



## CHAPTER 2

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# From Forbidden to Cure-All

Current society's obsession with innovation and entrepreneurship are based on an overly positive view of innovation, that seems largely to be matched by a similarly positive view among scholars of innovation. A quick glance at the literature in the interdisciplinary and steadily growing field innovation studies reveals a clear "pro-innovation bias" (Abrahamson 1991; Sveiby et al. 2012a; Fougère and Harding, 2012; Godin and Vinck 2017; Segercrantz et al. 2017).

An illustrative example is provided in the introductory chapter to the *Oxford Handbook of Innovation* (Fagerberg 2006). The chapter lists several "desirable consequences" of innovation that compel politicians, public administrators, and business leaders to seek to promote it: Innovation is "crucial for long-term economic growth", because it introduces novelty and variety into the economy, without which there would be stagnation; innovation "tends to cluster in certain more rapidly growing industries/sectors", where it is self-reinforcing and drives necessary "organizational and institutional change", and innovation is "a powerful explanatory factor behind differences in performance between firms, regions, and countries". Indeed, innovation is presented as the make-or-break factor for economic performance, since "[f]irms that succeed in innovation prosper, at the expense of their less able competitors" (Fagerberg 2006: 20). If this view is representative—and there is a lot to suggest that it is—then there is indeed a "pro-innovation bias" in innovation studies that most likely

impedes the chances of properly studying the preconditions for innovation, in different forms and in different contexts, and assessing the various consequences of innovation and how they act out.

Though accurate in a general sense, and certainly supported by vast empirical evidence, the cited description is oversimplified in two respects. Firstly, because it promotes an indiscriminate view of innovation as something general and abstract, with little or no concern for what it actually entails in terms of resources, processes, or outcomes. Secondly, because it presents innovation as a universal solution, a cure-all for firms, sectors, regions, and countries that are underperforming in some way or that want to secure long-term survival and success. Therefore, while innovation no doubt is what brings renewal to the economy, and while innovation in some form is absolutely crucial for the survival and success of any organization and any society, the pro-innovation bias in the literature is deceptive because it fails to recognize that innovation is an abstract category that represents nothing in and of itself, and that innovation can have both desirable and undesirable consequences.

Undesirable consequences of innovation are especially neglected in innovation studies, together with non-business aspects of innovation processes. A systematic literature review of thousands of journal articles on various aspects of innovation, and the six most influential handbooks in the field, found that a very tiny fraction (0.4%) of the articles, and none of the handbook chapters, discussed “unintended or undesirable consequences of innovation”. All the scholarly publications surveyed were found to have an unnatural focus on firms, the needs of firms, and the activities of firms. The pro-innovation bias and the business bias make innovation research “mainly concerned with what is directly measurable as economically beneficial for innovating firms and change agents” (Sveiby et al. 2012a: 61). The business bias is typical of our times, as it reflects a strong tilt in politics and broader societal discourse toward economic and financial concerns, economic and financial measures, and a view of human activities and human organizations as profit-maximizing enterprises (Chap. 3). But even if the unreserved business focus in innovation studies would be warranted, say out of a theoretically well-found argument or premise that innovation is indeed mainly or only interesting as a business phenomenon, it still makes little sense to not account for unintended or undesirable consequences. This is the first in a series of errors of thought that characterize our current societies’ view on innovation, and it is peculiar to

have its foundation in the scholarly study of innovation, which emanates from a detailed understanding of renewal and change in economies. Quite obviously, the “creative destruction” that Schumpeter (1939) identified as both unavoidable and beneficial in overall perspective and in the long term and that is lauded by many economists and policymakers also can and will have some negative or undesirable consequences. That these are mainly neglected in innovation studies can probably provide reason for some of the undividedly positive view on innovation in broader society, which has evolved into an obsession.

### INTRODUCING THE X-FACTOR

But the pro-innovation bias and policy obsession with innovation was not always the norm. For the better part of human history, it seems innovation was generally viewed in negative terms. In Ancient Greece, innovation was a pejorative word and viewed as something that threatened the stability of societies, and the order of things, and therefore generally forbidden (Godin 2012: 38). For many centuries, therefore, the concept of innovation was not used at all, “except in the hands of critics or those who wanted to deny that they innovated” (Godin 2012: 39). This changed only far into the modern era: It was not until the early twentieth century that the productive effects of novelty started to overshadow the perceived threats, in scholarly and political discourse. Joseph Schumpeter’s work of demonstrating the crucial role of innovation in economic (and social) development, and of ascribing innovation to specific actors, namely *entrepreneurs*, was instrumental in this shift at least on the scholarly side (Schumpeter 1939: 84ff). In the wake of Schumpeter’s breakthrough ideas, in the first half of the twentieth century, innovation was mostly discussed academically, and as a theoretical conception of a positive x-factor in the economy (Godin 2012: 44–45).

What Schumpeter did when introducing the entrepreneur into the mix of the theoretical understanding of the economy, was to add a new building block to the central formula of *value creation*. Originally, and for the whole premodern period, this formula was dual—the only recognized sources of value in the economy were land and labor. Toward the end of the eighteenth century, as part of the industrial revolution, capital was added to the mix. During this time, the general understanding of the economy was that it would continuously and inevitably strive toward a

state of equilibrium. Schumpeter's own breakthrough innovation was to discard this view, and to refuse to stick to the well-known extra-economic factors (such as wars, religion, or politics) to account for changes in the economy and punctuation of equilibria. He instead looked within, and found the process that accomplishes new combinations of the productive factors: Innovation (Schumpeter 1934). Seen in retrospect, the argument is logical on the verge of self-evident: A rationally balanced economy, where all actors share the same information, are in possession of the same technology, charge the same prices, pay the same rents and wages, will stagnate. In such a market, Schumpeter argued, the only possible competitive advantage of a firm would be to cut prices. But if the premise is that costs of production remain the same, then price cuts must lead to cuts of profit margins, which is self-defeating in the long run. Therefore, Schumpeter suggested, the capitalist economy is dependent not on a continuous rational balance of land, labor and capital, but by renewal at the expense of equilibria. This is what Schumpeter named "creative destruction" through new combinations—innovations—that create disequilibria that give competitive advantages to entrepreneurs, at the short-term demise of competitors, and the long-term benefit of the sector, market, and society as a whole: "The carrying out of new combinations we call 'enterprise'; the individuals whose function it is to carry them out we call 'entrepreneurs'." (Schumpeter 1934: 74).

Schumpeter had a major impact on the economics discipline, but his ideas hardly reached the level of policymaking other than in the shape of general acknowledgments that innovation and entrepreneurship are sources of renewal in the economy. Western politics was, in the period from the 1930s to the 1960s, preoccupied with other quite demanding things: most of all World War II and the early Cold War, but also the buildup and expansion of the welfare state on basis of the vast returns of the unprecedented economic growth of *les trentes glorieuses*, all under the paradigm of Keynesian demand-side economics. This changed in the 1960s. If the early twentieth century had seen innovation go from negative to neutral, as it entered academia and became a theoretical concept, then the late twentieth century saw the emergence of innovation in broader society, most of all politics, public administration, and the economy, and the reconceptualization of innovation as something essentially positive. This transition was accomplished by the assignment of two meanings to innovation that certainly existed before but had not dominated.

The first is the understanding of innovation as *commercialized invention*, mostly of technological nature. The second was the view of innovation as a *process*. In previous times, innovation had mainly been understood as an *action*—“doing something differently, using new methods, processes, or practices” (Godin 2012: 46)—but now innovation began to be viewed specifically as a process that could be enabled and mitigated. In the 1960s, policy documents in the United States began to synthesize these two meanings into a definition of innovation as the process that takes an idea or an invention into the market (Godin 2012: 46).

Scholars agree that this Schumpeterian policy shift in the 1960s made innovation into a business phenomenon and gave it a restricted technological and commercial meaning, a capacity in which it came to be viewed by policymakers as beneficial to the economy and to broader society. Several influential policy reports were produced in this era, that impacted legislators and policymakers across the Western world and, most of all, spurred them to action to promote innovation (Fougère and Harding 2012: 15; Godin 2012: 37–38). The impact of this thinking was to be huge within a few decades: throughout the remainder of the twentieth century, innovation became the de-contested and non-controversial concept, and cure-all factor for economic growth and sustainable development described in the introductory chapter to this book. In sharp contrast with the view a hundred years earlier, when innovation was regarded by policymakers as undesirable or at least doubtful in its meaning and usefulness, something that threatened the established order and therefore was unwanted, innovation now came to be viewed as a proper policy objective. Governments saw as their responsibility to work actively and purposefully to promote and achieve innovation. Academics stood ready to give their support to this view by supplying all kinds of evidence and arguments for why innovation is a force of good or even the only viable and reasonable course of action for anyone (cf. Fagerberg 2006, above). It was in this symbiotic formulation of economic theory and economic policy that innovation became an “ideology” (Godin and Vinck 2017: 4; Valaskivi 2012) shared by policymakers and academics, and more or less voluntarily embraced by entrepreneurs. There simply ceased to be any alternatives—if the economy was to grow, society was to develop, and challenges were to be met, innovation had to be accomplished. Or, put differently, “innovate or die” (Hasu et al. 2012: 90).

The fundamental tenets of the innovation ideology are summarized rather well in the above-cited introductory chapter in the 2006 *Oxford Handbook of Innovation*. Since the 1970s, and with increasing intensity, innovation has been viewed as the (only) answer to the need for competitiveness—the holy grail for industries, regions, and countries—and the (only) answer to the allegedly threatening ‘lags’ and ‘gaps’ between the United States, Europe, and other flourishing regions in the world (Godin 2012: 50). But even if Schumpeter’s focus on business and the role of the entrepreneur and the firm was the intellectual foundation for this new innovation ideology, a key feature was the crucial role assigned to governments: If or when industries, regions, and countries were lagging behind, innovation was the obvious remedy. In the views of politicians, bureaucrats, and the theorists and scholars who readily served as consultants to these, governments could therefore not sit idle but had to act to mitigate innovation, or better, create it. Innovation had ceased to be viewed as “something that just happens in the world” and instead understood as “a normative aspiration” (Russell and Vinsel 2019: 252) that necessitates active policy intervention. Thereby, innovation became a major new policy area, one that “fundamentally altered the premises under which existing institutions could fulfill their societal functions—frequently in ways that marginalized any rationales and values other than innovation for framing and tackling social problems” (Pfothenauer et al. 2019: 903). The perceived role of innovation as a force of renewal in the economy was instrumental in this development, given the historical period that this took place in.

## INNOVATION POLICY AND ITS ROOTS

A look at broader societal transformations toward the end of the twentieth century can further contextualize the change and provide explanations to why it is that the self-understanding of politicians and government officials entail an active role in creating and stimulating innovation and sustainable economic growth. Broadly summarized, the changes that began in Western society in the 1960s, and took off for real in the 1970s and 1980s consisted of a decline in the strong optimism, especially toward technology and administrative rationalization, that had characterized the first two decades after the end of World War II. This development was in part caused, and in part augmented, by several conspicuous and devastating events and developments.

The dark side of modernity's progress had been seen before—in the chemical warfare of World War I, in the Nazi-German Holocaust, and in the atomic bombs that ended the war—but in the 1960s, they became palpable and less readily justifiable with reference to politics and ideology. Environmental damage, the horrors of chemical weapons, pharmaceutical scandals, the effects of the oil crisis, and nuclear accidents—to name a few scattered examples—affected people also in democracies and in peacetime, and reciprocated with a generational shift and new political awareness in the baby boomer generation. This created a general attitude shift. In the immediate postwar era, an almost blind trust in science and technology as production factors and success factors for society had dominated society. In the 1960s and on, it was replaced by what sociologist Ulrich Beck (1992) famously called the *Risk Society*. A society characterized by risk awareness, and a perceived need to focus policymaking and development on minimizing and avoiding risks that predominantly are caused by the technical and social development that previously was viewed almost exclusively in positive terms. With some delay, globalization would accentuate the development and add other dimensions to the transformation, including not least global and leveled information supply and a lowering of cultural barriers, for better and for worse, and a shift in power from local and national to supranational economic and political organs and interests, and especially a new boundarylessness in the expansion of global capitalism (Giddens 1990; Castells 1996; Bauman 1998; Beck 1999).

The aforementioned idea that rapidly spread in the 1970s, that governments have a crucial role to play in the economy not least in pushing innovation, should be understood in the context of these deep changes to (Western) society, and especially its economic implications for individuals, communities, enterprises, and whole industrial sectors. The restructuring of the economy in the final three decades of the twentieth century changed the entire dynamics of whole cities, regions, and countries, and in the light of these changes, it is hardly surprising that politics took a new route and began framing almost every policy area and policy decision in economic terms (Chap. 3). Here, we stick to a slightly more straightforward historical account that can help explaining how innovation became not only a cure-all but also something that politicians, bureaucrats, academics, business leaders, and a significant portion of the general public, believes that the state should be actively involved in.

A common way of historicizing the development of innovation policy in the second half of the twentieth century and beyond is by referral to three *generations* of innovation policy. Such a scheme is of course simplified for pedagogical purposes and should therefore be used with care so as not to adopt a deterministic view on policy development, so that current innovation policy appears as inevitable. As a general periodization, however, it works.

The first generation of innovation policy is usually identified as the research policy doctrine of the immediate postwar period. Although many of the institutions of postwar science and technological development in the West existed before World War II—universities with research mission, governmental and corporate research institutes, funding agencies, and so on—it was in the aftermath of the war that science became a cohesive policy area with substantial funding and a given place in the overall project of modernization and development of economy and society. Two key principles characterized this first-generation innovation policy. One was the *Social Contract for Science*, a figurative agreement between the institutions of science and government, that the latter fund the former without interference and direct steering, and in return gets innovations that benefit the economy and society as a whole. The other was the *Linear Model of Innovation*, which described exactly this almost automatic spillover from science to society (Guston 2000: 37–45). If enough money would just be invested in what was at the time usually called “basic” or “fundamental” science, it would lead to “applied” science and technological development, that would become innovation and produce economic and social developments and wide improvements of living standards (Smith 1990: 36–37). Although it was a greatly simplified model, that did not capture anything near all the dynamics and complexity of innovation processes, it also seemed to work fairly well in the historical context of record growth. Across the Western world (and in the Soviet bloc as well), governments spent enormous amounts of money on R&D. Further economic growth ensued. Living standards surely increased dramatically. In the 1960s, as the first signs of a slowdown emerged, some began questioning the linear model and the social contract. For the first time since the war, public and private spending on science plateaued (or even in some cases declined) in Europe and North America (Hallonsten 2016: 45) and serious questioning of the paradigm of technological progress was voiced.



But it took until the 1980s before the first generation of innovation policy was seriously questioned from a scholarly point of view. Kline and Rosenberg (1986) attained some fame for their “chain-linked model”, which described innovation as non-linear, dynamic, iterative, and interactive, and which highlighted that the process itself does not have to begin with “basic” science. Innovation, they argued, could just as well start in other organizations and other sectors than universities and governmental research institutes, for example, firms and research institutes with more applied focus. Others proposed a similar reconceptualization and emphasized the *systemic* nature of innovation (e.g. Nelson and Winter 1982; Freeman 1987), which became the hallmark of the second generation of innovation policy. Under its reign, innovation support focused more on the linkages between research, development, and commercialization, and the promotion of network formation. Among the most famous concepts developed at the intersection of innovation studies and innovation policy and as part of the second generation is the “triple helix model” where academia, industry, and government collaborate to achieve innovation (Etzkowitz and Leydesdorff 2000).

Innovation politics and the academic study of innovation and entrepreneurship grew together, in scale and scope, from the mid-1990s and on. The (national) innovation systems approach to innovation studies, pioneered by Freeman (1987) and Lundvall (1992), combined with refurbished theories of market failure derived from Keynesian economics and cluster theory, popularized by Michael Porter in the 1990s, created a firm theoretical foundation for an innovation policy doctrine that viewed innovation and entrepreneurship as valuable for not only the economy but society as a whole, but in need of public support due to the inability or unwillingness of the market actors to engage in all necessary parts of the process. A key concept in this view of innovation is *positive externalities*, meaning that any development of new technology creates spillovers that tend to stay in the close vicinity of where the technology was developed, and boost the competitiveness and productivity of several actors, also beyond the sector or line of business of the original technology, in the close surroundings. But *market failure* (Chap. 5) is, arguably, just as prominent in the second-generation innovation policy, which simply views the market economy as unable to create and sustain the development that theorists, policymakers, and bureaucrats unanimously viewed as key to the continued and renewed competitiveness of industries, regions, and nations.

## MISSION ECONOMY

In contrast to the supply-side focus of the first generation, and the commercialization and intermediary focus of the second generation, the current third-generation innovation policy is mostly outcome- and demand side-oriented, and clearly aimed toward what is usually called the “grand challenges” facing current society, such as climate change, the aging society, sustainable growth, and the future of transport and mobility. The systems approach to innovation from the second-generation policy is largely retained, but the systems are thought to be greater and more complex, including civil society and consumer markets, but still possible to control or at least govern with major initiatives and funding programs that are mission-oriented and typically transdisciplinary and cross-sectoral (Karlson et al. 2021; Mazzucato 2021). Third-generation innovation policy is not oriented toward increasing input to, or output from R&D, or stimulating entrepreneurship and innovation, or generally strengthening competitiveness in certain sectors. Instead, “policy programs are increasingly crafted to accomplish systemic transformation of the economy toward environmental and social sustainability” (Bergkvist et al. 2022: 202).

The generational shift in policy, from a systems- and stimulation-view on innovation to the mission-oriented programs of today, has many causes. One is certainly the general view, held by so many decision makers and bureaucrats today, that innovation is a cure-all and the road to salvation for firms, industries, regions, nations, and indeed humanity as a whole. The logic of the policymaker’s view, in light of this, is easily graspable: If innovation is such a silver bullet, for not only economic growth but also the fighting of climate change, poverty, and pandemic disease (among other things), governments can of course not remain passive. In the wake of the crises of the 2000s—the War on Terrorism, the Great Recession, the Euro crisis, and the Covid-19 pandemic—there is now also a far greater niche for state intervention and an attractive role for politicians and bureaucrats to take as masterminds or spiders in the web of the grand missions deployed to meet grand challenges. The crises themselves have stimulated, if not warranted, series of stimulus packages as well as policies to protect national interests and industries, partly driven by the nationalist-populist turn in politics. The era of big government seems, by all accounts, to be back. Although spending, especially in the United States, had mushroomed already during the Bush presidency of

2001–2009, most of all in connection with the War on Terrorism and the Iraq War (e.g. Dziubinski and Yetive 2009: 99ff), it was the financial crisis and Great Recession beginning in 2008 that accelerated the development and reintroduced, on broad front, government subsidies to industries in both Europe and the United States as well as unprecedented and unrestrainedly rising levels of public debt (Streeck 2014: 47; Lerner 2009: 1–2). The Great Recession meant a “sudden and surprising revival of Keynesianism” (Pontusson and Raess 2012: 18), and the return of governmental intervention to stimulate and instigate growth and change—the “entrepreneurial state” (Mazzucato 2013).

Mariana Mazzucato has become a central figure in the “intellectual and economic milieu” (Wennberg and Sandström 2022: 4) that has developed as part of the renewed growth in demand for government intervention, initiative, and spending, with her three best-selling books *The Entrepreneurial State* (2013), *The Value of Everything* (2018), and *Mission Economy* (2021). “As policymakers around the world were looking for answers and ways to deal with issues such as global climate change, sluggish economic growth, and increasing inequality,” write Wennberg and Sandström (2022: 4), Mazzucato’s book *The Entrepreneurial State* “was perfectly positioned to go viral”. It “provided public officials with a sense of importance and authority” and its message was swiftly accepted and adopted, especially in Europe, with Mazzucato serving as advisor both to the European Commission and to several national governments.

The essence of her message is something like the following: Important innovations, especially on the technical side and especially in the United States, have in the twentieth century been driven by governmental investments and in significant parts been developed in governmental organizations. The examples include wind and solar power technology, pharmaceuticals, and most famously the series of products launched by Apple in the first two decades of the millennium—the iPod music player, the iPad tablet computer, and the iPhone. They are all used in *The Entrepreneurial State* to demonstrate that investments in the early, high-risk phases of the development of these monumental innovations have been made by government actors rather than market actors. Looking ahead, Mazzucato (2013: 121ff) also predicts that the current investments in a so-called green industrial revolution by governments not only in the United States and Europe, but also across the Global South (in China, India, and Brazil) will lead to similar breakthrough innovations

with far-reaching positive effects for long-term sustainable economic growth. In *Mission Economy*, Mazzucato takes the message one step further, arguing that governments must take an active role in today's economy, not just promoting innovation and renewal but leading the way with "the same level of boldness and experimentation" that characterized the U.S. Apollo program, which put man on the moon in 1969 after several years of tremendously expensive developmental work (Mazzucato 2021: 5). President John F. Kennedy's bold assertion in a speech in 1962, that a manned mission to the moon and back would be undertaken within the decade, was more than just political rhetoric, Mazzucato (2021: 4) asserts: Kennedy indeed foresaw all the spillovers in the shape of technological and organizational innovations that the Apollo program created and whose long-term impacts on the economy and broader society go way beyond what we can grasp. Therefore, Mazzucato argues, we should abandon altogether the idea that the role of the public sector in innovation should be restricted to cases of market failure such as funding "basic" research and providing long-term institutional support for especially risky projects. This "narrow view" should be abandoned in favor of "mission thinking", a "new narrative and new vocabulary" (Mazzucato 2021: 7), that evidently means reversing several decades of policy change—see the discussion on economization and managerialism in the next chapter—and putting governments and public sector organizations (back) in a leading role of shaping not only economic development but defining the *missions* of (global) society and how to execute them, with large programs of research and innovation at the center (Mazzucato 2021: 163ff).

We will return to the flaws and merits of these arguments in the coming chapters. At this point, it suffices to conclude that Mazzucato's works, which have rendered such popularity and praise among policymakers and bureaucrats in the past decade, are epitomes of the most recent developments in the transition of innovation from something suspect and unwanted, through a status as evident and natural feature of economic development mostly accomplished by prudent shaping and lubrication of societal institutions, and to today's obsession. But there are several complementary causes of this development, that require a deeper theoretically informed analysis to shed appropriate light on, which the coming chapters will show.

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