CHAPTER 3

Where Does Infrastructure Sit in the Callonian Perspective on Markets?

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Since at least the pioneering work of Michel Callon in the 1990s, social scientists have attempted to understand markets as emerging from hybrid, socio-material processes. A vast body of work, using concepts such as actor-networks, socio-material assemblages, market devices, and market *agencements* has utilized a Callonian framework. Recently, another term with roots in science and technology studies (though not *only* in STS – see Coombs' chapter, this volume) has found favour in the study of markets: infrastructure. Scholars use the term to refer to socio-technical 'systems through which basic but crucial enabling functions are carried out, but that tend to be taken for granted and assumed' (Bernards and Campbell-Verduyn, 2019, p. 776). The concept has been applied to an array of elements – evidenced in the breadth of this volume – from barcode scanners and warehouses, to electronic order books and clearinghouses, payment systems and accounting schemes (Genito, 2019; Kjellberg, Hagberg, and Cochoy, 2019; Pardo-Guerra, 2019; Banoub and Martin, 2020; Martinez, Pflueger, and Palermo, 2022; Brandl and Dieterich, 2023).

Given their common roots in STS it is unsurprising to see similarities between the market infrastructure perspective and the Callonian view. Infrastructures, like devices and *agencements*, are held to be socio-materially hybrid assemblages or ecologies, featuring both 'hardware' and 'software': not just physical technologies, but organizational protocols, regulatory standards, and cultural ideas (Edwards, 2003). Also, they are similarly understood to 'emerge' or 'occur' through ongoing practice rather than to simply 'exist' as simple objects (Bernards and Campbell-Verduyn, 2019). Finally, like *agencements*, infrastructures format the character and agency of the people and things that they encounter in the market (Pardo-Guerra, 2019; Çalışkan, 2020). In the STS-inflected view, infrastructure, like *agencement*, is socio-material, performative, and locates ontology in a hybrid network.

These points of commonality have usefully allowed Callonian and infrastructural perspectives to develop in concert. But they have also made it possible to delay engagement with their differences. Beginning this

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engagement is the aim of this chapter. The chapter asks: Where does infrastructure sit in the Callonian framework on markets? How does scholarship on infrastructures prompt us to re-evaluate actor-network theory (ANT)-inspired work on market *agencements*? Does the Callonian perspective encompass market infrastructures and, if so, what is gained from an approach that pulls them out for special attention?

I argue that the focus on infrastructure highlights a pragmatically and phenomenologically important boundary elided in the Callonian perspective between components of an *agencement* that are physically and cognitively present to actors and those which – though critical to action – are not. This boundary in terms of presence is occasionally recognized, but never explicitly theorized, in Callon's framework. Incorporating this boundary into a theoretical perspective on markets has two major benefits. First, it helps us to see a distinct form of 'infrastructural power' (Pinzur, 2021) at work within market *agencements*. This power stems from the asymmetric relations of dependency and discretion that exist between the operators of infrastructures and their users. This asymmetry produces unequal dynamics around the alignment of framings in a market *agencement* that remain unspecified in Callon's flat perspective. Secondly, this division draws attention to the unique features of the 'boundary objects' (Star and Griesemer, 1989) that flexibly connect components of *agencements*. These boundary objects, being vaguely structured at a general level yet adaptable to the particularities of local settings, help to resolve the ongoing struggle of holding together market *agencements* whose components are pulled in different directions. This concept, I argue, handles the problem of 'multi-framing' (Callon, 2021) better than the established duality of framing and overflowing (Callon, 1998a). By recognizing the boundary between infrastructures and other elements of *agencements* we thus become aware of underexplored dynamics within Callon's perspective and gain tools with which to conceptualize these.

1 Callon and the Sociomaterial Turn in the Sociology of Markets

Use of actor-network theory to study markets heralded a sea change in economic sociology. Prior sociological work had conceptualized markets as institutionalized spaces featuring actors 'embedded' within, shaped, and constrained by a social context of laws and regulations, organizational rules, relationally enforced norms, and status hierarchies. By contrast, Callon, inspired by work on distributed cognition and action (Hutchins, 1995), asked not how markets and economic actors were constrained, but how they were composed. The goal of his analysis was not 'giving a soul back' to *Homo economicus* (Callon, 1998b, p. 51) by situating economic behaviour within a social context, but rather de-naturalizing the individual and the market, tracing how both took form through coordinated, distributed, materially mediated practices.

Key to this analysis have been the concepts of market devices and market *agencements*. The language of devices, defined as 'material and discursive assemblages that intervene in the construction of markets' (Muniesa, Millo, and Callon, 2007, p. 2), featured in the earliest ANT-style economic analyses. The concept enabled scholars to look at the impact of distributed physical technologies and economic representations on market actors' day-to-day work. More recently Callon and others have favoured the closely related term *agencement* (Çalışkan and Callon, 2010; Callon, 2021). The move is more about emphasis than conceptual divergence. As opposed to the notion of a device with its suggestion of a thing to be picked up and used by a person, each distinct and whole, *agencement* emphasizes the ways that humans and material objects form unique, agentic networks. This highlights what Callon and others see as the ontological character of distributed action and cognition: distinct *agencements* do not just equip actors differently, they create hybrids with different loci and degrees of agency. It is in this sense that we can meaningfully talk about market actors that are individual, collective

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('the firm's employees'), or even anonymous ('market forces'), which operate with different forms of calculativeness (Callon, 2008).

Critically, market *agencements* do not form simply by accident: they are formulated with the precise goal of orienting collective action towards bilateral transactions (Callon, 2021). *Agencements* organize five different 'framings' – producing active agencies, producing passive objects, arranging encounters between buyers and sellers, establishing prices, and maintaining the market – which together structure and coordinate economic action (Çalışkan and Callon, 2010; Callon, 2021). These framings are themselves performative outcomes of materially mediated, distributed procedures variously described as qualification, singularization, pacification, and activization (Callon, Méadel, and Rabeharisoa, 2002; Callon and Muniesa, 2005). They are the constitutive, socio-material processes by which markets and economic actors are built up across networked environments.

A market *agencement* thus consists of networked humans and non-humans enacting the five framings that underpin bilateral transactions. While these framings in pursuit of a strategic goal allow us to define and delimit *agencements* conceptually, doing so empirically is more challenging. The breadth of individuals, technologies, and texts involved in these five framings is extraordinary. Just consider how many are involved in a single piece of any one framing, for example, the creation of advertisements that attach consumers to goods, the construction of industry standards that establish a legible price, the regulation of consumer safety by the state, and so on. But, more significantly for the topic at hand, *agencements* have *depth*. Çalışkan and Callon (2010, p. 9) claim that '*agencements* denote socio-technical arrangements from the point view of their capacity to act'. But any given socio-technical arrangement's 'capacity to act' is wrapped up in and dependent on further socio-technical arrangements: a trading desk in an investment bank, for example, operates in conjunction with organizational rules and processes, international law, undersea cables, and so on. Any single actor (human or non-human) making a trade is designated and empowered to act by virtue of their position within a *agencement* that includes screens displaying prices, analyses drafted and circulated within an organization, computer programs that synthesize massive amounts of data, statistical networks that produce this data in the first place, and so on. It is in this sense, quite true that 'nothing is left outside *agencements*' (Çalışkan and Callon, 2010, p. 9).

This capaciousness helpfully demonstrates the massive effort behind every market transaction. But it also tends to efface an important pragmatic and phenomenological boundary between those actors, devices, and representations actively invoked, referenced, or manipulated in the everyday conduct of market action and those that – while crucial to the success of the *agencement* – remain hidden, inaccessible, and unmanipulated. This distinction and boundary, though unnamed and unspecified, is clear in prior ANT-inspired work. On one hand we see devices that gain value precisely through their components materially intervening in the strategy, calculation, and perception of transacting parties. Such devices are often appended with the particular actions they enhance or contribute to: they are 'optical devices' or 'evaluative devices' (Beunza and Stark, 2004), 'calculative device[s]' (Callon and Muniesa, 2005). They are actively and creatively engaged by individuals as aids in the market (Knorr Cetina, 2003; Preda, 2006). On the other hand are devices that support or prepare the ground for these: not the FICO (Fair Isaac Corporation) score, but the 'scorecard' that brings together the relevant data points; not the marketing materials, but the focus group that generates knowledge of consumers; not the derivative instrument, but the regulatory distinctions and accounting techniques that permit its construction (Muniesa, Millo, and Callon, 2007). These devices (which some scholars might later call infrastructures) come to matter in their ability to produce a taken-for-granted baseline from which actors can use *another* ready-to-hand set of objects to calculate, act, and trade. While Callon would

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certainly recognize that market actors relate to these objects and processes in different ways – some with intense focus, others as a taken-for-granted background – the notion of *agencement* offers no way to theorize the importance of this difference. Conversely, this distinction is precisely what infrastructure makes visible and theorizes.

2 Infrastructure as Absence

I describe the distinction between the infrastructural and non-infrastructural components of an *agencement* as a difference in 'presence'. Viewed phenomenologically from the angle of a transaction, infrastructures matter in a different way than ready-to-hand devices like screens, reports, or analytics: they are neither present nor accessible, cannot be manipulated, are not active and lively intervening components. Rather than remaining at the surface of action, they become deeply embedded in organizational routines and bureaucracies. Functioning infrastructures tend towards invisibility; they 'seamlessly fade into the background as if natural elements of our human environments' (Pardo-Guerra, 2019, p. 7). This backgroundedness – the possibility of forgetting that these technologies, organized practices, and rules even exist at all – is precisely what makes market infrastructures useful (Guseva and Rona-Tas, 2014). They allow actors to marshal ready-to-hand devices in pursuit of profit on the assumption that most, if not all, of the other components of a market *agencement* are properly aligned. Infrastructure's cognitive absence to market actors is a crucial ingredient in producing a calculable and actionable environment.

The cognitive presence or absence of devices is often accompanied by their physical presence or absence as well. Those devices that are actively manipulated for calculation tend to be more contained in space and time, assembled by an organization for its own distinct purposes, affording market actors a greater plasticity. For instance, new market analyses are produced daily using proprietary software and trading algorithms are tweaked constantly over the course of their short lives to reflect and accommodate changing market circumstances (Beunza and Stark, 2012; Borch and Lange, 2017). Similarly, the customizability of trading desks – with more or fewer screens, displaying different types of information – demonstrates the value of this device as a physical aid to local, embodied calculation and action (Beunza and Stark, 2004; Beunza, Hardie, and MacKenzie, 2006). The aim is precisely for these devices to differ from those being used by competitors, so as to manufacture unique profit-making opportunities (Erturk et al., 2013; Hardin and Rottinghaus, 2015).

By contrast, infrastructures tend to span multiple sites or events (Edwards, 2003; Silvast and Virtanen, 2019). This can be a physical spanning of distance via information and communication technologies (e.g., sub-marine cables or satellite networks) or an administrative harmonization via standards, classifications, and protocols (Bowker and Star, 2000; Guseva and Rona-Tas, 2014; Pinzur, 2016). This broader scope coordinates action across distant settings, creating a situation where 'local practices are afforded by a larger-scale technology' (Star and Ruhleder, 1996, p. 114). The politics and uneven impacts of this relation between the global and local is why payment, settlement, and clearing systems have attracted so much attention from infrastructural scholars. Infrastructures including the European interbank payment system (Jeffs, 2008), the European Union's Target 2 securities settlement infrastructure (Krarup, this volume), and the SWIFT (Society for Worldwide Interbank Financial Telecommunications) financial messaging system (Robinson, Dörry, and Derudder, this volume) all show the tricky questions and tough relationships that characterize infrastructures that span these scales.

3 Issues at the Boundary

Summing up the previous section, we see that scholarship on market infrastructures distinguishes *within* market *agencements* between

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elements that are physically and cognitively present to actors and those that – while critical to action – are not. This distinction is elided in Callon's presentation of market *agencements*. But why does this boundary matter? What does it help us to see or understand more clearly?

The following sections argue that this boundary helps us to recognize and theorize two important, understudied dynamics within *agencements*. First, this boundary aligns with an asymmetry in market *agencements*: local, ready-to-hand devices depend on the smooth operation of broader infrastructures, but the opposite is not true. That is, the impact of infrastructures in (mis)aligning the components of an *agencement* far exceeds that of local devices. This asymmetry translates into a distinct form of 'infrastructural power' (Pinzur, 2021) accruing to actors with discretion to enable or disrupt everyday routines for a wide swathe of the market. Secondly, this boundary draws attention to a different view of how to maintain cohesive *agencements* despite the inevitably multiple ways in which objects and activities are framed by distinct actors. Where Callon sees this 'multi-framing' as an ever-present source of overflowing to be contained and reframed, infrastructural scholarship suggests a more flexible approach. The concept of 'boundary objects' (Star and Griesemer, 1989) – artefacts, concepts, or methods that simultaneously retain a general, shared form and can be adapted to divergent particular applications – offers a tool with which to rethink the nature of alignment and misalignment, making ubiquitous multi-framing less of a threat to market action.

4 Asymmetry, Discretion, and Infrastructural Power

As discussed, Callon argues that market *agencements* are held together through the alignment of framings across actors and environments, collectively organizing action towards the single goal of bilateral transactions. In treating these myriad framings at the level of the collective (i.e., what matters is that the whole *agencement* stays aligned) Callon does not discuss the differential roles that individual acts of framing might play. But, in fact, when we consider the divide between local devices and global infrastructures – the components that are cognitively and physically ready to hand in everyday action versus those that support action, but are not present in the same way – it becomes clear that not all framings performed by every component of an *agencement* are equal. In fact, the framings accomplished by infrastructures are asymmetrically more important.

This, of course, is not to say that changes or struggles over smaller components of an *agencement* are necessarily inconsequential. Any set of framings that breaks out of line – whether related to a focus group, a stock index, a computer screen, or any other market device – initiates a struggle to re-establish alignment. The result may be bringing the offending framing back in line or it may lead other components of an *agencement* to change themselves. Donald MacKenzie's analysis of high-frequency trading offers a fascinating version of just such an analysis. MacKenzie traces the back-and-forth development across the fields of trading, exchange, regulation, and politics, where alterations of the market *agencement* in one area (e.g., new rules around Nasdaq's Small Order Execution System) provoke responses in another (e.g., development of ATD's (Automated Trading Desk's) trading algorithms or Island's open order book), which redound on yet another (e.g., moving from fixed role to all-to-all markets), and so on (MacKenzie et al., 2012; MacKenzie and Pardo-Guerra, 2014; MacKenzie, 2018, 2021). This is a history of local instances of bricolage, innovation, and opportunism: a large-scale shift in *agencement* built up from successive breakdowns and realignments of framings.

But the case of HFT also shows us the limits of this symmetrical analysis. MacKenzie (2018) notes that the most important ongoing relation in this case is the mutuality established between exchanges and trading firms. Today the most important alterations in framing involve exchanges developing

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HFT-friendly infrastructures – for example, co-location, ultrafast matching engines, rebates for market makers – in an effort to attract liquidity. There is a feedback effect: exchanges that offer the most enticing infrastructures attract more trading, which makes them more liquid, which makes them even more appealing sites for trading. The competition among exchanges to provide infrastructure has become the core of their business, extending beyond HFT to the provision of indexes, clearing services, trading platforms, and more (Petry, this volume). Critically, while exchanges and firms both rely on each other, this dynamic is not symmetrical. As access to top-notch infrastructure becomes a necessity for firms – both for the liquidity and the competitive advantage it provides – global exchange groups grow larger, wealthier, and more influential.

Drawing a distinction between infrastructures and ready-to-hand devices highlights an important divide in how alignment translates into power and influence. There is an asymmetry in dependency – devices need infrastructures to work, but not the other way around – which translates into an imbalance in the scale of disruption that would result from any changes to framings or stoppages of work. How many devices, or components of an *agencement*, would become inoperable – and thus quite radically 'unaligned' – if a particular infrastructure was not working as usual? How many things would become impossible to do or think as a result? Because of their global scope, their general invisibility, and their efficient handling of basic functions, infrastructures become enmeshed in and critical to vast numbers of market processes. A change in or breakdown of infrastructure thus means an immediate and profound misalignment across myriad market actors. This asymmetric interdependency offers a mechanism by which infrastructural actors, through their discretion to upset alignments of many framings at once, can exert outsized power and influence.

Elsewhere (Pinzur, 2021) I have referred to this as 'infrastructural power' (drawing out its connections to, but possibly also confusing with, the tradition from political economy, see Coombs, this volume). This outsized power is held by actors with discretion to disturb the smooth functioning of a market infrastructure, in the process provoking leveraged misalignments with a large number of local, device-mediated calculations and actions. For instance, nineteenth-century American commodity exchanges used their positions within key infrastructural processes to exert influence over the form of crop-statistic and price-quotation networks – core aspects of the five framings (Pinzur, 2021). In other instances, we see that power comes from the discretion to control access to an infrastructure. This is the power of the global exchange group wielding exclusive control over a set of goods and services whose absence would cause a crisis of misalignment for traders (Petry, this volume). It is also the power, exceptionally applied, of saboteurs (e.g., protesters clogging the streets of Frankfurt to keep bank employees from reaching their desks) or natural disasters (e.g., Hurricane Sandy knocking out elements of global financial infrastructure) (Folkers, 2017).

As discussed, though Callon recognizes the diversity of relations between market actors and the various components of market *agencements* – for example, that focus groups are core work for marketers but simply one bit of information for executives planning a branding campaign – he does not theorize these distinct types of relations. This leaves his view of an undifferentiated, flat *agencement* ill-equipped to account for shifting scales of alignment and the imbalances of power these asymmetries create. By contrast, recognizing the boundary between hidden infrastructures and ready-to-hand devices highlights the unique form of 'infrastructural power' and leveraged misalignment that exist within a single market *agencement*.

5 Alignment, Multi-framing, and Boundary Objects

The previous section considered the issue of how to align multiple components – objects, practices, discourses, people – within a single

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agencement. But Callon also notes the additional challenge that any single component may become entangled in several, distinct framings or *agencements* at once: Callon calls this being 'multi-framed' (Callon, 2021, p. 366). This multi-framing creates a local tension – keeping an *agencement* aligned even when many of its components are pulled in several directions at once – for which Callon, admittedly, has no general solution. I argue that an infrastructural perspective using the concept of 'boundary objects' (Star and Griesemer, 1989) offers traction on this issue.

Multi-framing occurs in settings where multiple *agencements* overlap. Take, for example, a university's scientific research laboratories. In such an environment components may simultaneously be framed with a market *agencement* (e.g., making genetic material patentable intellectual property that can be bought and sold), a scientific *agencement* (e.g., making genetic material a resource to be made widely available for basic research through collaborative networks), or even a religious *agencement* (e.g., making genetic material a divine substance that ought not be manipulated). The economic challenge of a multi-framed object is ensuring that it is not pulled so far out of its framing within a market *agencement* that it becomes untradeable or disorders collective action in the market. For example, regulators can influence the format and framing of credit scores (e.g., banning the use of particular types of personal information), but *only* if they do not disturb the score's role within the market *agencement* that promotes and sustains lending. This produces conflicts over framing that must be resolved locally.

Callon cautions against thinking that such conflicts are rare. Given the inherent openness of *agencements* and their components, multi-framing is, in fact, widespread. While we can certainly associate components to a market *agencement* by their participation in the five framings, 'we should not forget that each site and activity is also caught up, at the same time, in other collective actions, in other types of *agencements*' (Callon, 2021, p. 366). In each of their components and sites, market *agencements* grapple with other modes of *agencement*. In fact, multi-framing is so pervasive that the work of ensuring objects, people, and activities maintain their roles in markets despite being caught up in various non-market *agencements* is the core of market maintenance. And yet, despite the near ubiquity of this phenomenon, *how* this resolution occurs is a mystery. In response to the question of how these opposed tendencies are made compatible, Callon admits that 'there is, as far as I know, *no satisfying answer to this question*' (Callon, 2021, p. 368, emphasis added).

I suggest that Callon and other economic sociologists can find one 'satisfying answer' in the literature on infrastructure, particularly in the concept of 'boundary objects' (Bowker et al., 2016). In contrast to Star's concept of infrastructures, which has been eagerly adopted in the study of markets, this popular and closely related notion has not yet been taken up. The key feature of a boundary object is that it spans multiple groups and environments, both enabling collaboration and coordination across these *and* being adaptable to dissimilar uses in their various settings. Their defining feature is their 'interpretive flexibility', the ability to toggle between being vaguely structured at the general level and precisely structured in particular settings (Star, 2010). Boundary objects 'are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. … They have different meanings in different social worlds but their structure is common enough to more than one world to make them recognizable, a means of translation' (Star and Griesemer, 1989, p. 393). They can take multiple forms: artefacts (e.g., repositories, indexes), concepts (e.g., ideal types, classes), or methods (e.g., standardized forms) (Star, 2010). For instance, Star and Griesemer (1989) show that animal and plant specimens, field notes, and maps served as boundary objects in the scientific practice of a natural history museum, allowing collaboration among academics, volunteer trackers, animal trappers, and donors despite their divergent concerns, practices, and conceptions.

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While research on markets has not invoked boundary objects explicitly (Millo and MacKenzie, 2009, is an exception), I would argue that prior research has used the concept implicitly. Consider, for example, work on derivative-trading investment banks and clearinghouses, two organizations whose actions must be aligned so as to promote transactions, yet which frame these transactions' elements in starkly different ways. Scholars have identified several boundary objects at work in this coordination. The first of these is the derivative itself. While the derivative maintains a single, general identity in both environments (i.e., actors can agree on its identity, differentiate it from other derivatives), at the level of practice banks and clearinghouses decompose the same complex derivative transaction differently to suit their own local needs and purposes (Millo et al., 2005; Genito, 2019). Financial risk-management techniques are another boundary object, enabling communication and coordination among trading firms, clearinghouses, and regulatory bodies, yet being differentially incorporated into their particular workings. Financial theories operate as 'a "plastic" medium … able to accommodate different practices while allowing awareness about the common elements of the practices to evolve and strengthen the connections among the actors' (Millo and MacKenzie, 2009, p. 651). This sort of relation between infrastructures, devices, and boundary objects can even be seen *within* investment banks. Front-office and back-office divisions may treat a given security as a single, general object in their communication with one another, yet handle it in dissimilar and sometimes incompatible ways in their day-to-day work (Muniesa et al., 2011). These boundary objects, sitting at the interface of different components within an *agencement*, enable distinct groups pursuing divergent concerns to nonetheless collaborate in pursuit of an overarching goal.

Boundary objects thus offer a way of understanding how cohesively aligned market *agencements* can be maintained despite the (possibly conflicting) multi-framings of their various components. Notably, the concept also offers greater flexibility than the pairing of framing and overflowing, the current means by which Callon attempts to understand components' entanglement in different *agencements*. Framing and overflowing are metaphors of containment, struggle, and rigidity: one must ensure that one's own framings are not overflowed, prevent key elements of one's environment from being co-opted into other frames, and force alignment across the multiple components of a market *agencement* (Callon, 1998a). Boundary objects, by contrast, suggest a dynamic of flexible cooperation, where important elements are able not only to exist simultaneously within multiple framings but to be simultaneously *aligned* with multiple framings. Boundary objects thus are not only multi-framed, but can be 'multi-aligned'.

This discussion highlights the likely multitude of boundary objects mediating between local devices and infrastructures. An infrastructure is only an infrastructure when it seamlessly supports the use of more local tools: alignment is a requirement. But, given the physical and cognitive distance between actions in each setting, it is almost unavoidable that common objects and activities will be framed differently (e.g., as they are in investment banks and clearinghouses). In this case, the operation of market infrastructures would hinge on the mass mobilization of boundary objects. Identifying these, how they are used, the extent of their flexibility, and how they contribute to crises or breakdowns could be fruitful areas of future study. In fact, they are already the subject of some concern. Scholars warn that clearinghouses are increasingly becoming too tightly aligned with their clients, with key boundary objects losing some of their flexibility and thus increasing the potential for systemic crisis (Millo et al., 2005; Genito, 2019; Thiemann, 2022).

6 Conclusion

Where does this leave us on the central questions of this chapter? It is clear that the notion of infrastructure is broadly compatible with the Callonian framework on market *agencements*. The concepts share several

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core principles. Additionally, infrastructure does not posit an empirical object that is outside of or in conflict with *agencements*, but rather posits a distinction and boundary in presence – between components that are physically and cognitively present to market actors and those that, while critical to action, are not – within it.

This boundary is useful for helping us to recognize and theorize dynamics that escape notice when our attention is on whole market *agencements* or even when we break them down according to the various framings they organize. First among these dynamics are the asymmetries attending alignment. Callon argues that the requirement to align framings within an *agencement* creates an environment of constant struggle as actors innovate and compete precisely by altering dominant framings. An infrastructural perspective does not dispute this point, but simply notes that this is not an even fight. Changes to the framings accomplished by infrastructures exert a far greater impact, causing 'leveraged misalignment' that disturbs the routines of myriad actors. The implications of this and the 'infrastructural power' it produces for how markets evolve, and their competitive and innovative dynamics, is a topic for further study. Secondly, Callon sees the multi-framed components of market *agencements* as a threat to the strategic goal of bilateral transaction; actors must constantly seek to keep these components aligned within a market framing in the face of unavoidable overflows. An infrastructural approach, drawing on the notion of 'boundary objects', offers a different view, one of flexibility rather than rigidity. Boundary objects, able to toggle between vaguely and precisely structured, accommodate these differently aligned components, permitting global coordination despite local differences. In fact, the notion of boundary objects suggests that Callon's strict binary between alignment and misalignment may be too blunt and that, perhaps, alignment and misalignment co-exist in complex ways that require greater attention. In these ways, infrastructure as a concept and empirically identifiable object enriches Callon's framework on market *agencements* and opens new areas for research.

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