvard Law Review*, vol. 4, no. 5, 1890, pp. 193–220, doi:10.2307/1330091.

Winner, Langdon. *Autonomous Technology: Technics-out-of-Control as a Theme in Political Thought*. MIT Press, 1978.

Winner, Langdon. *The Whale and the Reactor: A Search for Limits in the Age of High Technology*. 2nd ed., University of Chicago Press, 2020.

Wittgenstein, Ludwig. *Philosophical Investigations*. 3rd ed., Trans. by G.E.M. Anscombe, Prentice Hall, 1958.

Zuboff, Shoshana. *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*. PublicAffairs, 2019.