Introduction

Governing Markets as Knowledge Commons

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INTRODUCTION

Ceaseless acts of bargaining, haggling, buying, and selling happen around us all the time. Places where people gather to buy and sell goods and services emerge all around the world: in parts that are poor, in parts that are rich, at the old-fashioned market square, and in the modern digital world. We call these gatherings markets. Market forms vary from highly personalized services to commodities that are sold to millions of people at a time, from illicit goods to some of the most revered works of art. Originally, markets were meeting places that emerged at the frontier between villages as grounds where strangers could meet to trade. Trade generally did not emerge within a family or a tribe.[1] Today buyers no longer have to be physically present, although personal connections remain a crucial part of many markets. What small-scale and global markets have in common is the requirement of communication. Buyers and sellers must communicate and they must share some kind of a common understanding.[2] When they trade, buyers and sellers must share a system of signs and interpretations, an enforceable set of rules, customs, and laws governing contracts and an established system of property rights.

We tend to take for granted that people in markets can buy low and sell high without much trouble in understanding or trusting one another. Markets appear so natural, that Adam Smith (1776/1981) considered that the propensity to 'truck, barter, and exchange' to be an innate part of human nature. It was the original sin of modern economics to proceed as if markets were natural phenomena. As if their

[1] Henri Pirenne (1937: 140), wrote that although it might seem strange "medieval commerce developed from the beginning not of local but of export trade" … Karl Polanyi (1945: 274) agreed: "Trade does not arise within a community; it is an external affair involving different communities." The problem that arises from an exchange between strangers, then, is how to define, recognize and enforce transfers or property.

[2] See Frank Fetter's chapter on "Money and markets" (1915: 50–60).

emergence and continued existence itself did not have to be explained. As if self-interest alone was sufficient to explain why people would engage in exchanges of various kinds with each other.

Behind these seemingly natural interactions there is an intricate web of mostly invisible relationships that specify the peculiar conventions of different markets. Who can buy and sell? What are legitimate objects of exchange, and which things are off-limits? Is money an acceptable means of exchange, or should one pay in kind? What is a just price? And what is the appropriate way of valuing a particular good? Should customers tip, or sellers reward the buyer for their loyalty? Should one haggle? We take for granted that entrepreneurs can retain their profits; that at times, they might even enjoy a monopoly position after their invention is patented. All these assumptions require formal rules and informal norms to be in place. This book is about the routines, conventions, and shared pools of knowledge that underpin market exchange generally and specific markets in particular.

The legal framework is probably the most studied of these market-enabling social infrastructures. Within law and economics, the legal infrastructure has received ample attention, albeit with a strong emphasis on formal rights of property and contract. The rules of property and contract are the most basic defining characteristics of markets. But there is nothing natural about these rules. In fact, the rules of property and contract come in a great variety extending beyond formal rights; they include informal norms and enforcement mechanisms, which together make up the legal infrastructures on which markets rely (Hodgson 2001; Ostrom 2005). Our work extends beyond formal legal infrastructures and takes into account social infrastructures that may facilitate or hamper markets. We suggest that these infrastructures are of crucial importance in legitimizing markets; they create shared understandings, facilitate trust and, more generally, transform transaction costs to facilitate exchanges (van Waarden 2012).[3]

[3] Our project closely parallels the work of John Searle (1995, 2005) in seeking to understand the social processes that lead to shared understandings, and the consequences of human coordination (or conflict) in the presence of institutional facts that sustain market interactions. The emergence of markets is in part a problem of critical mass, and as such it is captured in the difference that economists make between thick and thin markets (Roth 2015). But it is also a problem of coherence (Lachmann 1971). What allows us to call a market "thin" is that we, by whatever criteria, judge there to be few similar (enough) transactions that make up this market. What allows us to call a market "thick" similarly is a judgment call about finding a great number of similar transactions that cohere enough with each other. What makes a market cohere, we argue, is the social infrastructure, the framework, a set of intersubjective beliefs and expectations, formal rules and shared knowledge about classifications and categories. This framework, according to Douglass North, evolves in all societies "to structure human interaction. This framework is the basic 'capital stock' that defines the culture of a society. Culture, then, provides a language-based conceptual framework for encoding and interpreting the information that the senses are presenting to the brain. As a consequence, culture not only plays a role in shaping the formal rules, but also underlies the informal constraints that are a part of the makeup of institutions" (North 2005).

Elinor Ostrom argued that the social infrastructure that sustains a "competitive market – the epitome of private institutions – is itself a public good," this, as Ostrom points out, is because once the market is there, "individuals can enter and exit freely whether or not they contribute to the cost of providing and maintaining the market" (Ostrom 1990: 15). This volume shows, following the late work of Elinor Ostrom, that the social infrastructures that sustain markets are not public goods but rather a form of knowledge commons. Social infrastructures are key resources required for the emergence and continued existence of markets and their production and maintenance is not costless.

Increasingly, scholars across disciplines have realized the importance of social infrastructures made up of institutionalized classificatory systems within which voluntary private interactions take place. Development economists have come to argue that historically determined social infrastructures captured in part by language are central in explaining long-run economic performance (Hall and Jones 1999). More recent work in economic sociology has explored the moral nature of markets. Marion Fourcade and Kieran Healy (2007), for instance, talk about the moralized-markets approach, in which scholars are concerned with 'social sources of moral ideas'; Jens Beckert (2009) discusses the problem of valuation emphasizing the moral orders that support markets. In law and economics, Brett Frischmann (2012; see also Kornberger et al. 2019) highlights the importance of shared intellectual infrastructures in sustaining market orders. Gillian Hadfield (2016) has extended the analysis of normative frameworks to legal infrastructures while Kaushik Basu (2018) emphasized the coordinative role of shared beliefs about the rules of the game.

We are critical of naturalistic accounts of markets that assume that private interests and opportunities for exchange alone are sufficient for the emergence and continued existence of markets. But we are equally critical of the standard assumption that infrastructural resources should be publicly provided. Two recent volumes entitled *Manufacturing Markets* (Brousseau and Glachant 2014) and *Marketcraft* (Vogel 2018) argue that states are crucial in the design and governance of markets. While we do acknowledge that states have a role in limiting violence (North, Wallis, and Weingast 2009), we also suggest that key infrastructural resources for the emergence and continued existence of markets are developed by market participants and related communities. Markets require organization (Eucken 1940). But governance structures are often organized communally, not purely privately or publicly (although entanglements abound). The key analytical question is how and why such resources are developed and maintained.

FOUNDATIONS AND THE THEORETICAL FRAMEWORK

How do markets emerge? Who bears the costs and efforts of producing the market-sustaining knowledge commons? How are knowledge commons, such as the intellectual and legal infrastructures maintained? Charlotte Hess and Elinor Ostrom, in

their book on Governing Knowledge Commons, highlighted the concept of a contribution to a shared resource (Hess and Ostrom 2006: 52). They defined it as a right to change (contribute to) a content of a common resource. The concept of a contribution is key to understanding the creation and maintenance of knowledge commons.

Along with access, extraction, management, exclusion, and alienation, the right to contribute is, according to Hess and Ostrom, a kind of a property right. The right to contribute to a common resource is a kind of a right that is particularly important when we zero in on knowledge commons. We have every reason to think that, rather than being a public good, a market is made up by rules that are closer to a particular form of a knowledge commons that is produced and reproduced by way of contributions and that might be adjusted by removals. Who has the power and the right to contribute, and who can be excluded from contributing and removing the shared aspects of the infrastructure that sustains markets become key issues in the analysis of market governance. Who has access to markets, how goods are supposed to be produced, bought, and consumed, how is exchange supposed to take place? These questions are directly related to how the market at hand is understood.[4] The wide variety in rules means that it makes little sense to talk of markets in the abstract, instead markets should be studied as specific institutional settings. And the meaning attributed to the institutions of exchange will depend on the place of markets in social life (Hodgson 2001).

These questions can be better understood when considered in context of the Institutional Analysis and Development (IAD) framework developed by Elinor Ostrom and her collaborators. This framework was first developed to study the governance of commons in the natural environment (Ostrom 1990) and later modified for use in the study of *Governing Knowledge Commons* (GKC) series by Brett Frischmann, Michael Madison, and Katherine Strandburg (2014; Strandburg, Frischmann, and Madison 2017). In this theoretical framework, *commons* refers to

> a form of community management or governance. It applies to resources and involves a group or community of people, but it does not denote the resources, the community, a place, or a thing. Commons is the institutional arrangement of these elements.
>
> (Strandburg, Frischmann, and Madison 2017: 10)

Importantly, what distinguishes commons from other kinds of governance (such as individual private property rights) "is institutionalized sharing of resources among members of a community" (Frischmann, Madison, and Strandburg 2014: 2). The intellectual infrastructure that enables and regulates market is a kind of a resource.

[4] Such shared understandings might also prevent markets from emerging because they are considered undesirable, corrupting, or repugnant (Satz 2010).

But the infrastructure, besides being a resource, is in the first place a kind of knowledge.

In general, we say that *knowledge* "refers to a broad set of intellectual and cultural resources" (Strandburg, Frischmann, and Madison 2017: 10). Intellectual and legal infrastructures are a part of our knowledge. Mental models and shared classification schemes are knowledge too. Institutional aspects such as formal rules, informal norms, and instruments of interpretation; classification schemes, and enforcement mechanisms are forms of social infrastructures that all constitute knowledge as we understand it. That perspective is in line with the knowledge perspective developed in markets, in which the price system and firms both play a key role in the coordination of the expectations and hence the actions of different individuals (Coase 1934; Hayek 1945). The meaning of prices and the way we interpret and understand price movements are important aspects of that shared knowledge (Velthuis 2005).

Knowledge commons, then, is a

> shorthand for the institutionalized community governance of the sharing and, in many cases, creation of … intellectual and cultural resources. Demand for governance institutions arises from a community's need to overcome various social dilemmas associated with producing, preserving, sharing, and using [these resources].
>
> (Strandburg, Frischmann, and Madison 2017: 10)

While the demand side for governance institutions has received a good deal of attention in the new institutionalist literature, the supply side of many institutions in general and those governing knowledge commons in particular still seems to be somewhat of a mystery. The chapters in this book contribute to the GKC research program by asking how the intellectual and legal infrastructures, on which markets depend, are produced and reproduced; how they grant coherence to our actions and interactions in markets while at the same time permitting change.

FOUR BUILDING BLOCKS

This volume presents a couple of basic ideas that run through the following chapters. First, markets are cultural; they rely on a form of knowledge that is governed as a knowledge commons. A corollary of this idea is that the growth of markets depends as much on relevant knowledge commons as it does on changes in technology or geography.

Second, the market-supporting forms of knowledge are produced and reproduced by contributions and sharing. They are thus neither privately nor publicly provided. Rather, the mode of governance for the production and maintenance of market-supporting forms of knowledge is the commons. While markets are not natural, they are in many instances self-supporting.

Third, knowledge commons include intellectual and legal infrastructures that serve as economic inputs to new production processes. The knowledge infrastructures we discuss in the book do not merely legitimate and structure economic exchange in markets, they also function as jointly produced resources on which market participants can draw for private initiatives. They are quite literally a pool of knowledge from which market participants can draw.

Fourth, our volume conceptualizes the social and cultural effects of entrepreneurship. Entrepreneurs draw on the knowledge infrastructures to make new combinations, to engage in slight evasions of existing rules, and to provide new justifications (or condemnations) of particular acts. In doing so they bring new products on the market, alter existing practices, or try to prevent existing ones. This has not merely economic effects, but also impacts the knowledge commons that sustain markets. As such entrepreneurial acts feed back into the cultural framework of markets. Let us situate each of these building blocks in the wider academic conversation on markets.

Markets Are Cultural and Rely on Knowledge Commons

Anthropologists and sociologists have long argued that markets are part of social systems (K. Polanyi 1945; Appadurai 1986; Granovetter and Swedberg 1992; Gudeman 2001). In economics there has been less attention to this fact. But, as one of us has demonstrated, in the crucial interwar period a large group of Central-European intellectuals rediscovered the importance of institutional frameworks that constitute the social infrastructure of market societies (Dekker 2016). In more stable times that framework is easily taken for granted, but during the major upheavals of the 1930s it became acutely visible how important these frameworks were. Neoliberal thinkers of various political and national backgrounds rediscovered the importance of the legal, social, and cultural preconditions for flourishing markets (Foucault 2008).

In economic sociology these ideas became known as the embeddedness thesis associated with the work of Karl Polanyi (Dale 2010). The debate made Friedrich Hayek realize the importance of the rules and institutions that have supported liberal civilization (Hayek 1960; Boettke 2018). It made Joseph Schumpeter argue that capitalism could not survive in an unrestrained democratic state (Schumpeter 1976; Allen 1994). It made Norbert Elias inquire into the process by which the West became civilized, and how this process was reversed (Elias 2000). It made the Ordoliberal thinkers in Germany inquire into the framework that allows for peaceful competition on markets (Eucken 1940; Röpke 1950; Peacock and Willgerodt 1989). And it made Michael Polanyi and Karl Popper inquire, in different ways, into the ways in which free scientific inquiry is embedded and part of an open society, and a set of shared attitudes (Popper 1945; M. Polanyi 1958).

Many of these writers used the term 'civilization' to refer to this set of frameworks.[5] Sigmund Freud, who reflected on the same set of development suggested that the term civilization "describes the sum of achievements that serve two types of purposes: to protect men against nature, and to adjust their mutual relations" (Freud 1930/1961: 36). What protects man against nature is primarily a set of technologies, but what interests us is the sum of achievements that allow humans to adjust their mutual relations. What this perspective allows us to realize is that this shared set of achievements, which differs between societies and over time, consists of shared knowledge. This consists of common sense knowledge, social conventions, classification schemes, and a wide variety of institutional forms that allow for peaceful human interaction. Markets are an integral part of these, and directly related to the wider set of knowledge. They therefore depend on these shared social infrastructure and feed back into them.

As the ordoliberal writers argued persuasively, society consists of different orders (Luhmann 1995; Goldschmidt and Wohlgemuth 2008). These different orders, social, legal, political, and economic, overlap in complex ways; we have elsewhere compared these orders to plate tectonics, due to having stable internal structures, but also being partly incommensurable with other orders (Dekker and Kuchař 2017). Between these orders potentially serious friction may emerge, along with a great possibility for conflict (Boltanski and Thévenot 2006; Stark 2009). It is precisely at the borders of the orders that we expect opportunities for entrepreneurial action, consisting in part of arbitrage between different normative orders (whether legal, social or both), to emerge.

Knowledge Commons Are Produced and Reproduced by Contributions and Sharing

To conceptualize the production side of shared infrastructures we rely on the notion of contribution, and in particular on two types of goods that are discussed in this book: contribution goods and shared goods. Contribution goods are conceptualized by Kealey and Ricketts as "goods whose benefits are non-rival over contributors but that cannot be accessed by non-contributors" (Kealey and Ricketts 2014: 1015). For instance, in order to access scientific knowledge one has to become a scientist since important parts of the knowledge is simply inaccessible to outsiders, and other important parts are tacit. It is only through contributions to science that one gains

[5] When we talk about civilization, we refer to those societies with developed and open state bureaucracies, codified legal systems and legally sanctioned rules of property and exchange. As Geoffrey Hodgson writes, property and contract are key for markets to exist "there must be a system of law that recognises 'legal persons' making transactions – individuals or groups that are deemed to have collective discretion and choice, and may enter into contracts with others. Once again, such conditions are associated with the rise of civilisation and the existence of a state with a relatively developed legal apparatus" (Hodgson 2001: 331).

meaningful access to science. The production of scientific knowledge depends on the contributions of many different scientists, who should feel sufficiently motivated to contribute to science. Such contributions are more worthwhile for the individual when other individuals are also making contributions. Science is a noncooperative coordination game (see also Kealey and Ricketts, Chapter 1).

Shared goods, on the other hand, are defined by Arjo Klamer as coproduced non-divisible goods. Klamer emphasizes their non-rival nature and suggests that exclusion is nearly automatic for shared goods (Klamer 2016: 72–76). His favorite example is that of a friendship between two people from which non-friends, or non-contributors, are excluded. Ownership of such goods, including scientific knowledge, is not clearly defined, but that is not necessary for its production. Unlike Kealey and Ricketts, Klamer thinks of the production of such goods as requiring cooperation: the production of a good friendship is a cooperative game (see also Potts 2019). What Klamer adds to his discussion of shared goods is that they are typically practices, which derive value from an active engagement (see also Won and Klamer, Chapter 11). In that sense one becomes a scientist by doing science, and a friend by practicing friendship.[6]

Knowledge Commons Serve As Economic Inputs to New Production Processes

A major step toward understanding the function of social infrastructures has been the work of Brett Frischmann. Infrastructural resources run in the background of any kind of social and economic interaction. More specifically, we can say that these resources are "consumed non-rivalrously for some appreciable range of demand," that a "demand for the [infrastructural] resource is driven primarily by downstream productive activity," and finally, that the infrastructural resources tend to "be used as an input into a wide range of goods and services" (Frischmann 2012: xiv). Typically, things like roads and highways, railways, bridges, lighthouses, water systems, power grids, optical fibers, etc., come to mind. Very often, we tend to think about these kinds of infrastructure as public goods in the sense that their consumption is non-rival and non-excludable. A standard textbook scenario demonstrates that private initiative will fall short of providing these kinds of infrastructures in a satisfactory quality and quantity and that, therefore, these goods should be provided by a political authority.

Frischmann extends the analysis of physical infrastructures to include intellectual infrastructures. We might think of language as a central example of intellectual infrastructure. But apart from language, intellectual infrastructures "include a broad

[6] Elsewhere we have suggested that a subset of institutions we called 'instruments of interpretation' arise out of individual market exchanges, so that market participants help the knowledge infrastructure evolve (Dekker and Kuchař 2019; see also Cornes and Sandler 1996). What all concepts have in common is that they provide a rationale for continued contribution to the goods that sustain it.

set of resources that create benefits for society primarily through the facilitation of downstream productive activities, many of which generate spillovers" (Frischmann 2012: 275). Intellectual infrastructures are simply non-rival inputs into a wide variety of outputs; think basic research, general purpose technologies, or infrastructural ideas.

The importance of infrastructures seems to be most conspicuous in the case of malfunction. That is especially true when we talk about "legal infrastructures," as Gillian Hadfield does in her book titled *Rules for a Flat World* (Hadfield 2016). We recognize the importance of uncongested highways or high-speed railways during our daily commutes, we are well aware of the enabling power of language and such realizations become much more vivid when the road becomes congested, when the railway workers go on a strike, or when we cannot simply "plug in," as Hadfield puts it, into a framework of people who share our language or adhere to a common legal code. With legal infrastructure, which may be considered a subset of Frischmann's intellectual infrastructure, things are different to the extent that the enabling function of legal and institutional rules is almost always hidden, it mostly runs in the background, and what we typically notice about law is that it tells us what not to do. Law, however, also has a constructive enabling role which facilitates interaction and coordination.

Hadfield (2016: 89) – as Buchanan (1975) had also similarly suggested – makes the case that legal infrastructure is a form of capital that is, because of its widespread availability, a shared good. Just like with other kinds of infrastructure, we do not typically have the legal infrastructure tailored and constructed just for our purposes. The legal infrastructure must be general enough to allow entrepreneurs with different kinds of plans to plug into it and make use of it. As such, the legal infrastructure seems to be a part of the environment, "it was there before you got here" (Hadfield 2016: 87). But what can flourish in a given (legal) environment is a question of the complementarity between the environment and the activities employed by individuals and groups.

The importance of the complementarity between different types of capital goods has been emphasized in economics by Ludwig Lachmann (1978) who argued that in order for individual plans to succeed they must be compatible with each other (Endres and Harper 2013). That is the same type of interdependence that is also stressed by game theorists on the micro level.[7] This interdependence can cause

[7] Interdependence is at the very heart of economic theory, Adam Smith's theory of division of labor is fundamentally a theory of interdependence. Not only do individuals become dependent on each other's skills, goods, and services, but the associated regime of free trade also makes regions and countries dependent on one another. Alfred Marshall, developing political economy along Smithian lines, realized that the interdependence of transacting individuals may generate increasing returns. This idea becomes apparent when we look into Marshall's interaction between organization and the growth of knowledge. First, Marshall considers knowledge and organization to be a part of the capital structure: "By Capital is meant all stored-up provision for the production of material goods . . . Capital consists in a great part of

individuals' plans to fail, since others don't act as expected. But the interdependence can also give rise to positive reinforcing effects and lead to increasing returns of being part of the same community or culture. It is now well established that this is the case at least for knowledge of the R&D type (B. Hall, Mairesse, and Mohnen 2010; see also Kealey and Ricketts, Chapter 1).

Entrepreneurship Has Social and Cultural Effects

A recent volume has argued for a regime of permissionless innovation (Thierer 2016). We suggest that even if governments would remove all barriers to innovation and new technologies, entrepreneurial action would still be anything but completely free. Entrepreneurs must draw on the existing knowledge resources for their innovations, and the extent to which novel innovations might be accepted is in large part determined by their compatibility with existing social norms.

Entrepreneurs do more than buy low and sell high. In fact, entrepreneurs are important agents of change who tend to change social norms and classification schemes in general (Elert and Henrekson 2017). Besides direct efforts to shape and mold our existing knowledge, entrepreneurs contribute to the joint production of new product categories (Navis and Glynn 2010), new ways of valuing goods (De Marchi 2008), and new legitimations for exchanges previously believed to be illegitimate or repugnant (Kuchař 2016). More broadly they change the existing set of conventions (Choi, Chapter 5). Entrepreneurship thus has effects beyond the economic realm. It also jointly impacts social and cultural norms and beliefs.

Wadwhani and Lubinski (2017) have suggested the term 'New Entrepreneurial History' for a field of study that explicitly recognizes the importance of legitimizing novelty. The focus on legitimation of economic actions has long been left by economists to sociologists and organizational scholars (Swedberg 2005). We believe

knowledge and organization . . . and of this some part is private property and other part is not" (Marshall 192: 138). Might the part of knowledge and organization that is not private property be a kind of a knowledge commons? The mode of governance, or in Marshall's terms "organization" was clearly important: "Knowledge is our most powerful engine of production; it enables us to subdue Nature and force her to satisfy our wants. Organization aids knowledge; it has many forms, e.g. that of a single business, that of various businesses in the same trade, that of various trades relatively to one another, and that of the State providing security for all and help for many" (Marshall 1920: 139). If organization aids the knowledge – our most powerful engine of production – Marshall thought therefore "it seems best sometimes to reckon Organization apart as a distinct agent of production" (Marshall 1920: 139). We agree. Secondly, Marshall intuited the shared nature of knowledge by discussing cases in which "the law of diminishing return does not apply to the total capital and labour" (Marshall 1920: 165). This happens because under some circumstances "the pressure of population on the means of subsistence may be restrained for a long time to come by the opening up of new fields of supply . . . by the growth of organization and knowledge" (Marshall 1920: 166). Marshall thus suggests that "an increase of labour and capital leads generally to improved organization, which increases the efficiency of the work of labour and capital" (Marshall 1920: 318).