Chapter 1 Unearthing the 'very dirt of private fact': the work of market devices

> Rationalism sticks to logic and the empyrean. Empiricism sticks to the external senses. Pragmatism is willing to take anything, to follow either logic or the senses and to count the humblest and most personal experiences. She will count mystical experiences if they have practical consequences. She will take a God who lives in the very dirt of private fact – if that should seem a likely place to find him. Her only test of probable truth is what works best in the way of leading us, what fits every part of life best and combines with the collectivity of experience's demands, nothing being omitted (James, 2000: 39-40).

William James had religious belief in mind when he wrote this. Not markets, consumption, low finance or anything else in that area. The passage appears near the end of his essay on what pragmatism means and underlines the strong claims he makes for adopting an accommodating attitude toward what does, and what does not, count in the way of evidence. It might not have been what was on James's mind but his idea that making room for the humblest and most personal experiences, where they have practical consequences, is both an equally sound first principle for the study of markets and consumption and one that has not been followed widely. No matter how elegantly logical, no matter how empirically robust the academic modelling of markets and consumption in economics and sociology has been, people's mundane and practical motivations for participation have often eluded formal study. This is an interesting elusion since, in concrete practice, one of the things that distinguishes successful consumer markets is precisely the ability to accommodate the range of humble, personal and practical experiences that bear on participation. This is one of the main purposes to which the devices of markets and marketing have historically been put.

Yet really grappling with how markets devise means of accommodating private, individual experience has not been an overriding concern in either the study of consumption or of markets.

In many of the classic studies of consumption, as if to ward off the fatal charge of banality, the emphasis has been on high conceptual ground. Consumption has figured in the past as the necessary terminus of impeccably conceived political economies of production, as the over-determined outcome of the promotional technologies demanded by the structural logic of the commodity-form, as the debased cultural pacification for an alienated labour force etc. Even when all this theorising ran out of steam and the case for a more meticulous accounting of the content and experience of consumption began to emerge by way of the new seriousness accorded to 'popular culture' and 'everyday life', it did not lead immediately to the humble, personal or practical. Rather the legacy of grand theory continued to haunt investigation in a reformulated, sometimes celebratory, preoccupation with the dreamier, more magical and escapist dimensions of consumption. Thus 'moments' of conspicuous, special and highly visible consumption have been closely scrutinised while the 'ordinary consumption' of everyday 'stuff' has generally not (Gronow and Warde, 2001; Molotch, 2005). The academic terrain is still overrun with dreamworlds, glittering malls, spectacles, flaneurs, luxury, global and niche brands while supermarkets, banks, department, furniture and DIY superstores largely pass unremarked. Exactly what, and precisely how, those of limited means, the overstretched and the poor, consume has largely been left to a few historians, reformers and policy specialists.[i]

This has begun to change. In the last decade or so the material stuff of consumption has emerged from beneath complicated theoretical explanations and even trumped them in a growing array of studies devoted to artefacts, uses, practices and techniques. Across the social sciences and in allied disciplines like management, organisation studies and marketing, the material world, as reformulated within Science and Technology Studies (STS) and Actor-Network Theory (ANT), has taken on a new priority. This is evident in all sorts of ways across all sorts of fields[ii] but my main interest in this chapter is in the emergence of 'market studies' as an interdisciplinary field committed to both disrupting the disciplinary separation of the economic from the sociological, that is sometimes referred to as 'Parson's pact' (Stark, 2000;

2009), and taking the material form and distribution of economic action seriously. This field holds the greatest potential for getting to grips with how private, lived experience is incorporated in markets (and therefore in both consumption and production) because it is here that the practical details, the tools, techniques and arrangements, in short the 'devices', that make up market action (Callon, 1998; Callon, Muniesa and Millo, 2007) have received the closest scrutiny. The result has been a sustained re-evaluation of the relationship between action, knowledge, tools and outcomes in a variety of economic and market settings. This re-evaluation has not challenged the dominant position of economics in public policy but it has opened up a debate about the policy implications of understanding the economic as a process, a matter of design and engineering, and it has reinforced our grasp of what this can mean, particularly in the attention grabbing contexts of high finance (cf Caliskan and Callon, 2009, 2010; Halpern, Lascoumes and Le Gales 2014; Mackenzie, 2011, 2012; Mackenzie, Beunza, Millo and Pardo-Guerra, 2012; McFall and Ossandon, 2014; Parda-Guerra, 2013; Poon, 2007).

These inroads towards a more useful understanding of how finance markets work however haven't really been matched in the context of everyday, consumer or 'low' finance (cf Langley, 2007). While it is clear that this sector too has its 'market devices', their form and content, the character of the work they do, has received far less attention. The effort to elaborate the burden of economic work carried by devices like scorecards, order books, stock tickers and pricing formulae has no equivalent in the analyses of payment record books, credit vouchers or insurance proposal forms. This is resolvable of course by shifting and extending the focus but there is a bigger obstacle to overcome if a market devices approach is to accommodate the role of private, lived experience. Since the idea of 'devices' as a tool for thinking about the laws and operation of markets was proposed in Callon's (1998) field defining collection, usage of the term has veered between the sweepingly general and the minutely specific. A market device is at once anything that intervenes in the construction of markets and the material cause of very particular consequences like, for instance, the introduction of numerical credit scores. Not enough has been said to fill the space between these two extremes, to catalogue or categorise the different types of work that market and marketing devices do or to define the level, extent and limits of their action. Market devices offer a new way of thinking about the very old problem of how markets work, how sellers and buyers encounter each other in ways that enable exchange to take place, not as a one off, but in the markets for consumer finance, over and over again. To achieve this involves more than just intervening – it requires a chain of actions, or more precisely relations, to be established, tended and reproduced.

As a necessary step toward this way of thinking about the 'devices' or 'devising' of markets and consumption, the chapter begins by discussing some of the main currents in the literature. One of these currents has been to place market devices in the context of debates about the proliferation, expansion and intensification of markets and market logics. Devices are scored as historical innovations that intervene directly in these broader market dynamics always resulting in new actions and new consequences. Rather less attention is paid to stability, continuity and repetition, to the way innovations sometimes address problems that have formerly had other solutions. This point is illustrated by the long history of 'quaint devices' (McFall, 2004) that have been employed to bring about repeating market encounters. In a field preoccupied with marketization and market proliferation these arcane, quickly forgotten devices are usually disregarded. Yet they point towards some of the most fundamental market tasks, the design, engineering, and adaptation of the fit between customer and seller experience. These are the same tasks that were performed for more than 150 years in the low finance industries through the quaint device of doorstep agency.

Doorstep agents performed a variety of specific, operational functions but most importantly they supplied a means of channelling the mess of private fact, of personal and humble dispositions into market transactions. As the 'philosophers, guides, and friends'[iii] of their customers, agents were ideally placed to discover, connect, remember and report back as the need and opportunities arose. This led to very particular forms of market transaction and consumer conduct. More generally, doorstep agency also raises questions about the sufficiency of existing accounts of how the 'private fact' of consumer dispositions gets into and configures markets. Even as digital consumer companies develop more responsive techniques of mining and manipulating private consumer data, this problem has not gone away.

While the devices literature might need to get more specific about how this task is accomplished, there is simultaneously a case to be made for thinking more generally about the scope, extent and limits of devices. Questions about how material devices - no matter how elaborately conceived as networked, extending *dispositif* - relate to wider contexts have to be addressed. Government, legislation, political arrangements, the public 'atmospheres' of culture, fashion, mood or sentiment and more, all play roles in shaping the fate of markets and consumption as well as particular market devices. It is not clear that the current formulation, and the priority given to the material, is accommodating enough to these roles, even if, in the end, the only proper answer to the question of how private, political and practical factors intervene in markets is the empirical one – 'it all depends' (du Gay, 2010: 174).

Markets, market devices and the devising of consumption

Markets and the production consumption chain

> Production is … at the same time consumption, and consumption is at the same time production. Each is directly its own counterpart. But at the same time an intermediary movement goes on between the two. Production furthers consumption by creating the material for the latter which otherwise would lack its object. But consumption in its turn furthers production, by providing for the products the individual for whom they are products. The product receives its last finishing touches in consumption. (Marx, 1980/1857-8: 24)

This passage in Marx's outline for his critique of political economy is well known for making it plain that production and consumption are linked in a contingent way. Not many would argue against the theoretical point Marx was making. Economics is founded on formally modelling how these contingent links are resolved through the mechanism of price and across the other social sciences monitoring the consequences of how production and consumption are brought into balance is among the foundational motives of the project and often tackled as more of a theoretical problem more than a practical one. This latter has resulted in a concentration on intermediary functions as engineered solutions that span the gap imagined between production and consumption. Advertising was accorded this kind of intermediary role early on, a position consolidated and expanded by Bourdieu's (1984) brief remarks on the significance of cultural intermediary occupations and the vast scholarship that followed elaborating the work of advertisers, and more recently, branders, retailers, merchandisers, web developers etc. While this has been going on for decades, until much more recently, very little attention had been paid to the less glamorous occupations that intervene in the chain from production to consumption. Stock control, logistics, product development, pricing, financing and such like were dismissed, presumably because, ostensibly, their more instrumental character lacked the immediate theoretical significance that could be accorded to symbolic work.

This only began to change, in a systematic way, after the publication of Michel Callon's edited collection "*The Laws of the Markets*" in 1998. In many ways, *The Laws* was part of ongoing efforts to sociologically reimagine the relationship between economy and society[iv] but it was also a departure for a number of interconnected reasons. One of these was the sustained application of ideas, hallmarked in STS, ANT and anthropology, about the significance of the material world, of tools and techniques, to the study of economies and markets. This gradually began to encroach upon the intellectual sovereignty accorded to questions of meaning, representation and the symbolic, especially within European sociology after the 'cultural turn'. Instead the object of inquiry turned from narrowly defined symbolic intermediary roles that explicitly functioned to stimulate demand or promote consumption, towards all manner of material market making devices. Underpinning this was an effort to move away from the sociological tendency to try to humanise or 'embed' economic agents in the social by concentrating instead on how they were made technically. Economies were not to be understood as the formal, natural or emergent properties of economics but neither were they the mere social constructions outlined in sociology. When the social is regarded in actor-network terms as the consequence of specific collective practices, not as a stable domain with its own particular characteristics, it is not clear that excavating the social context in which economic action is 'embedded' yields much. All that can be reliably of the social, Latour insists (2005; c.f. Callon 2007; Caliskan and Callon, 2009, 2010), is that it refers to networks of association and relations. 'The social' is just too nimble a concept – referring at once to all sorts of actions and relations without saying anything very concrete about their content - to offer much explanation of market action.

Instead of a socialised economic agent, Callon concluded that a calculating '*homoeconomicus* really does exist' Callon (1998: 51). The sociologists' job was to prize open the mysteries of calculation as a cognitive operation too difficult to be the sole preserve of isolated human agents and achievable only through its distribution across a range of actors, techniques and devices. Economics is recast here as itself a central agency in the process of making things calculable rather than the - normally mistaken - knowledge that other social scientists question. Broadly in keeping with the sensibilities articulated in the Foucauldian literature[v] but with the emphasis firmly on material practices rather than broader political rationalities or govern-mentalities, economic knowledge is defined as *performative*, explicitly formatting the process of calculation. This move inspired numerous researchers to test the performative claim empirically by elaborating the role calculative devices play in specific market contexts. Donald MacKenzie's (2006; cf MacKenzie and Millo, 2003) account of the Black-Scholes formula, as the dominant market device in framing derivatives transactions became the prima facie case mobilised to test the argument. Still if it is economics itself that simplifies and 'disembeds' market participants 'to the extent that economics becomes applicable' (Mackenzie and Millo, 2003: 138), it is a very broadly defined economics that is at work. It is not just the formal operation of pricing mechanisms that are involved but all manner of devices and techniques for measuring, charting, brokering, negotiating, ranking, merchandising etc.

This work has been of major significance. In explaining that economies and markets can be analysed as the outcome rather than the foundation of socio-technical material practices the approach has reinvigorated empirical research. There has been a plethora of studies exploring and categorizing economic performativity through investigations into the role of technical instruments, theories, formulae, tools, techniques and protocols as the devices that configure or construct markets[vi]. On the face of it, this work seems ideally placed to offer fresh perspectives on the mechanics of consumption but for a variety of reasons that hasn't quite happened. For one thing, with some notable exceptions[vii], the most concentrated attention has been devoted to investigating performativity and market devices in the context of financial markets. This could be resolved easily enough through further studies of consumer market settings but there are much bigger challenges to be tackled before the concept really starts to shed light on the devising of consumption.

The most significant challenge relates to the matter of definition. If market devices are defined, as in Callon et al. (2007; cf Caliskan and Callon, 2010; Callon and Muniesa, 2005; Callon, Meadel and Rabeharisoa, 2001), as those socio-technical, material and discursive assemblages of humans, formulae, tools, prostheses and so on, that intervene in the construction of markets then they are almost anything and everything connected with market activity. This definition has certain advantages. It allows for the multiple, diverse, unpredictable, generative and overlapping ways that devices might affect markets. The disadvantage however is that this level of generality is not very helpful in practical or analytical terms. This is some distance from the call, made in the governance and public policy literature, for a 'more precise language', one capable of distinguishing clearly between the different roles and levels at which tools, instruments and techniques act (Hood, 2007; Lascoumes and Le Galés 2007). In contrast, the boundaries and relations between one market device and another are left open, as too are questions about the scale and level of their operation[viii]. There may be devices for pricing, merchandising, stock control, record keeping or any function but whether their field of operation is the firm or the market is unspecified. The relationship between market and market*ing* devices, whether marketing devices are just a particular sort of market device, a special case or whether it matters, is also unstated. In all, it is down to the researcher to determine in what way exactly, any particular device intervenes.

With an intellectual heritage in which the distinction between micro and macro level analyses is dispatched as a hierarchical habit of thinking that leaves analysts blind to both the complexity of tiny things and the simplicity of grand structures, this silence on questions of level and scale is certainly consistent and possibly deliberate. Just as MacKenzie (2006) remarks of the difficulties of establishing a causal relationship between the use of a mathematical pricing model and a change in market conditions, the formulation of market devices accepts that market events have multiple causes that cannot be traced to single devices. This does not counter the claim that devices configure markets, it just means that the manner in which they do so is fraught, partial, open to debate and prone to failure (c.f. Callon, 2010; Callon, Lascoumes and Barthe 2009).

That said, it is still worth pushing the idea a bit further in the interests of thinking more clearly about what it means to devise markets, to devise consumption. The first step towards this involves pinning down what markets are and how they relate to production and consumption, supply and demand. As Aspers' (2011) attempt to synthesise a sociological approach to markets notes, definition is both banal and difficult. The solution he comes up with defines markets as social structures for the 'exchange of rights in which offers are evaluated and priced, and compete with one another, which is shorthand for the fact that actors – individuals and firms – compete with one another via offers' (2011: 4). Buyers and sellers face each other across the market to constitute these social structures and stabilise them over time through a record of actual, not just potential transactions.

Leaving aside for now the debate about whether the social structure of the market adds significantly to our understanding or not, this definition appears serviceable enough. With one exception - it doesn't quite reach to cover one of the primary ways that the term 'markets' is used in commercial practice. Commercial organisations, and many other sorts of institutions, often refer to markets as sources of prospects, of possibilities for future business. Markets here are those groups of people that may be susceptible to a common approach, proposition or idea, whether or not they have an existing transaction history with the seller. These 'markets' are only potential markets and that is what is most interesting about them. Prospective, susceptible groups of customers are just as important for markets as customers with a transaction history because market survival depends on continually extending and repeating chains of relations or associations. This may be due to the expansionist tendencies of markets, although, since there will always be some attrition to compensate for, it is not necessarily so. In his classic discussion of the path that led to the technological and mass market establishment of the Kodak camera in the nineteenth century Latour concludes that 'a chain of associations is more real than another if it is longer' (1991: 118)[ix]. Step by step, relation by relation, markets owe their existence and their survival to this extension. This is getting closer to Caliskan and Callon's (2010) definition of markets as arrangements for the conception, production and circulation of goods, and the voluntary transfer of some sorts of property rights.

Thinking about markets as a long, multi-stranded chain of relations has rather different implications than defining them primarily as a space, arena or a forum, of whatever kind, in which buyers and sellers confront one another with offers. Instead of buyers facing sellers, or more broadly production facing consumption, market action is distributed across a whole crowd of actors and intermediaries; suppliers, agents, factotums, allies, publicists, publishers and whathaveyou (c.f. Musselin and Paradise, 2005; McFall, 2014). As Esposito (2012) remarks from a systems perspective, *all* economic transactions, on both producer and consumer sides, are performative. Performativity, 'is the rule and the meaning of economic action, and does not concern only theories trying to interpret it and their practical impact: any behaviour and any idea, any purchase and any investment, are included into a reflexive circuit affecting the reality they to which they refer' (Esposito 2012: 111-112). A whole crowd then has parts to play in making markets move. This distributed cycle of action could have been where Marx was heading in his deliberations on production and consumption in the *Grundrisse*. More likely he meant only to signal the ontological necessity of consumption to prove production. Regardless, the idea that the product receives its finishing touches in consumption can be taken quite literally. What buyer/consumers do *with* products, what seller/producers do to find this out and what they do *to* products in response, is the understated loop that practically defines markets both in reality and in prospect.

Marketisation and Quaint Devices

All market devices contribute in some way to this looping of feedback within long, multi-stranded chains, whether to establish, inform, maintain or improve the links between an enterprise and its market. Market devices intervene in markets and that intervention depends on the information they produce. For all market devices, including those directed primarily at marketing functions, the core task is to provide a mechanism for generating and transferring information from one place to another with the aim of producing particular sorts of action. Market devices are defined by this capacity for action which, to borrow MacKenzie's (2006) metaphor, makes them more 'engine' than 'camera'-like, since they are meant to transform, not simply record, their worlds.

Much has been made of the ways in which such transformative actions have been the companions or causes of the expansion and proliferation of contemporary markets. For Callon, modern market transactions are enabled by an extending array of socio-technical devices which offer new ways of entangling people and objects in an 'economy of qualities' (1998, 2007a; Callon et al. 2001). This is a refined take on a theoretical orthodoxy on which 'everyone seems to agree' (Callon, 2007a: 139): *viz.* that market expansion is the core condition of an historical process styled variously as marketization, market fundamentalism, commoditization, commercialization or consumer society[x]. In accounting for an exchange between devices, practices and knowledge on the one hand, and actual economies on the other, that is performative, or co-productive in character, Callon's version is distinctive. In some particulars, it is also familiar.

Critical accounts of consumption and marketing have, for the longest time, read the pervasiveness of markets as a function of the expansionist tendencies of the commodity form; tendencies that are aided, abetted or dependent upon technological innovations designed to fuel demand or 'produce consumption'. This is the function of the culture industries in the Frankfurt school vision (Adorno, 1991) and it is the particular role accorded to advertising and promotional technologies in countless versions of 'consumer' or 'market' society. Technological innovations are imagined teleologically, as key factors in the evolution of producer-consumer channels such that information is not only conveyed more efficiently, but it is better, more persuasive information that is conveyed. In an influential version of this account, advertising evolves, through changes in content and technological format, from an information business to a persuasion business that has become so successful that commoditised, promotional culture has colonised all of social life[xi]. Advertising, sometimes conceived as promotion and more recently as part of the expanded formulation of branding, is accorded at times an almost magical capacity to drive markets.[xii] Marketing technologies seem to keep getting better at marketing; cleverer, louder, more intrusive, more targeted, more personalised, more reflexive with each new media, each new innovation. A difference appears between 'simple/old' marketing techniques that used information and 'advanced/ new' techniques that employ persuasion. This well-worn information/persuasion dichotomy, as Barnard (1995) complained almost twenty years ago, completely misses the point. *All* information is meant to change something - that is what makes it information and not data.

Market devices perspectives generally accord less privilege to promotional and marketing processes. These processes take their place among a more extensive, and less predictable, range of tools with actions, aims and consequences that are not always easy to track. Market devices 'intervene' in markets, they do not cause them, they are implicated in their 'co-production'. Law and Ruppert's (2013: 229) discussion has devices as 'more or less patterned teleological arrangements' with function and purpose – they do things - though not necessarily, or only, the things they are supposed to. The latent, implicit or unintended functions of devices are for the competent analyst to dig up. Following what devices are getting up to then is a critical, empirical task, not one that can be assumed in advance or read from the label. And yet there is an older sort of teleological pattern in the devices perspective, one that assumes not just purpose but a necessary historical direction that sometimes veers close to a doctrine of final causes. In some discussions, the version given of market action invokes a dynamic of expansion enabled by the changing functions of devices which in turn allows marketization to become the 'dominant modality of economization' (Caliskan and Callon, 2010: 22; c.f. Callon et al. 2001; Callon 2007a). This is rendered in a manner that is fairly sensitive to the diverse forms taken by marketization processes and by markets themselves, which nonetheless share a 'family resemblance' (Caliskan and Callon, 2010: 2). Even so, the emphasis is (almost) always on the proliferation and expansion of goods, and especially services, organisations, institutions and agencies that are caught up in markets and marketizing processes. The direction of traffic and history is (almost) always to more things, more of the stuff of life, of nature (and even interplanetary nature), private experience and public provision succumbing to market logics.

This is perhaps an odd tendency in a literature that is otherwise determined to unpack the specific features of specific markets. Markets have a history, Caliskan and Callon (2010: 24) remark, 'they also have a future that cannot be reduced simply to an extrapolation of the past'. This history is as full of latent, unintended and implicit consequences as it is of purpose and direction. This is something that is easier to see by looking at actual historical, or what I call 'quaint devices', than by observing the history of marketization where the devil disappears alongside the detail. When critical analysis of devices is tied too closely to marketization dynamics there seems to be an almost irresistible evolutionary creep that binds the technological affordances of devices to the encroach of markets. This is just a bit too materially, too technologically, observant. As has been noted before[xiii], in the darker English vernacular, devices are not just material, mechanical contraptions they are also, sometimes simultaneously, tricks, disguises and deceptions. Sometimes these backfire or don't fire at all and sometimes they work far better and in ways other than those originally anticipated. This combination of unruly and instrumental effects is, as I argue throughout this book, what is in play and at work in market devices.

Contra the technological current, there are some deep historical similarities in what it is that all marketing devices are trying to do. All marketing devices convey information in a bid to prompt buyers to act. Considered historically, the variety, invention and persistence of marketing devices, their rapid adoption and appropriation of new material forms, new technologies and new media can be read as a sign of how difficult, how determined, sometimes desperate, a task this is. The advertising vans or machines used in the nineteenth century combined noise, novelty and obstruction in a bid for attention. These machines appeared in all sorts of guises; a glass pillared obelisk design was patented in 1826, while globes, balloons and giant product avatars were also common. Sometimes as big as small houses, they moved slowly and disruptively through cities and towns accompanied by musicians and gaudily dressed exotics (McFall, 2004b). They have a legacy in contemporary mobile advertising; zeppelin-shaped air balloons and motorised signboards are common among the wide range of peripatetic devices adapted to different environments, like the gas delivery vans that announce their presence in the steep narrow streets of Valparaiso in Chile with the unexpectedly musical application of drumsticks to gas cylinders.

Figure 1.1 Electric eye advertising display

(Source: http://adverlab.blogspot.com/2009/05/emerging-media-in-1930s.html)


ELECTRIC EYE REVEALS AD IN MIRROR

Right, a cabinet that apparently contains an ordinary mirror. When the passer-by reaches for a folder, an electric eye, as below, turns on a lamp that lights up an advertisement behind the transparent glass

DESIGNED to be installed in the lobbies of hotels and public buildings, a new advertising device offers a passer-by a chance to inspect his appearance in a mirror, and invites him to take a folder from a pile on a shelf. When he reaches for a folder, he unwittingly interrupts a beam of light that falls upon a photo-electric cell. Brilliant lights automatically flash on behind the mirror, which is now seen to be transparent, and illuminate an advertisement within the cabinet for a predetermined period of time.

Mobile devices are highly persistent in comparison to some of the more experimental promotional devices that have popped up from time to time. These devices offer the kind of solutions Heath Williams might have come up with to the problem of making marketing information irresistible. Pavement painting has been used since at least the early nineteenth century to highlight the presence of sellers but a mechanised version, the pavement stenciller, took this further in the 1930s by painting the street with an advertising line to lead buyers straight to the seller. Gramophone record players were used in the 1930s to ventriloquize life size dummies with the voices of the famous announcing faux endorsements in a bid to woo prospective shoppers as they passed by. Figure 1.1 shows an electric eye device used to trigger the transformation of mirror to advertisement when a passer-by draws a catalogue.[xiv]

These mechanical novelties are part carnival trick but at the same time they are market devices in the sense already defined. They all send out information in an attempt to produce particular forms of action. These actions are only precursors to the action that matters -the purchase. This is quite an order in itself but the goal that matters even more is the repeat purchase. For this, marketing devices need not just to transmit but to receive information and thereby allow constant little adjustments and refinements to be made to what's on offer, where, at what price, on what terms etc. To make markets, marketing requires devices, which, by prompting, announcing, listening, collecting, recording, remembering and transmitting information produce actionable feedback.

The contraption in Figure 1.1 is like a mechanical prototype of contemporary digital billboards that use facial recognition technology to gauge the age range, sex and attention level of passers-by and target appropriate advertisements at them. Such devices exemplify sellers' enduring preoccupation with reaching into, or 'mining', the private thoughts, needs and longings of individuals. While critics routinely deliberate over the intrusive prospect posed by each new technology, marketers themselves have often been a little more circumspect about what innovations add. The disparity between critical academic and practitioner views is particularly marked in the case of advertising – a medium famously doomed by its own practitioners as a waste of money at least half of the time - and persuasively explained as as much a function of producer anxiety as confidence in its results (Lury and Warde, 1997; Schudson, 1984). This anxiety can be traced in marketers' tendencies to hedge and mix strategies as well as in the relentless drive for new and reinvented techniques of 'discovering' and 'qualifying' the consumer (Schwarzkopf, 2008; 2009; Ariztia, 2013). The seldom voiced 'bogey' of marketing is that it knows nothing worth knowing about consumers, that modelling the steps from attention, to interest, to desire, to action reveals little about what finally makes consumers act, that maybe, in short, marketing has no decent mechanisms for connecting to the 'very dirt of private fact'.

For all their attributed contributions to market expansion, marketing devices are still not all that sensitive or responsive to consumers. Market and marketing professionals rely heavily on fuzzy channels of information in which the practices of other producers (White, 1981), their own, sometimes arbitrary, representations of consumers and a preoccupation with the moment of purchase all contribute to a 'black boxing' (Grönroos, 2006; Shove and Araujo, 2010) of consumption and consumers. The chronically inward-looking and self-referential tendencies of the promotional wing of marketing where attention is focused far more intently on the competition than on potential consumers has also been well documented[xv]. This dissociation persists across markets which operate as 'tangible cliques of producers observing each other' as if facing a mirror in which they see only themselves not their targets (White, 1981: 543-4). Worse than this, Esposito (2013) argues, the market's mirror is double-sided and quite unable to convey all the information that goes into purchase - the expectations and observations of consumers, for instance are left out as producers observe only each other on one side, while consumers watch consumers on the other.[xvi]

The double-sided mirror metaphor exaggerates the problem a bit. The bogey might be that marketing knows nothing about consumers but that's just the bogey - in practice, marketing clearly does know things but knows too that there are things it doesn't. These 'known unknowns' are what the devices of marketing attempt to negotiate. Marketing science may admit to the persistence of unknowns but as the debates within the marketing literature demonstrate, it doesn't always take a dismal view of its prospects.[xvii] In what Tadajewski and Saren (2008) characterise as an 'amnesiac' discipline, each new device, each new technique, each new idea seems to promise better ways of knowing the consumer. So in the interwar years, crowd psychology and propaganda theory, after the model of Edward Bernays, were summoned to shore up the call for marketing communications to be recognised as 'a social engineering technique and a science that could be used to find, and match, demand and supply in order to prevent under-consumption' (Schwarzkopf, 2008; 2009). After the war, emphasis shifted in some quarters to using psychological sciences and motivation research to get to know consumers and their desires even better than they knew themselves (Nixon, 2009; Miller and Rose 1997). Since then a long succession of devices have claimed to socio-economically, anthropologically, and more recently psycho-socio-demographically render consumers knowable using everything from government statistics to semiotic analysis to residential neighbourhood profiling in patented methods like ACORN and MOSAIC.

More recently, one device in particular has reframed the ambition to transform marketing's unknowns into engineered consumers. By combining the principles of relationship marketing, the 'transactional data' accumulated through sales records, online searches and/or retailer loyalty schemes and data management software, 'Customer Relationship Management' (CRM), has presented a new solution to the problem of knowing the customer. With CRM, marketing becomes an 'exemplar par excellence of surveillance' that can tackle the problem of feedback through 'systems of data gathering that are used to better discern the needs, desires and trends of consumer behaviour as well as to shape these behaviours by subtle and not so subtle means' (Pridmore and Lyon, 2011: 115). CRM allows immense volumes of transactional sales data to be channelled into integrated systems in an attempt to coordinate business and customer experience and create a securely attached customer base. Users of CRM systems are promised:

> … the ability to, inter alia, identify customers by attribute and behaviour; distinguish between them by profit contribution; facilitate better decisions on product design and promotion; target customers as individuals and as segments; as well as measuring promotional effectiveness and return on investment. CRM packages are thus promoted as fully-fledged Latourian (1987) 'centres of calculation' where, it is claimed, a comprehensive and predictive knowledge of the consuming subject can be assembled out of partial traces (such as transaction data, surveys, questionnaires, loyalty schemes, etc.). (Knox, O'Doherty, Vurdubakis and Westrup 2010: 340)

Both advocates and critics have accepted this 'comprehensive and predictive knowledge' as a mark of the power of customer relationship management devices. For its many critics,[xviii] CRM offers extraordinary powers of surveillance in a covert, sinister marketing device that converts transactional data into digital representations of consumers. CRM, it is argued, may begin with the old imperative to know and retain customers but it becomes a means of appropriating more and more details about the private everyday lives of "glass consumers" (Lace, 2005). Through digitisation, especially in the user-generated Web 2.0 version of the internet, CRM enhanced marketing, intensifies the blurring of production and consumption into 'prosumption' (or 'co-creation') that becomes 'the centre of economic value creation' (Zwick & Pridmore, 2011: 274).

While most critics acknowledge that CRM shares many of the characteristics of other forms of marketing, and acknowledge too that it has its limits, they nevertheless settle upon a pretty high estimation of its potential and accomplishments. 'Glass consumer' is a term intended to showcase the fragility of consumers in conditions of 'absolute informational transparency' (Gibson in Lace, 2005). Such fragility is a concern as CRM tools and techniques open up new connections between producers and consumers but questions remain about just how transparent the private matter of consumers ever really gets. Despite continuous innovation, CRM systems remain vulnerable to 'misappropriation, inversion and breakdown' and dependent on willing, cooperative consumers (c.f. Knox et al. 2010: 341; Beckett, 2012).

A core objective, as one of CRM's highest profile applications Tesco supermarkets' Clubcard loyalty scheme illustrates, is to map product and consumer profiles more closely to one another. Products are given the attributes they represent to customers; 'fresh', 'adventurous', 'time-poor' and so on; these attributes are then scored for each customer based on Clubcard's stored history of purchases to create individualised customer profiles (Beckett, 2012: 8; Knox et al., 2010). Clustered product attributes become proxies for consumer behaviour as 'digital reflections' of consumers start to emerge. These reflections are faint since changing, ageing, inconsistent human beings - it is conceded – cannot (yet?) be accurately rendered in digital code. Even so 'the dream of the digital double' promises an entirely new relationship between vendor and consumer (Knox *et al.*, 2010: 352). CRM devices don't have to feature deep knowledge as long as they render consumers knowable *enough*. A superficial behavioural profile, Pridmore and Lyon (2011) remark, still implicates consumers in its own self-fulfilling prophecies and in that way produces a step-change in the relation between producer and consumer.

CRM devices clearly handle customer relationships differently than other marketing devices. By mobilising transactional data, by coding, managing, arranging and manipulating it, in the service of multiple, distinct marketing strategies, a range of specific, implicit and sometimes unexpected consequences are produced. Amongst these, Beckett (2012) describes the normalising of relatively new shopping customs like gift buying for teachers at the end of the school year, while Felgate, Fearne and Di Falco (2012) note more broadly how the Clubcard scheme fixed a new promotional logic of 'buying on offer' (which persists despite the often dubious economies of two for the price of one offers). No doubt numerous examples of contemporary shopping practices could be traced back to the intervention of CRM systems to co-opt, elaborate and reinforce existing practices, thereby 'framing and enacting consumer agency' (Beckett, 2012: 15). The important question however is whether this is really doing anything structurally transformative to the production/consumption relation.

CRM is the latest contender to succeed advertising as the 'magic system' (Williams, 1980; *c.f.* Hennion, Meadel and Bowker 1989) channelling consumers to producers. Magic, understood as the 'power over things and over others' (Knox *et al.*, 2010: 351) is precisely what the coalescence of information technologies and marketing techniques in CRM seems to promise. But CRM is not magic and like any device, it is set to work in a world that doesn't quietly submit to being finally known and re-ordered. Market devices, in the way of Michel Foucault's 'modes of existence', ought to be assessed according to immanent criteria, according to what is historically possible and without appeal to transcendental teleological values (Deleuze, 1991; Foucault, 1974). CRM, like all devices, is contingent. In the particular context of the last two decades it has set out to solve the new forms taken by a very old market problem. The old problem is the need for a device that generates and transmits information *and* receives feedback. CRM systems promise to tackle this problem differently by de-massifying or 'mass personalising' consumers into individual profiles and using feedback technologies that automate consumption and modify marketing systems. Different sorts of outcome do indeed emerge from CRM but only because they come out of a different field of possibilities to address the particular market problems presented by mass, relatively anonymous, geographically distributed, online exchange. In other contexts, the old problem has found different solutions.

Agents: an organised, localised device of market encounters

Hennion *et al.* (1989: 204) noted that within organisations, 'the big opposition between the product and the market' is dissolved, not by breaking down barriers, as the 'pro-sumption' model suggests, but by multiplying them in order to 'localize and organise' a series of small-scale face-to-face encounters**.** This might *seem* counter-intuitive and yet, barriers in the form of fields, sectors, areas, divisions or departments, render the abstract problem of production and consumption into the more or less manageable, organisational process that, in concrete practice, it always is. Nor is it the case that Hennion *et al.'s* characterisation has been made obsolete by the rise of online markets in which there are no local encounters, no physical co-presence of 'producers' and 'consumers'. Co-presence of 'producers' and 'consumers' does take place in some market situations, but even historically, it is comparatively rare. More usually, intermediaries are organised to divide, specialise and collaborate in the series of encounters that convey products to markets. Some of these encounters, like those between media planners, clients and web designers or between delivery agents and customers, are still face-to-face even as more and more advertising and marketing moves online alongside retailing (cf Mellet and Beuscart, 2013; Aritzia, 2013). The important point is that market encounters are almost never between 'production' and 'consumption' but between a prolific series of specialist participants. This series, not a single magical intermediary or system, is what accomplishes exchange transactions because it is the series that puts consumption *in* production. Desire happens when we;

> … have in front of us not a strange object, but an object that already contains us since we have been incorporated in it by a thousand techniques from the moment of its production;

> and it is to be ourselves but the simple addition of the objects through which we are defined. The product traces out the consumers, the consumers the product: the familiarity of the couple has replaced the otherness of the confrontation between the reality of things and the illusions of desire. (Hennion *et al.* 1989: 208)

This formulation softens the contrast between digital marketing solutions; whether they deploy CRMS, crowdsourcing or social media, and traditional marketing. It is banal, and important anyway, to note that the core task of CRM systems is not that different from that faced by the archetypal grocer in listening, remembering, reacting and responding to what their customers say and do in face-to-face interactions. Face-to-face encounters still take place throughout the lifecycle of all products. In some market situations, they are the neglected devices at the very centre of the precise, contractual moment of exchange. Sales force interactions are the basis of the charismatic, party planning, doorstep and pyramid selling organisations Nicole Biggart (1989) described; in their continuing role in the sale of mortgages, pensions and life insurance they remain fundamental to much of the contemporary financial service industries (Vargha, 2011) and they are the defining feature of the mass market, doorstep finance collecting firms described throughout this book.

Both the insurance and credit sectors of the doorstep finance market were built around a system of agents who, acting as canvassers, collectors or more often both, conveyed the product to its customers. In industrial life assurance, the oldest and by far the largest sector, the size, longevity and persistency of the market simply could not have been accomplished without the face-to-face work of agents. Life assurance had been around in Britain for almost two hundred years before in its 'industrial' version - misleadingly named after the 'industrious' classes it targeted - it achieved mass-market penetration in the last quarter of the nineteenth century. By 1911, an estimated 42 million policies were held by the industrial offices; by the 1940s, the total number was well over 60 million.[xix] These figures were so high because individuals purchased multiple policies on other lives within their extended families. Policies were held on husbands, wives, children, grandparents, aunts and uncles and often issued by the same company in patterns of habitual loyalty that were sometimes carried across generations. The role of agents in this stretches far beyond that of personal selling in the promotional mix of orthodox marketing.

Some of the time, some offices employed specialist sales canvassers and a reserve of routine, usually part-time, collectors, but the majority of staff were employed as agents performing both the roles of collection and sales. Industrial assurance was organised around the mechanism of weekly, door-to-door collection of small premiums on policies that initially would have paid out only enough for a modest funeral.[xx] By collecting premiums, agents became the source of discipline necessary to ensure cash-strapped customers kept paying their premiums and kept their policies live. The collection system meant agents were the core device in distribution and promotion but their role went deeper still. Through weekly collections, agents, quite literally, got into households. They acquired, as elaborated in the chapters that follow, a foothold and a standing that helped the industry to both defend the always controversially high price of industrial versions of life assurance and exercise the electoral clout that enabled it to outmanoeuvre a series of parliamentary reforms. As the offices caught on to the significance of agents, they were ever more carefully organised and cultivated as ideal representatives, an inoffensive fit in any home, and the industry's central motif, repeatedly activated through advertising, sales promotion, merchandising etc.

In this way, agents were not just bearers of the product but *part of it.* Agents were devices with a field of operations that explicitly spanned consumption and production; they were in fact devisers – they did not just take the product to the market, they were expected to build their market, to coax and discipline it, even to become themselves part of what the market was trading in. To achieve all this agents had to act as a two-way system, collecting and selling but also always gathering feedback and adjusting their performance, and within certain limits even their product, accordingly. This was not something that they could have been managed on their own. Although much of their work was conducted 'outdoors', 'in the field' and without direct supervision, agents were always the local bearers of a vast, bureaucratic organisation, division and specialisation. They carried with them the work of actuaries, medical officers, statisticians, data processors, divisional superintendents, publicity experts, clerks and many more. Collectively this crowd of specialists configured and reconfigured products in line with the aggregated feedback that agents had gathered in an attempt to ensure that the products incorporated customer (and seller) experience.

Agents in the doorstep credit sector played a similar but slightly different role. Doorstep credit was a much smaller, less bureaucratised and chronologically slightly later, industry to develop. Although there were earlier precedents in the form of clothing clubs, the sector proper dates to 1880 when the *Provident Clothing and Supply Company* was formed in an explicit attempt to adapt the structure of industrial assurance for the purposes of credit provision. As a result, the role of agents parallels that in industrial assurance fairly closely. Credit agents also sold products in the form of clothing checks or other tokens and then collected weekly repayments door to door. They too were encouraged to gather information from customers and relay it back to branch offices allowing modifications of the amount and terms on which credit was issued. This implicated agents in both sectors in what Zelizer (2005) calls the 'relational work' of combining intimate, personal ties with economic transaction but for credit agents the work had heightened significance in line with the raised stakes surrounding credit refusal, repayment and debt collection (*c.f.* Deville, 2013). Credit agents thus had to perform an even more delicate balancing of friendliness, commerce, assessment, discipline and pressure than insurance agents. As a smaller sector populated by often much smaller, and with the exception of Provident, local companies, these agents also did without much of the specialist organisation, distribution and support typical of the largest insurance companies. Even so, agents were participants in the highly organised system that credit products travelled along, from company to branch to agent to household to retailer and back again.

The point is that market devices are at work in all sorts of bounded, limited applications and always tackle particular parts of the problem of incorporating consumers and consumption into the product and its production. Despite all the digitally enhanced potency of new and emergent forms of marketing the world has not dissolved into pro-sumption, the problem of moving goods remains and is still tackled organisationally and 'artisanally' through departments, specialisms, equipment, skills and functions. Moreover, the multitude of tiny assessments, adjustments, corrections, recollections, reflections and reports that agents carried out during face-to-face sales and company interactions are not possible to replicate digitally. Digital systems like CRM, quaint devices like the electric eye and human devices like sales agents, all address the challenge of 'knowing' the consumer and unearthing those bits of private fact, the deeper set dispositions that 'make' products and markets in different and more or less successful ways. The role this human matter plays in the form products finally take is not easy to identify or describe, and, as I'll suggest next, has thus far been only very thinly sketched within the concept of market devices.

The Scandal of Humble Dispositions

For all the long historical succession of devices, and for all the celebrated or maligned advances in marketing, there is still little to be said with any certainty about how people make market choices. Market encounters are a challenge to practitioners 'in the wild' and to academic observers alike because individual choices, as Louis Menand puts it, 'seem to arise, in the end, out of the mysteries of personality which are a scandal to theory' (1997: xxxiv). While the pragmatist approach Menand was outlining has no final answers to the question of where choices come from either, it does at least open up a way of allowing a space for the confounding role private fact plays in market action.

In their introduction to *Market Devices* Muniesa, Millo and Callon (2007) gave an explicit account of their approach to the part played by human dispositions in market action. The notion of 'device', they explained, offers a means of bringing objects inside sociological analysis by calling attention to the various ways; soft, gentle, hard or violent, that they *act*. In articulating actions, devices have agency but despite its mechanistic connotations, 'devices', implies no division between machine and human. Rather, drawing on the philosophical proposition of 'agencement', Muniesa *et al.* advocate a mode of analysis in which the person is not positioned as external or other to, but part of and enacted through, a device (*c.f.* Deleuze and Guattari 1988). Device thereby assumes a hybrid character that is more readily conveyed by 'agencement' since, at least in the original French, the companion term combines a sense of arrangement *plus* action. These arrangements or assemblages of humans, prostheses, tools, equipment, formulae, algorithms, etc. make things happen as a consequence of the way elements are connected (cf Callon 2007a; 2005). Agencement itself draws from Foucault's (1977) sense of devices as apparatus, 'dispositif', which contain human dispositions within their architecture. A dispositif, Deleuze explains:

> … is a tangle, a multilinear ensemble. It is composed of lines, each having a different nature. And the lines in the apparatus do not outline or surround systems which are each homogenous in their own right, object, subject, language and so on, but follow directions, trace balances which are always off balance now drawing together and then distancing themselves from one another. (1991: 159)

This tangled mass of broken, forked, drifting lines connecting people, objects and language, gives a sense of the distribution of ways of being, of modes of existence, across and between sites. Shifting, dynamic connections have productive force because it is in the connections between people, objects and language that forms of action acquire their shape or identity. This is the same sort of relational architecture that agencement describes. In Phillips' (2006: 108) discussion, agencement directs attention to the connections between a given state of affairs and the statements made about it but 'designates the priority of neither'. It is the connections between states of affairs and statements that matter because the connections produce something that exceeds them, and of which, in a transformed state, they now form part. This is important because it contains the key to how the human dispositions that bear on market action, the forms of ranking, valuation, calculation, judgement, qualification etc., arise[xxi]. By privileging the consequences of dynamic articulation, agencement targets not the assemblages *per se* but the forms of action they produce. Market devices, understood as agencements, thus stake their claim to tracing the 'evolving intricacies of agency' (Muniesa *et al.,* 2007: 3).

Devices then, as the compound 'agencements' of economic action, are always objects plus human dispositions. This elaboration of devices has brought market objects, tools and practices into sharper focus, but so far this has been accomplished with only a schematic account of what, and how, private matter is incorporated. The argument that human agency arises in conjunction with material arrangements, not prior to them or independent from them is clear conceptually. Even so there is something unsatisfying about reading dispositions only through devices, especially when all the empirical heft has been put into describing the material equipment, tools and formulae and not the practices, training, cultivations, skills, capacities, bodies, beliefs and emotions that animate them. That the attributes, skills and knowledge required of the insured, of doorstep borrowers or of online shoppers, are produced through interactions with assemblies of tools, technologies and information is fine as far as it goes. Surely though, there is more to be said than this about how precisely, private fact is incorporated in these assemblies.

Deleuze (1991) speculates that variations of the type I am driving at here, in the processes of subjectification, the histories of private life, would have occupied Foucault further had he lived. The production of human dispositions, as Foucault observed, regularly elude the forms of knowledge and power of one dispositif, only to be reinserted in another, resulting in all sorts of muddles, by-products and excesses. Dispositif are made up of all sorts of different lines: lines of visibility, of force, of enunciation, of subjectification, etc. This vast mixture made variations and new combinations inevitable and called into question the very idea of universals, or the possibility of stable material objects or stable human subjects.

> The universal, in fact, explains nothing it is the universal which needs to be explained. The One, the All, the True, the object, the subject are not universals but singular processes – of unification, totalisation, verification, objectification, subjectification – present in the given apparatus. Also each apparatus is a multiplicity in which operate processes of this nature still in formation, distinct from those operating in another (Deleuze 1991: 162).

This commitment to the singularity and variation of processes reveals a pragmatist sensibility that is also pronounced in Foucault's approach to reason. Foucault's, largely unfulfilled, interest in the historical nature of reason and in forms of reasonableness, is underscored by his rejection of the idea of essential 'Reason par excellence'. In stating that there is 'no sense in the propositions according to which reason is a long narrative which has now come to an end', Foucault (in Deleuze, 1991: 163) addressed a debate that remains of central importance in the context of financial calculation and one that had preoccupied early American pragmatists as it had a long line of others.[xxii] The relationship between reason, information and choice is of course contested in all sorts of fields, as the emergence and subsequent popularisation of behavioural economics in Thaler and Sunstein's (2008) *Nudge: improving decisions and health, wealth and happiness,* testifies. This debate has its own long history in the context of 'low' consumer finance where 'bad', apparently disadvantageous, choices of financial product are cast in relation to personal, or sometimes social, deficits in rationality or information. In contrast, pragmatist accounts like those advanced by Charles Sanders Peirce, William James and John Dewey defend the need to assess human conduct, not by reference to universal, transcendental values like reason or probabilistic calculation, but in terms of its relations, contexts and consequences.

As Peirce has it, the meaning of any proposition is not to be determined by reference to universal reason but is 'that form in which the proposition becomes applicable to human conduct, not in these or those special circumstances nor when one entertains this or that special design, but that form which is most applicable to self control under every situation and to every purpose' (Peirce, 1982/1905: 113). This places the rational meaning of all propositions in the future since the only conduct subject to self-control is future conduct. For a proposition to become applicable to human conduct in every relevant situation, that is, for it to be meaningful, the proposition has to be 'simply the general description of all experimental phenomena which the assertion of the proposition virtually predicts' (Peirce, 1982/1905: 113). An experimental phenomenon is the fact asserted by the proposition that a certain kind of action produces a certain kind of result. Confidence in this relationship between action and consequence is at the root of all purposeful action. Truth and meaning then, cannot be derived from rational, logical deliberation but depend on the future, collective determination of consequences. As John Dewey summarises;

> A theory corresponds to the facts when it leads to the facts which are its consequences, by the intermediary of experience. And from this consideration the pragmatic generalization is drawn that all knowledge is prospective in its results, except in the case where notions and theories after having first been prospective in their application, have already been tried out and verified. … however, even such verifications or truths could not be absolute … they are always subject to being corrected by unforeseen future consequences or by observed facts which had been disregarded. (Dewey, in Thayer, 1982/1931: 32)

Peirce's pragmatism was directed to ascertaining the 'meanings of hard words and difficult concepts' (1982/1905a: 56), to provide some means of testing, albeit provisionally, the truth of intellectual propositions. This did not go quite far enough for William James who sought to stretch pragmatism beyond the investigation of scientific, intellectual concepts to understand how thinking and individual belief operated in ordinary practice. 'The true', he remarked, 'is the name of whatever proves itself to be good in the way of belief, and good, too, for definite, assignable reasons' (James, 2000/1907: 38). What James was driving at, was the sheer, generative force of those ideas that are found useful and meaningful in everyday living; this force operated irrespective of whether the ideas themselves would pass either formal rationalist or empirical standards of truth. This is precisely what he meant by the 'very dirt of private fact'; truth is whatever works best, whatever fits best, with the collective demands of experience. In this, James was not trying to bar rational or empirical evidence but to allow *any* evidence that could be shown to have practical consequences. Pragmatism for James is empiricism pushed to its legitimate conclusions to look away from 'first things, principles, 'categories,' supposed necessities; … towards last things, fruits, consequences, facts' (2000/1907: 29).

There is something potentially very significant in James's attitude to the matter of private belief. By focusing attention only on the consequences of belief, and not its 'correctness', he offers the grounds for an explanation of how calculation is accomplished that can more fully accommodate the shortfalls and deficits of information and reasoning in consumers who nevertheless complete market transactions. This explanation points back to the necessity, for products to even be products, that they somehow incorporate the beliefs, sentiments and desires of those who will consume them. This incorporation of human dispositions is among the core, but so far under-described, tasks that market devices undertake.

A better sense of how this might work can be gleaned from returning to the particular case of industrial assurance. Pragmatism, cast in Jamesian style, would attend, not just to the technical or material characteristics of the market, but also to the various collective and individual beliefs that sustained it. Industrial assurance is a good test case for this because it was not only hugely popular it was also highly contested - most notoriously on grounds of price and value. Its enduring popularity, as mentioned above, was closely related to the mechanism of weekly collection. Where 'ordinary' life policies were built, and priced, around a model of remitted annual or quarterly premiums, industrial premiums were collected. Doorstep collection is, of course, a significantly more expensive business model to administer and administrative expense ratios in the first quarter of the twentieth century were as high as 50%, compared to around 15% in ordinary assurance and around 7% in compulsory social insurance schemes in the same period (Wilson and Levy, 1937). Effectively, this meant that the poor customers of industrial assurance paid far more for their cover than 'ordinary' customers. That the poor would get a better return by taking their pennies to a savings bank or post office was never in doubt and although expense was not the only objection raised against the business, it was probably the strongest and certainly the most enduring. Between the 1860s and the 1950s and even beyond, industrial assurance was repeatedly cast as preying on the fecklessness, ignorance and irrationality of the poor.

Now it may be 'true' that for a well-resourced person, industrial assurance is an irrational purchase. For a hard pressed, cash and time poor person for whom collection presents itself as the only practicable route to any kind of provision it is not quite so 'true'. The debate about the value of the product is classically at cross-purposes. It cannot be settled by logic, reason or objective evidence since these are not final arbiters but only aspirations that can be summoned on every side of any argument. The prestige of reason, as James declares, often justifies belief, but reason is far flimsier and truth far more provisional than rationalists and logicians admit.

> there is this, - there is that; there is indeed nothing which someone has not thought absolutely true, while his neighbour deemed it absolutely false; and not an absolutist among them seems ever to have considered that the trouble may all the time be essential, and that the intellect, even with truth directly in its grasp, may have no infallible signal for knowing whether it be truth or no.' (James, 2000/1896: 208)

What is clear is that the 'truth' about the product, its value or rationality, is situated. Neither the price nor the cacophony of political voices raised against industrial assurance persuaded policyholders to exit the market (c.f. Hirschman, 1970) quite simply because for vast numbers of policyholders it continued to offer the best available 'fit' with their experience. Policies purchased initially to provide a means of paying for funeral expenses were purchased in response to what, in an era of high mortality, was the very common social and private problem raised by sudden death. As public health and mortality rates improved, policies were still purchased in vast numbers but for a widening range of purposes, including for coming of age, wedding or anniversary celebrations. Among the reasons why industrial policies continued to 'fit' with this changing experience was that in collecting agents an adaptive mechanism, a device, had been engineered that helped incorporate customer experience within the product. Agents entered households, they observed, talked, listened and responded to customers' habits, ideas and beliefs and then fed this aggregated experience straight back to companies. Formal information in the way of premiums paid and missed, death and illness was routinely fed back this way alongside the more informal, impressionistic information that agents were trained to gather and report. In this way, what James calls 'private fact' was channelled straight back into the design of industrial policies and the agents who bore them.

James's pragmatism admits private fact as evidence as long as it can be shown to have practical consequences. In being 'willing to take anything' James was drawing attention to the limits of reason and calculation (2000/1907: 39). This argument does not necessarily contradict Callon's (1998) insistence that however more soulful and irrational human economic agents are than economists' models, they *still* calculate. Calculation in Callon's formulation is situated in a device (or agencement) that includes, but is not restricted to, any individual human being. So the agent and the cornucopia of insurance materials, premium books, policies, proposal forms etc., might all be part of what it takes to 'perform' calculation. To the extent that the agent provides a medium of channelling private fact back into the presentation of the product then this too may claim a place in Callon's model of calculation. This model accommodates human weaknesses and cognitive limitations by distributing calculative agency but it still ends up sitting very close to economic models of rationality. Even the softer, less mechanistic definition presented in Callon and Muniesa (2005: 1231) which describes how calculation 'starts by establishing distinctions between things or states of the world, and by imagining and estimating courses of action associated with those things or with those states as well as their consequences' specifies a three stage process of detachment, manipulation, result. Judgement here becomes part of calculation in a characteristic softening of distinctions and boundaries that has not proved universally palatable. Such enlarged definitions of calculation and of economics, it has been objected, flirt with the substantive collapse of everything into everything (Karpik, 2009; Mirowski and Nik-Khah, 2007).

It is surely a risk that an explanation that can so comprehensively accommodate everything may end up by not explaining very much. This is precisely the problem here. It is clear that devices are meant to include human dispositions by equipping, formatting or 'agencing' them.[xxiii] Yet very little attention has been spared on examining precisely how the habits, beliefs, attitudes, ideas, practices, skills and competences, the whole shooting match of private fact, are practically incorporated within devices. The storing and response to past purchasing and browsing behaviour in CRM and the relational work of sales agents are examples of the sort of devices that do carry out some of this work and they bear close investigation. It seems likely though that even when more of this sort of investigation has been completed and when more robust descriptions of the routines and formulae for feeding private fact into product and market design are available, something will still be missing. That is to say there is an irreducible element of mystery, excess, that cannot be swept into even the most elaborate calculative collective device involved in the mass purchase of consumer products. What it is that makes something 'the thing' to purchase for so many for a time until it's quite suddenly not, is not wholly explainable in terms of the devices of markets and consumption.

Atmospheres, sentiment and politics

> There are no independent variables in this henhouse. (Molotch, 2005: 88)

With a sensibility that is all William James, Harvey Molotch insists that art is always with economy, as form is always with function. The artistic and the sensual create the desire that is in, but is not all, of markets. The trouble is that the ways that desire, that inaccessible reserve of private fact, get incorporated in markets is difficult to trace and routinely under-rated. What

James saw as the conceits of rationalism are organized into academic disciplines that help maintain instrumental rationality as the best, most consistent explanation of human behaviour. Economists come up with intricate explanations of why even the most idiosyncratic practices are in fact rational choices and even attempts in other disciplines to situate rationality stay within the same structure of explanation. Calculation may be distributed and equipped, it may be socially constructed or socially softened by community or weak network ties, but it remains a rationality.

And so it should. That there is something unaccountable, confounding or mysterious in market action does not mean that there is no reason, no process, no system to be described. James' plea for the admission of private fact was not an abandonment of the pursuit of reasoned or observed knowledge. It was a plea for humility, an acceptance that such knowledge will always be partial, socially negotiated and subject to change when better evidence comes along. The attempt to uncover the role of devices is an important advance in explaining how markets and market practices like calculation come to take the form that they do. This can put flesh on abstract models and demystify the processes and physical infrastructures that, as if by magic, place the objects you might want just where your eye will find them, whether on a web browser or in a large store. The challenge is that this pipework, this infrastructure of tools and techniques, is at work, not in isolation like a machine in a controlled laboratory environment, but in an unstable and unpredictable atmosphere. Within this atmosphere, this henhouse, relevant and dependent variables include private fact, sentiment, arts, fashion, the climate, public conversation, politics and the multiple discourses or rationalities that make up knowledge (acai berries are good for you, payday loans are not) just for starters. It is too much, far too much, to expect the description of a device, no matter how elaborated, extended or distributed to shed light on all of this – even if it's conceptually meant to.

Two risks arise from approaching markets through their devices. One is that in trying to incorporate all of this, as Callon (2007; c.f. Caliskan and Callon, 2010) seems to in defining agencements to include 'statements and their worlds' much as operating instructions are part of machines, is that everything tautologically collapses into everything else as 'nothing is left outside'. This ends with everything in the world being part of what makes the world as it is[xxiv]. Unsurprisingly, few have followed this injunction very far empirically. Most have focused on offering a closer account of how a given market device, whether a focus group, financial chart or scorecard, can be seen to configure a market. This scholarship is important. The best examples, like Martha Poon's (2007) history of the scorecard as a device for consumer credit, trace the connections between a given device and the broader dispersion, and socio-political implications, of certain forms of calculation. Less adeptly handled and less well chosen empirical sites court the second risk, of overstating the priority of mundane material arrangements and understating the significance of their relations and inter-relations with the ideas, rationalities and sentiments that inspire them. As Mennicken and Miller (2014: xx) point out, for Foucault, attention had to be directed not just 'to the devices that instrumentalise the real' but to 'their interdependence with the multiple rationalities and codes that seek to prescribe how the real is to be programmed'. Objects are interesting, in this tradition, only because they are the correlate of historically specific sets of practices and this ought to place the relations that link actors, instruments and ideas at the centre of analysis.

It is not that a devices approach is meant to focus only on the material, to exclude practices or to ignore broader relations with ideas, rationalities or atmospheres. Indeed the reworking of dispositif in the form of agencement, defined as arrangement *plus* action where it's the connections between elements that matter most, is explicitly designed to accommodate all of that. The problem is that dense description of 'all of that' is methodologically indigestible so a quiet reduction takes place in which devices, however vast in conception, in description become the tools and techniques associated with particular market actions. The goal to follow the pathway taken by the device remains but it is the account of its material, bounded and stable elements that often predominates. This emphasis on the material can even be read as a corrective to the failure in Foucauldian studies of rationalities to offer much in the way of material history at all. Devices in all their mechanical, technical complexity thus come into clearer view and their confounding relations with forms of reason, sentiment, private fact and political programmes fade into the background. Devices after all are tricky things.

There isn't a solution to this. No study can cover everything that bears, or might bear, on market action satisfactorily. The approach here is to acknowledge that while techniques of socio-technical description can be extended to cover the devices and 'devisings' that allow private fact to be channelled and incorporated into products, there are limits to what can be accounted for. Markets and the devices that help make them are relational properties that emerge in the connections between buyers, sellers, the crowds of other interested parties and the host of political, economic, social and technological elements that make up public and private moods. These elements and the connections between them are prolific and always changing. This leaves something cunning, baffling and powerful that just dodges description in the way that markets move.

It is a gesture to the importance of this constant motion and the practices and processes that comprise it that this book focuses more on devising than devices. The low finance agents who feature throughout were involved in the devising of markets and of consumption practices, with all the mechanical and human contrivance that the term connotes. Agents were a channel, a feedback device between customers and the offices that designed and provided the products. They proved an extraordinarily effective mechanism for maintaining relations between customers and offices in such a way that customers were incorporated within products. As adept at devising as they were, neither agents nor all the other marketing devices at the disposal of the offices, could offer permanent maintenance.

Markets for particular sorts of products and services emerge in particular sorts of contexts. These contexts are perpetually in flux so devising work is always targeting the future in an attempt to work out what can be devised to inform the next product, the next production. This is not exactly guesswork but it is predictive and uncertain. Agents helped inform offices about what customers were doing at a given point in time. Ultimately this relationship to how existing customers lived could not compensate for a product whose design no longer fitted into how prospective customers wanted to live. This fracture in the lines connecting products to prospective markets can occur for any number of reasons or for no discernable reason at all. There is something in the political or general sentiment of a given time that makes the atmosphere in which certain sorts of products and markets can flourish. That something in the public mood, part politics, part fashion, varies dependently with instrumental need and technological affordance to devise what people consume. Not everything that goes into that mix deserves explanation. Even if that were possible it would be by way of what Dewey (1977/1915: 571) called a 'complex catalogue', complete but meaningless. What mattered in accounting for the past, according to Dewey, was not the completeness or exhaustiveness of the description but its relevance to determining what is to be done in the future. That is an equally good standard for deciding what it is about the historical devising of markets and consumption, that is worth describing. In the detail of past markets and the failures of past regulations there are clues to the design of future regulation.

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[i] Though even here, despite increasing interest in the role of things in domestic interiors, (e.g. Strange, 2013; Doolittle, 2011) the material history of the human experience of poverty still barely exists (c.f. Pemble, 2012).

[ii] For materially focused studies of consumption and marketing see for example Slater (1997); Jackson (2000); Gronow & Warde (2001); Cochoy (2002, 2008a, 2008b); (Gregson (2003); McFall (2004); Shove (2003, 2007); Warde (2005); Shove, Watson, Hand & Ingram (2007), Grandclement (2009), Shove & Araujo (2010); Araujo, Finch & Kjellberg (2010). Not all of this attention is attributable to STS/ANT. Anthropological studies in particular were taking materiality seriously well before the intellectual ascendance of STS/ANT, notably Appadurai (1986); Thomas (1991) Miller (1995). Even where the STS/ANT project has been taken up it is among a number of causes.

[iii] This phrase was used in the run-up to the 1911 National Insurance Act to mark the significance of the industry, and especially the agents' lobby. See also Chapter 2.

[iv] There were substantial literatures on the government of economic life (eg Miller and Rose (1990; 1997); Burchell, G., Gordon, C. & Miller, P. (eds) (1991); Donzelot (1988)) and cultural economy (eg du Gay (1996; 1997) and Nixon (1996)) by the mid 1990s that were partly a response to this.

[v] See references to note 3

[vi] See the contributors to Callon et al. [eds.] (2007); Mackenzie, Millo & Sui [eds] (2007) Pinch and Swedberg [eds.] (2008)

[vii] Cochoy (2007; 2008a, 2008b, 2009), Grandclement (2009), Dubuisson-Quellier, (2010) and Araujo, Finch & Kjellberg (2010) all offer important illustrations of how market devices perspectives can be applied in consumer market settings.

[viii] Law and Ruppert (2013) also discuss the implications of questions about size, extent and definition for the concept of socio-technical devices in general.

[ix] I am grateful to Zsuzsanna Vargha for flagging the potential of Latour's essay for rethinking the separation of production and consumption

[x] See Keat, Whitely & Abercrombie (1994); Ray & Sayer (1999); Slater (2001) for accounts of marketization; Somers & Block (2005) on market fundamentalism; Williams (2004) offers a challenge to the 'myth of marketization'.
[xi] See McLuhan (1951); Ewen (1976); Wernick (1991); Goldman & Papson (1996) Leiss, Kline, Jhally & Botterill (2005) for a historical sample of this sort of position and McFall (2004) for a more extended discussion of the problems with it.
[xii] Wernick (1991) on promotional culture and Lury (2004) and Moor (2007) on brands offer some of the most persuasive arguments for the historically transformative action of marketing processes.
[xiii] See Erturk, Froud, Johal, Leaver and Williams (2013: 336-337) and McFall (2004: 1-6) for examples
[xiv] All these devices are featured in http://adverlab.blogspot.com/2009/05/emerging-media-in-1930s.html
[xv] For examples see Nixon, 2003; Malefyt and Moeran, 2003; Dickenson, 2009; McLeod, O'Donohoe, & Townley, 2009.
[xvi] This might make some kind of sense out of the prolonged spat between Apple and Samsung over who is imitating who but, as Chapter 4 elaborates, it also fits with the imitative structure of market behaviour on both producer and consumer sides.
[xvii] See Baker and Saren (2010); Araujo, Finch & Kjellberg (2010); Tadajewski & Saren (2008) for more on the problem of defining the knowledge, discipline, objects and theory which constitute marketing.
[xviii] See for instance those collected in Zwick & Pridmore (2011); Pridmore and Lyon (2011); Mishra and Routray, (2011) and Lace (2005); Beckett (2012) offers a thoughtful review
[xix] The term 'industrial offices' refers to all the various organisations that transacted industrial assurance, most of which were companies but some were friendly societies and some were a hybrid of the two. See Chapters 2, 3 and 5 for more on the composition, structure and size of the industry.
[xx] Hence the use of terms like 'collecting society', funeral or death assurance and the persistence of older terms like 'burial clubs' to refer the industry.
[xxi] See Kjellberg and Mallard (2013); Helgesson and Mallard (2013); Muniesa (2012); Moor and Lury (2011); Karpik (2010); Caliskan and Callon (2009; 2010) Cochoy (2008a) and Callon and Muniesa (2005) for more on these varieties of market action.
[xxii] Foucault was responding to Nietzsche and Spinoza's formulations of reason. There is also an extensive literature on the emergence of specific forms of probabilistic reasoning that are especially germane in the study of financial calculation. See for example Gigerenzer et al. (1989); Hacking (1990); Porter (1996).
[xxiii] Cochoy and Trompette (2013) propose the term 'agencing'. It supplies a means of emphasizing the active, dynamic processes that make up any agencement without the machine-like connotations. I have used the term 'devising' in this book for similar reasons.
[xxiv] An position that Mirowski and Nik-Khah (2007: xxx) find both 'trivially true and utterly uninteresting'.