The Ordinal Society

In this book, a sweeping critique of how digital capitalism is reformatting our world.

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THE Ordinal Society

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The Ordinal Society

Introduction

Valley Fever

OVER THE PAST FIFTY YEARS, CHANGES IN THE SCOPE OF SOCIAL data collection and analysis have radically reorganized how we experience and make our lives. Much of what we do is now immediately authenticated, recorded, classified, and scored on some sort of scale. We live in an ordinal society, a society oriented toward, justified by, and governed through measurement.

How did this happen? Technology gave us the means to grasp the totality of people's lives in the form of discrete, standardized units of information.[1] It fed on an abundance of personal data emitted by ever smaller and more powerful computing devices that ended up first in the homes, then on the laps, and then in the hands of billions of people. The networked structure of the World Wide Web scaled up and amplified this process. Some of this data was exfiltrated covertly, but much of it was freely and even eagerly given out of hopefulness, convenience, or sociality. Managers and financiers became convinced of its usefulness and started to chase after it.

The increasing capacity to frame and use these data has reorganized markets, the state, and social life in general. Methods for analyzing it are by now everywhere. They streamline and automate processes of risk prediction, resource allocation, communication, and decision-making. Sometimes these methods are plausible and precise; sometimes they are opaque and even absurd. But either way, they group and stratify people in ways that are both highly individualized and flexibly differentiated according to the demands of particular settings. We cannot escape this process; in fact, we count on it. In domain after domain, it is changing the overall distribution of opportunity, the everyday experience of status, and the nature of economic competition. In its wake, our moral intuitions about merit and personal worth are changing too.

Even when the data is bad, or the analytical results are spurious, the outcome is a form of rationalized stratification. It is not that everyone is simply reduced to a faceless number. Rather, the ebb and flow of social and economic life is expressed by and managed through measurement. An ordinal society creates order through automated ranking and matching. The apparent power of its methods justifies the ostensible rightness of its hierarchies and categories. Interaction and exchange are built around a flow of personally tailored, data-driven possibilities. For people who are “well classified,” the results are often quite gratifying and carry a sense that what is personally convenient is also somehow morally correct. For those who are not, the outcomes can be more punitive, but are no less moralized.

That is the social form we seek to understand in this book. To grasp the structure of an ordinal society, we must first have a sense of how it emerged, and then try to understand how its component parts work. These components have, of course, more than one source, and detailed histories of their own. Where do we start? We can get our bearings by sweeping across a familiar landscape. The arc to follow is the changing relationship between information technology and power. We begin our history at a moment when the leading edge of the computer revolution seemed as if it might be at odds with the very idea of a well-ordered and carefully measured society. We begin in the home of the 1960s counterculture.

We begin in California.

Homestead Dreams

Until the 1940s, the rolling hills of Santa Clara Valley were best known for their orchards and open fields. The most significant economic activity was canning fruit. At the northern end of the valley, Stanford University was a quiet campus still widely known as The Farm.[2] But change was in the air, quite literally. As early as the 1910s, the Bay Area had been an early hub for ham radio enthusiasts. In the 1920s, entrepreneurs like Bill Eitel, Charles Litton, and Jack McCullough began building vacuum tubes and other components to serve this community. For a time they existed quietly in the long shadow of East Coast giants like General Electric and RCA. The outbreak of the World War II brought a surge in demand for their products from the larger manufacturers, and the attack on Pearl Harbor transformed the importance of their proximity to the Pacific coast.[3] After the war, these tendencies were accelerated by the great surge of US military spending that accompanied the beginning of the Cold War. With science as "the endless frontier,"[4] hard cash from the US Department of Defense started pouring into universities, eventually reaching the West Coast. In 1951 the Stanford Industrial Park opened its doors, encouraging students and faculty to launch businesses. Hewlett-Packard, founded by two Stanford electrical engineering students in the late 1930s, blossomed into a local powerhouse and the darling firm of the era. More established players such as IBM and Lockheed soon followed. They, too, were eager to secure their own slice of the new federal contracts and to capitalize on the local concentration of brainpower. Encouraged by government subsidies, private capital also started to take notice and developed a new form of financing specifically oriented to meet the needs of a high-tech, high-risk sector.

Digital computing was a new and rapidly expanding enterprise. Although born in World War II and raised to adolescence within the military-industrial complex, the culture of computer science in the 1960s was not entirely one of pure secrecy, high seriousness, and Cold War paranoia. To the contrary, it was shot through with thick streaks of both libertarian individualism and communal cooperation. Engineers valued a somewhat cranky form of independence within a context of freely circulating knowledge and a hobbyist ethos of practical tinkering. Perhaps these practices were a cultural sublimation of the "closed world," command-and-control political vision that dominated the era.[5] Perhaps they were responding to the long shadow cast by the earliest computer geeks, working mostly unbothered as "blue sky" researchers with a commitment to the sharing of methods, tricks, and fixes—an approach that later came to be known as a hacker ethic.[6] Or perhaps it was simply a convenient story that allowed each generation of entrepreneurs, especially the very young homebrew startups of the 1970s, to reclaim credit for themselves alone and draw a discreet veil over their sector's deep history of government sponsorship and military applications. It may even have been something of an accident. It took quite a long time for researchers and engineers to fully grasp the distinction between software and hardware, and thus to see the vital importance of software as a thing in itself, over and above the physical computer it was written to run on.[7]

Whatever the reason, as the era of "big iron" in computing gave way to smaller and more personal machines, an influential subset became increasingly vocal about the politics of software and its use. Engineers and programmers tinkered with and extended the operating systems that were licensed to run on their corporate and university mainframes. By the 1980s this tendency had produced a nascent ecology of shared tools. It also gelled into a self-conscious movement committed to the idea that software should be free. Richard Stallman, then at the Massachusetts Institute of Technology, published a license, the GNU General Public License (commonly known as GPL), that permitted the authors of code to distribute their work freely and without any warranty while it also forbade any subsequent proprietary modifications. The practical goal of the Free Software Foundation was to develop a complete alternative to the Unix operating system. The organization wanted software shorn of the burdens of intellectual property, something that could not be reincorporated into any subsequently copyrighted piece of code.

In the end, the free software movement did not succeed in liberating computing from the shackles of copyright. It became somewhat bogged down by internal disagreements about the relative purity of purpose that would be required for the revolution to succeed. Stallman's particular vision was also complemented, or outflanked, by related projects released under less constraining licenses. (These included BSD Unix, which still underpins Apple's operating systems, and the hugely successful Linux kernel, which allowed a Unix-like operating system to run on cheap PC clones.) It did, however, represent the most pointed and uncompromising formulation of a long-standing and more general ethic of sharing of what came to be called open-source software, broadly construed. This way of working persisted and indeed has continued to flourish to a remarkable degree right alongside the cutthroat, patent-ridden world of corporate competition in the technology sector.

In any case, by the late 1980s and early 1990s, advances in computing infrastructure had allowed communities of users to coalesce in a manner enabled by the technology itself, much as radio hobbyists had a half century before.[8] But computing made possible collaboration and participation on a much larger scale than radio ever had. Moreover, its diffusion was much more rapid, and its resistance to centralization—for example, its conversion into simply a new form of broadcasting—ran much deeper. Information technology really did seem to have abolished the constraints of time and space in the manner first predicted by postwar visionaries in the late 1940s and first demonstrated in nascent form by the Silicon Valley innovators of the 1960s.[9] New kinds of communities formed and flourished around these communication networks. They were virtual and global; they had a temporality of their own, emancipated from the demands of synchronicity; most important, the range of choices on offer was enormous, and people could join or leave at will.[10]

Initially they were relatively small in scale. Computers could be remotely accessed via text-based terminals. Discussion communities flourished in the 1980s through various bulletin board systems and on USENET. Files could also be shared over file transfer protocol or, starting in 1991, with a protocol like Gopher.[11] In 1993, the World Wide Web was launched as a protocol running on the internet that specified some seemingly incremental improvements to open document sharing. It might not have seemed particularly transformative, but the consequences were remarkable. Its combination of free-standing sites, simple page-based structure (including images and other media), and the convenience of navigation through hyperlinking enabled its rapid growth. Also, it was free and unencumbered by licenses. Self-styled virtual communities set up in this new landscape, established their homesteads, and began to figure out how to cultivate and manage settlements on their own.[12] Their self-consciously worn social identity was often expressed in this language of pioneer, homesteader, explorer, or frontiersman—people who left the noninitiated in the dust. The hacker myth expanded to offer a path toward a kind of transcendence, toward what Vincent Mosco called "the digital sublime." The computer promised to "lift people out of the banality of everyday life" and the drudgery of history, geography, and politics.[13]

The excitement and often the hubris of this mid-1990s moment can be seen in various manifestos from the period. America's leading futurist, Alvin Toffler, declared all standardizing and centralizing organizations, including governments, obsolete; he announced the coming "demassification" of existing institutions and culture.[14] He was echoed by electronic rights advocate John Perry Barlow, who rather grandly proclaimed the internet a realm of pure freedom that anyone could enter "without privilege or prejudice accorded by race, economic power, military force, or station of birth." Within its constantly expanding borders, ideas—of whatever sort—circulated without restraint. Identities were fluid. No one could claim sovereignty, not even the state. In retrospect, this vision seems naive at best and preposterous at worst.[15] To be fair, Barlow did presciently recognize that the global nature of the internet made it hard to govern. But like any good manifesto, his "Declaration of the Independence of Cyberspace" imbued a utopian vision with an air of inevitability. It borrowed its key term, *cyberspace,* from a much darker rendering of the future, William Gibson's *Neuromancer,* but it was an optimistic piece of writing.[16] The expansion of cyberspace would be inexorable but beneficial.

Speculation about new forms of cultural and political organization that technology would enable fused with confidence about the benefits of free and open-source software development.[17] The fantasy of a happy, cooperative anarchy (a bazaar) that also outcompeted the bureaucratized engineering models of IBM or Microsoft was hugely influential, even if the reality of most open-source projects bore little resemblance to the ideal.[18] Beneath the surface, "private corporate networks" still remained "the keystone of the internet arch."[19] Meanwhile, and notwithstanding the assertions of the manifesto writers, the state was very far from withering away. To the contrary, in its role as the regulator of the telecommunications system it did a great deal to encourage the exhilaration surrounding the web. In the debate over the Telecommunications Act of 1996, the doomed effort to regulate obscenity and indecency online received the bulk of the public's (and Barlow's) attention. But most of the act relaxed rules for ownership and market concentration in a way that generally pleased Silicon Valley. "We were all deregulators" remarked Joseph Stiglitz, then chair of the President's Council of Economic Advisers. "By adopting [the language of] deregulation ourselves, we had in fact conceded the battle."[20]

The pace of change had been very high since the personal computer revolution had escaped the bounds of hobbyism in the early 1980s. Computers were now both a consumer good and a business necessity. As fortunes were made and lost through that decade and into the next, the image of Silicon Valley took shape through the repetition of stories that became myths. Giant firms were born in garages and basements. No one wore a tie to work. Corporate hierarchy was passé. College dropouts became chief executives. Self-taught geniuses wrote their own rules. Work, education, and play were tightly connected. Barely out of school themselves, these new executives established their headquarters as "campuses" outfitted with lavish cafeterias and a range of amusements. At the height of the dot-com boom, the workspaces of startups looked like dorms and ran like boiler rooms. In late summer the wider world of hackers and misfit makers met by the thousands in a makeshift city in the Nevada desert, built a gigantic effigy out of wood, and set it ablaze in a paroxysm of expressive frenzy and chaos.[21] It was all very exciting.

Challenges arose as fast as the expansion of the web itself. When the dot-com bubble burst in March 2000, many startups were simply unable to survive, if survival required making a profit. At that point, the importance of hardware design and manufacturing was in steady decline in Silicon Valley. Instead, software ruled, and services offered on the web were at the center of the action. Most of the largest and most recognizable internet startups, such as Google, either sold their services at a loss or simply offered them for free, with no clear view of how they were going to turn what seemed like a novelty, or a useful tool, into an actual business. The ones that did manage the transition were prompted by the valorization of what Shoshana Zuboff has called the "behavioral surplus."[22] In effect, what had previously been a cost of maintaining a service—all the infrastructure of servers and their log files, databases and transaction records, their user actions and their histories—became a source of data that might be turned into revenue. Unprofitable lines of business in search, in chat, in social interactions, and many other places could be repurposed by taking advantage of the digital traces people left behind on their own computers and the servers they connected to. Companies breathed in the exhaust fumes of their own data and found that it smelled of money.

The first, clearest, and largest market was advertising. The search industry rapidly became ad driven. The basis for Google's initial success was a network-based method of ranking searches, analogous to bibliographical measures of influence or sociometric measures of centrality, that allowed the web to speak for itself, as it were, to tell the user where the best answer to their query might be found. Thus, early on, Sergey Brin and Larry Page argued that, by contrast, "advertising-funded search engines will be inherently biased towards the advertisers and away from the needs of the consumers."[23] But they came to realize that what they were in a position to build was the most powerful advertising infrastructure the world had ever seen. The opportunity to learn from the incomprehensible quantity of data passing through Google's servers meant that the needs of consumers might stand a little reconceptualization.

Silicon Valley culture shifted too. It took hardly any time at all for the early frontier mentality of the World Wide Web to become a well-articulated business creed. By the late 1990s the concept of "disruptive innovation" was already taught in business schools as a particular way that markets came to be reconfigured. Rather than something wholly outside or separate from existing markets, the sort of innovation seen on the web could be interpreted as a kind of challenge from below, where a seemingly less useful or poorer-quality product or service cannibalized better-established and more easily understood offerings. The idea was expanded upon and reinterpreted. It came to connote a form of success strongly associated with technological change, and particularly with the displacement of some physical service with an online one. This sort of "disruption" was what the innovator brought, often in the form of a straightforward disregard not just for entrenched convention but also established law.[24] Google held on to its original motto ("Don't be evil") for a while, but Facebook's Mark Zuckerberg chose "Move fast and break things" to represent the culture he was eager to foster. In 2021, former *Wired* magazine editor and flying robots company CEO Chris Anderson asserted on Twitter,

> "Ask forgiveness, not permission" is the guiding motto of Silicon Valley. That means innovating in

> the regulatory "gray space" between the obviously allowed (too crowded) and the obviously illegal. Think AirBnB, Uber or even our open source drones, which . . . all found loopholes or ambiguity in existing regs to introduce something new, which then proved too popular to shut down. But once you win with this strategy, you then have to work with regulators to evolve the rules to explicitly cover what you do, so you can scale. That's an unnatural act for tech CEOs, but like it or not, a necessary one.[25]

The shift from the sale of physical computer hardware, first to packaged software and then to web services as the basis for success in Silicon Valley, fostered a firm belief that "code" could and should solve most problems facing society. For the region's "technological solutionists," disregard for legal rules, hierarchies of knowledge, and existing organizational forms was the price of progress.[26] There were echoes of Karl Marx and Friedrich Engels, who also acknowledged capitalism's astonishing power to rip up the world and replace it with something new and almost incomprehensibly dynamic. "All that is solid melts into air": capital discards obsolete technologies and fills up junkyards; it sheds the chrysalides of antiquated social structures, leaving a trail of destruction in its wake; it mocks ideas whose time has passed and incites the laity to pray to new idols. The metamorphosis is painful for everyone, even capitalists. To survive, they too must undermine their own production base. Joseph Schumpeter, himself a fine reader of Marx, termed the process "creative destruction": the opening of new markets, the creation of new capacities, and product innovations, which "incessantly revolutionize the economic structure from within, forever destroying the old one, incessantly creating a new one."[27] While the new revolution was made of code rather than coal, scripts rather than steam, its language and imagery was curiously and inescapably industrial. Code was made, it seemed, in forges, with engines, through pipelines, by foundries—an entire metaphorical world of intensely physical production was conjured up to represent the activities of people who spent their days in front of screens, typing. They were not *writing;* they were *building.* Soon they would be mining also.

Wild fortunes were amassed out of this Schumpeterian ferment. In the Bay Area, several batches of twentysomethings became millionaires, and a few turned billionaires. The associated mythos was also economic, luring the hopeful and the skilled, year after year. In the physical setting for all of this—in the actual place—property values soared, rents became astronomical, and homeless encampments sprung up as neighborhoods transitioned to accommodate the new class of coders.[28] By 2018 San Mateo had the most interpersonal inequality of any county in California.[29] Local politics remained firmly Californian, combining a lofty progressivism in principle with a fierce conservatism when it came to one's own property. As more and more people lived and died in the streets of San Francisco and Oakland, Silicon Valley continued to cheerfully trumpet its ambition to "make the world a better place" through dataism, artificial intelligence (AI), and biogenetics.[30]

It was all a long way from the dream of cyberspace (though perhaps not that far from the original vision of cyberpunk). And yet, long after its arguments appeared quaint to the point of embarrassment, there were moments when Barlow's optimism seemed on the verge of bursting forth once more. In the early 2010s, around the world, these new communication technologies were at the center of a momentous wave of political upheaval, briefly reviving the old dream of the web as a democratic force. In the early 2020s, decentralized finance and cryptocurrencies seemed to revitalize and once again radicalize the promise of digital homesteading. But the Arab Spring failed to deliver the expected transformation. Social networks turned alarmingly divisive.[31] Crypto markets descended into fraud.[32]

Crabgrass Frontier

Why did technolibertarian ideas about freedom and the internet seem initially plausible? By the same token, why did they become dated so quickly? Part of the answer is simply the speed with which the World Wide Web expanded and diffused after it was established. Once a new technology is incorporated into everyday life, and once there are enough people who not only use it routinely but also have grown up with it, it will simply be taken for granted. “Real power,” Mosco reminds us, is achieved when a technology “[leaves] mythology and [enters] banality.”[33] The diffusion of the personal computer and, later, the internet, the web, the search engine, and social media, enabled and amplified a culture of connection, personal growth, and individual fact-finding right across people’s lives. That sort of process will reliably strip the sheen off any revolution, even if the new arrangements have ongoing effects that really are properly revolutionary. This is not the whole answer, however. Looking back on the expansion of the web, we can see why its initial architecture was so appealing to a broadly countercultural and moderately anarchic constituency, but also how its foundations gradually came to support layers of additional organization that resulted in a very different outcome from what these optimists had imagined.

The first wave of speculation and generalization about the web was able to emphasize the twin themes of freedom and community because the protocols that ran the internet and the web were open. The specifications for network transportation, for applications like email and later hypertext-based web connections, were all decentralized and accommodating. The “P” at the end of abbreviations like TCP/IP, SMTP, and HTTP is for “Protocol.”[34] Like a standard or a specification, a protocol organizes a task and allows for it to be controlled.[35] Despite the military sponsorship of much of the early research into distributed communications networks, the specification of the internet’s suite of protocols had an intrinsic openness to it that carried through to the hypertext transfer protocol (HTTP) written down by Tim Berners-Lee and Robert Cailliau around 1990. Combined with hypertext markup language (HTML) for documents and a system of unique identifiers for locating them—universal resource locators (URLs)—the web rapidly established itself as a means for making material of all kinds available.

In principle, anyone could write a piece of software that implemented the protocol for serving up web pages. And in principle anyone could use that software to set up a server and use it to make text and images available to the world, or host discussions, or establish communities, or do any number of other things. Once the pages were public, anyone with a browser could just grab them from the server with a minimum of fuss. Earlier tools had done similar things. But there had been nothing quite like the web. Its relative lack of centralization and ease of use was tremendously attractive to early users and prognosticators.

The protocols that carry the web's information have been greatly expanded and refined since their origination, but their core remains stable. The very oldest web pages still render in modern browsers. Protocols are slow to change. As it turned out, however, making direct and relatively unmediated use of them was not what most people wanted. Although the most enthusiastic writing in the early days of the web was filled with images of the frontier, of homesteading, and of unfettered, free-form exploration in "cyberspace," it quickly became apparent that the overwhelming majority of people were not in a position to run their own servers or actively manage their own virtual homesteads in any kind of regular, self-sufficient manner. Even the small minority who *were* equipped for that sort of task generally preferred not to if they could pay someone else to do the job instead. Administering a server turned out to be frustrating when it was not merely boring. Certainly people wanted some means of connecting to what was on offer online. Many also wanted a way to actively contribute. It was just that, if they were in the business of producing what later came to be called "content," they wanted that process to be easy and quick. That meant having someone else do the work of serving it up. And finally, when it came to *finding* interesting things (or just locating people they knew about), they wanted some effective means of search and navigation to make that task easy also. This became all the more pressing as the web very quickly expanded far beyond any individual's ability to keep track of its content.

These fundamentally demand-side forces propelled the rise of so-called Web 2.0 technologies. This newer wave of places on the web offered sites and services that did something useful or fun but also made it relatively easy to be their client. These services were not, as a rule, part of the utopian world envisaged by early enthusiasts. Commentary around this transition sometimes recalls the disappointment verging on contempt that revolutionaries can have for the preferences of the peasants they have liberated. Repeatedly, the opportunity to build a little online homestead from the ground up was rejected in favor of services that did that work and facilitated the interactions and experiences people wanted to have, or the services they wanted to consume, or the tasks they wanted to perform. The values of self-sufficiency, autonomy, and privacy seemed to give way easily before the desires for convenience, ease of use, and practicality. Like Silicon Valley, the web steadily became more suburban.[36]

Even today, there is nothing intrinsic to the architecture of the web, nothing in its underlying protocols, that prevents the kind of widely distributed, robustly local, essentially decentralized network of free communicators—both cultural producers and consumers—that the likes of Barlow imagined.[37] But that is not what the overwhelming majority have chosen to do with it. Putting this point in the language of choice may seem like a mistake given the sheer social power of the organizations and institutions that constitute the digital economy. And indeed, we shall explore and critique the character of that power throughout much of the rest of this book. But the growth of these services and the digital economy in general was not simply imposed on people. The tech landscape is littered with the wreckage of huge investments that were catastrophic failures, rusted hulks of grand schemes that were a gigantic waste of money because people simply did not care to use them.[38]

The concentration of power on the web is not at the level of protocol but rather of infrastructure, of the servers that deal with billions of requests for content and services. This is not just a matter of the relationship between dominant large firms and atomized individuals. When it comes to their presence on the web, even the largest firms are themselves usually in some client-like relationship with a very small number of core service providers. Amazon's

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