

# The Business of Expectations: How Promissory Organisations Shape Technology & Innovation

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## Abstract

The *business of or market for* technological expectations has yet to be thoroughly explored by scholars interested in the role of expectations and visions in the emergence of technological innovations. However, intermediaries specialising in the production, commodification and selling of future-oriented knowledge, have emerged to exert new kinds of influence on the shaping of technology and innovation. We focus on the work of those specialist forms of consultants known as ‘industry analysts’ and consider them as *promissory organisations* to capture the fact they are successful in mobilising and indeed increasingly organising expectations within procurement and innovation markets. Our aim is to highlight the important role these actors play in shaping technologies and in so doing how they typically exhibit complex and highly *uneven* forms of influence. The paper is organised around a central question: Why are certain kinds of promissory behaviour more influential than others? To answer this, we draw from the literature on technology expectations on discussions of the ‘constitutive’ nature of promises, which provides a useful but arguably partial analytical approach for articulating the dynamics and differences surrounding product based expectations. We thus supplement our understanding with recent developments in Economic Sociology and the Sociology of Finance where an ambitious theoretical framework is unfolding in relation to the ‘performativity of economic theory’. By contrasting different forms of promissory work conducted by industry analysts and varying forms of accountability to which this work is subject, we begin to map out a typology that characterises promissory behaviour according to differences in kind and effect.

## Introduction

Scholars have demonstrated how technological expectations are influential in the development of new artefacts and knowledge, often through tracing, in the emergence of specific artefacts and innovation fields, the work of ‘promise builders’ (typically innovation players) whose hopes and efforts are invested in the success of new technologies (van Lente 1993; Swanson & Ramiller 1997; van Lente & Rip 1998; Brown *et al.*, 2000; Hedgeco & Martin 2003; Miller & O’Leary 2007). However, in recent years, we have seen the growth of independent third party organisations dedicating themselves to the production, distribution and selling of future-oriented knowledge and tools (Firth & Swanson 2005; Burks 2006). Intermediaries such as ‘industry analysts’ draw up signposts about the state of the industry and its future developments as well as set the criteria by which new innovations may be assessed and judged. These assessments, often critically-oriented towards vendors and their offerings, turn out to fulfil a crucial role in shaping the development of technological fields and constituting markets for constantly changing supplier offerings. Scholars have not yet considered how technological fields may be shaped through interventions by these and similar types of complex phenomena. What influence does the emergence of intermediaries, which specialise in the *business of technological expectations*, have on the development of new products?

Our general aim is to throw light on the important function played by these specialist forms of consultants in mobilising promise and expectation amongst supplier and users communities alike. We draw on research conducted over several years of study to describe the activities of the biggest industry analyst player in the information technology (IT) area: the Gartner Group. We analyse these intermediaries as ‘promissory organisations’ to capture both the predictive element in their work (how they *mobilise* promises about new technologies) but also the wider shaping role they appear to play (the *organisation* of the promissory space). Promissory organisations can be defined as intermediaries that are prodigious in producing future-oriented research that not only represents the state of affairs in a particular marketplace but actively contribute to its shaping in some way. In this respect, our more specific aim is to understand the extent to which their advice is ‘performative’. With this it is suggested that technological visions mobilised in the building of technological fields do not simply describe these future technologies but also help bring them into being (van Lente 1993; Brown *et al.* 2000; Michael 2000). Industry analysts would appear to be an ideal group to test and develop

the emerging performativity thesis in that they exhibit complicated and highly uneven forms of influence. However, whilst current work on the performative nature of technological expectation is highly suggestive, we argue that it can also be strengthened through the addition of further analytical templates able to track promissory-work with respect to the differing ways it may generate and configure innovation. Thus to fully unpack the work of industry analysts we also draw on recent discussions of the ‘performativity of theory’ emanating from Economic Sociology (Callon 1998, 2007) and the Sociology of Finance (MacKenzie 2006, 2009), which include the basis of a framework for conceptualising strong and weak forms of influence, and successful and failing forms of knowledge. Inspired by this, as well the argument that the nature, character and effect of promise based assessments are best understood comparatively (cf. Borup *et al.* 2003), we begin to derive from our fieldwork a *typology of promissory work* that characterises some of the differences between various kinds of promissory behaviour.<sup>1</sup>

## **The Sociology of Expectations**

Scholars acknowledge how expectations are crucial to the development and shaping of new science and technology as well as their patterns of uptake and use. Borup and colleagues (2006, 285-6) argue that little innovation “...can work in isolation from a highly dynamic and variegated body of future-oriented understanding about the future”. Promises are seen to be ‘fundamentally generative’ in the production of artefacts and knowledge. Expectations can help innovators mobilise support and funding for emerging artefacts. Van Lente developed the nostrum ‘by sketching a future, others will find reasons to participate’ to characterise how expectations grab and direct the attention of actors (1993, 187). Stewart (1999) coined the term ‘poles of attraction’ to explore the ways in which (IT supplier) firms seek to mark out their plans and visions of future technology with various identifiable purposes: these include to mobilise the expectations of potential customers and thereby build confidence in, and win commitments to, an emerging technology, and, at times, to ward off competitors, to mobilise fear, uncertainty and doubt and thus frustrate a competing technology. Not only do

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<sup>1</sup> This is not – and could not be – a complete or systematic typology, but rather an initial attempt to investigate the potential for an empirically grounded characterisation of the different ‘kinds’ of expectations produced, their variability in ‘effect’, and how, as will also become clear, they are subject to different ‘webs of accountability’. This is not a ‘complete’ typology because we are at the beginning of a programme of enquiry into the work and activities of industry analysts (fieldwork and analysis is continuing under our recently funded Social Study of the Information Technology Marketplace project). Thus, we see this as the opening stage in what will undoubtedly become a much more complex typology. We are also not attempting a ‘systematic’ typology because promise and expectations are such an all-encompassing feature of human activity it would seem presumptuous to generate an empirically-validated map of promissory processes. Moreover, whilst there may be generic similarities between expectations, promissory organisations operate within particular contexts. We return to this issue in the concluding part of the paper.

expectations help enrol external actors (or ward off competitors) they are also seen to guide and shape the activities of technology development teams. They do so, as van Lente (1993) argues, through providing structure and legitimation to an inherently uncertain activity.

Working within the Social Study of IT, Swanson and Ramiller (1997) have highlighted the role of 'organizing visions' in information systems innovation, encompassing interpretation, legitimation and mobilisation, which help mobilise the material and intellectual resources needed for innovation. Expectations help build consensus both about what to expect and on the nature of the various opportunities and risks that lay ahead (Borup *et al.* 2006, 285).

Scholars have focused on the often 'hyperbolic' nature of expectations. Gregory, for instance, has developed the concept of 'incomplete utopian project' to "describe the phenomenon of envisioning as constructed, evoked, and employed within an innovative intra- and inter-organisational effort, and to open up theorizing about innovation, work practices, and technology" (Gregory 2000: 180). The word 'utopian' draws our attention to the influence of "longstanding deeply shared desires simultaneously characterized by their unrealizability and their devotees' tendencies to over-reach reality in their pursuit" (2000: 194). It has been suggested - though we are not sure how this can be measured - that expectations are becoming *more* unrealistic and levels of hype are *increasing*. Borup and colleagues write (2006, 286): "hyperbolic expectations of future promise and potential have become more significant or intense in late and advanced industrial modernity. This shift in intensity is probably connected with a number of tendencies in the contemporary character of science and technology". These tendencies include but are not limited to the fact that "processes of science and technology innovation have become more complex, with a significant increase in the amount of communication and interaction across institutions and epistemic borders" (*ibid.*, 287).

What is at issue however is not just the growing technical and organisational complexity of innovations, drawing upon growing arrays of knowledge and experience that may be dispersed across occupations and organisations, but also the accelerating pace of innovation. Actors thus seek competitive advantage by improving the efficiency of communication between producers of complementary products and with the 'market' constituted by intermediaries and final consumers (Howells 2006; Stewart and Hyysalo 2008). We see the emergence of active strategies to grapple with and manage complexity and uncertainty to improve the pace and efficiency of learning rather than simply 'wait and see' processes where an innovation succeeds through trial and error. There is as a result greater competition

between expectations, meaning more attention is placed on expectations and their coordination. Added to this, or perhaps as a result of this, new kinds of activities (roadmapping, standardisation, public policies and envisioning etc.) and actors (industry watch bodies, consultants, academics and of course industry analysts) are attempting to better regulate and systemise that competition for ideas. In doing so (and perhaps this is what Borup and colleagues [2006] are referring to), the extent of expectation-building activity has been significantly augmented and has become increasingly pro-active and oriented towards longer-term futures. However, we would argue that what is most interesting about these forms of expectations is not their imputably hyperbolic character but the fact that they are coordinated in a more organised manner.

### ***Expectations and their Accountability***

There is an important and growing body of research suggesting that the articulation of expectations and ‘hype’ about new technologies requires serious analysis as they constitute an important medium for shaping innovation. The reason expectations are often overly optimistic say Geels & Smit (2000, 882) is “...*not* that forecasters or futurists are ignorant or short sighted” but rather that “[i]nitial promises are set high in order to attract attention from (financial) sponsors, to stimulate agenda-setting processes (both technical and political) and to build ‘protected spaces’”. Brown (2003, 17) provides a note of caution arguing that “[i]n so many cases, the present fails to measure up to the expectations once held of it. This can have disastrous consequences for the reputations not only of individuals but entire innovation fields” (*ibid.*, 9). Along similar lines, Borup and colleagues suggest that unrealisable expectations damage credibility because in promising something actors are making themselves responsible for doing that something - they can potentially be “held to future account” (2006, 289). Intuitively we feel this is probably right but we think scholars could also be more nuanced here. It is unlikely that all expectations are accountable in the same way. For instance, longer-term predictions might be projected too far into the future and couched in too many techno-scientific uncertainties for any group to be held responsible for their non-materialisation. Conversely, there may be other much shorter-term kinds of assessments where more concrete choices can be made and thus there is every possibility for them to be subject to scrutiny (and possibly sanction). Moreover, and to move onto the discussion of performativity, if it is true that expectations are subject to different forms of accountability, then this begs the question as to whether they also exercise different forms of ‘influence’.

## ***Expectations as Performative***

The notion that promises are ‘performative’ or even ‘constitutive’ of phenomena is a fruitful line of enquiry (van Lente, 1993; Michael, 2000; Borup *et al.* 2006) but also one that could perhaps be further strengthened through the addition of new theoretical templates and further empirical work. The clearest example of how the notion of performativity has been applied within the work on expectations is the history of the microchip. Back in the 1960s, G. E. Moore predicted that the microchip would continue to increase in complexity and processing power geometrically year upon year. ‘Moore’s law’, as it has become known, was widely judged to have been a successful prediction on the basis that it was a ‘self-fulfilling prophecy’:

This prediction turned out to hold so well that we may speak of a self-fulfilling prophecy. The fulfilling did not occur because it was a prophecy, but because actors have taken up the prophecy, and acted accordingly. The provided the reasons for other actors to accept the expectation and act accordingly, etcetera (van Lente, 1993, 87).

In other words, because industrialists and technologists were convinced by Moore’s claim, that decreases in the size of microchips would be persistent, they acted as if it was true and continued to fund research into the further miniaturisation of this technology. The prediction was thus brought into being (see also MacKenzie [1996] who offers a similar view on the history of the microchip). Importantly, neither van Lente nor MacKenzie are suggesting that technologies are a simple or direct *product* of promissory work.<sup>2</sup> This is because we cannot presume stable trajectories and the continuation of existing sets of expectations (Fleck *et al.* 1990). As Jørgensen and Sørensen (1999) remind us, even where apparently stable sets of beliefs are shared by those perceived as the relevant actors, one cannot rule out the entry of other actors and factors into the arena. In such an environment, there is every opportunity for beliefs to be challenged and reworked in the arduous process of creating artefacts and making adequate linkages with the organisational and institutional practices of intended users.

Various analytical frameworks within Science & Technology Studies (STS) have argued that the achievement of a new technology takes place in a heterogeneous landscape, involving a diverse and unevenly malleable array of human and nonhuman elements..

Perhaps the most vexing aspect of discussions adopting the notion of a self-fulfilling prophecy is that it invites the interpretation that *any* vision if handled and communicated by enough reliable and trusted actors could become true. This is presumably the case for the most robust or insubstantial of fact or rumour. It is simply enough that people take-up a statement,

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<sup>2</sup> This is in contrast to some of the recent work from the Sociology of Expectations which presents a rather linear or causal view of predictions. For instance, Borup *et al.* (2006, 286) write that expectations are both the “cause and consequence of material scientific and technological activity”.

and that because the belief is widely shared by others, then it makes no difference if the statement is informed or arbitrary, since because it is believed by everyone the world comes to resemble it (MacKenzie 2006; Callon 2007). This interpretation is widely held within discussions but is arguably found wanting because it does not deal adequately with the ‘content’ of expectations or the work involved in their ‘production’. What is at stake when we ignore the content and production of expectations is that it decries the idea that this type of knowledge has a valid base. It is also indifferent to the fact there are various levels of work involved in their construction. For instance, one of the concepts advanced to capture the presumably unsubstantiated status of these kinds of knowledge claims is Rip’s seminal work on ‘folk theories’. Folk theories, he writes: “...are a form of expectations, based in some experience, but not necessarily systematically checked. Their robustness derives from their being generally accepted, and thus part of a repertoire current in a group or in our culture more generally” (2006, 349). Indeed, Rip describes the Gartner’s ‘hype cycle’, a device used to map the rise and fall of hype surrounding emerging technologies, as an example of a folk theory. He notes that whilst it is highly influential it does not necessarily result from sustained forms of research:

Introduced by the Gartner Group as the hype cycle for information and communication technologies, it has become a folk-theory par excellence, because it is widely recognized, used to draw out implications, and *not an object of systematic research*. The visualization provided by the Gartner Group is widely referred to, and copied on websites...It shapes thinking about further developments and possible responses (2006, 352-3, *our emphasis*).

As we see it, there is a problem with the notion of a folk theory when applied to the work of industry analysts. It places undue emphasis on the acceptance of this knowledge as opposed to its production. This lends weight to the suggestion that these tools could be more or less arbitrary and they become influential simply because of their diffusion. However, we think scholars should be more detailed and precise here. We need to say something about the various effects expectations might have (be this strong, weak or even ‘temporary’ forms of influence). Not all expectations influence technologies in the same way. Nor do current templates give us the ability to differentiate between ‘successful’ and ‘failed’ claims - except by hindsight (Geels 2007). This suggests that we need to reflect more carefully on (i) the causal nature of expectations, to be able to say something about their differential robustness and outcomes, as well as (ii) acknowledge the forms of work involved in their production.

### ***New Insights into Performativity***

Some of these issues have been the subject of discussion within recent scholarship in Economic Sociology and the Sociology of Finance. Two strands in particular can help us

conceptualise more fully the market for expectations. In his work on financial markets, seeking to investigate the influence of the Black-Scholes-Merton model on the derivatives market, MacKenzie's (2006, 16-18) has developed a typology of different types of performativity. There are those financial theories, he argues, when applied in particular settings that have no or little observable effect, which he describes as 'generic performativity'. Then there are those theories that when applied 'make a difference' in some way, which he deems 'effective performativity'. There are also those that bring about the 'state of affairs' for which they are a good 'empirical description'. He describes these - after the Sociologist of Science Barry Barnes - as 'Barnesian performativity', also noting how Barnesian performativity has similarities with the notion of self-fulfilling prophecy. Finally, he argues there are also those that change economic processes so they conform *less* well to their depiction by theories, which he describes as 'counter-performativity'.

The second set of ideas is Callon's (1998, 2007) attempt to recast the success of economic theory as a process of 'world making'. He describes how theories emanating from the academy (or the various other market making organisations within the economy) as 'indexical' - meaning that they refer to particular circumstances, time and space. If these theories are to have influence, he argues, they must create the context, or, to use the term he prefers, 'world' to which they point. Successful theories are those able to create some form of 'material reality' or 'obligatory point of passage' which others are forced to take into account. Those unable to mobilise their world will fail. Importantly this formulation draws explicitly on the idea from Actor Network Theory, of which Callon was a major proponent, that agency is configured within a network of both human and non-human actors. To reflect this he describes the theories and the world they create as a *socio-technical agencement*. The term depicts a heterogeneous collection of material and technical elements that act on and adjust each other.

Both these ideas can be applied productively to the discussion of industry analysts. We find MacKenzie's formulation useful as it provides for more precision when talking about the differential outcomes promissory work might have. Whilst we do not directly adopt his terminology, it is a practical inspiration for the *typology of promissory behaviour* developed below. Callon's conceptualisation is valuable because it enables us to begin to discuss the forms of work involved in the production of expectations, which includes identifying their success and failure. That is, how certain kinds of promissory activities become obligatory points of passage (or not) for those working within technological fields.

## The Market for Technological Expectations

The market for future oriented knowledge claims is a relatively recent phenomena. It was only by the 1980s, for instance, that some of the large IT consultancy organisations began to collate and sell information about supplier offerings and new kinds of IT available. This was followed in the 1990s by the growth in popularity of specialist industry analysts and IT research firms (the Gartner Group, Forrester Research, IDC, AMR, Ovum, Yankee, the Aberdeen Group, to name but a few) which gathered and traded information on competing vendors (Firth & Swanson 2005). By the end of the 20th Century, however, we have seen the development and proliferation of a new, influential class of knowledge producer which has heralded in a much more elaborate system of consultancy and advice that attempts to subject vendor statements about new offerings to a more systemised and formalised evaluation (Author Study 2009). These firms operate within a lucrative and prosperous market and the suppliers of such knowledge and services have expanded from a small number of (primarily US based) players to, today, hundreds of such firms around the world.

As the market for product-based expectations matures, differences between the various players are more apparent. One common distinction is whether a firm is a ‘buy’ or ‘sell’ side organisation: the former provides information to those who *buy* IT; whereas the latter to those who *produce* technology. This division is important because it is said that each ‘side’ will have different clients, market strategies, deliverables and, interestingly, allegiances and levels of independence. According to one of the few practical descriptions of the sector available, for instance, sell-side analysts are those that work primarily with vendors and derive the bulk of their revenues from them (Hopkins, 2007). It is said that as a result they are “less critical and objective” (*ibid.*, 44) in that they will therefore “support the aims of the vendors they serve” (*ibid.*, 44). By contrast, buy-side analysts are said to be those whose work is primarily with end users. They are typically thought to be “objective, neutral, and independent” (*ibid.*, 44).

In practice, however, it seems that there is no clear dividing line between these two categories, as most analysts will do elements of both.<sup>3</sup> This means that firms will be concerned to (i) anticipate the evolution of a new technical field and of the business context which patterns its use and utility. This will include articulating and mobilising support for generic technological visions (with some analysts aligning themselves with specific vendor visions). However, and importantly, a large number of these will also be concerned to (ii)

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<sup>3</sup> We thank George Goodal for this point.

subject the promissory work of specific innovation players to a certain level of scrutiny and accountability. Here the work of the analyst is not in generating specific promises but in the differential circulation of promises and expectations mobilised by others. This will include the production of expectations based – and often critically-oriented – assessments about vendors and their offerings. It follows that these latter analysts are not, in principle, wedded to any particular technologies or promises (and indeed these organisations dedicate much of their time and energy in convincing others of their ‘disinterestedness’ and ‘integrity’).

Whilst clearly an important area there has been little academic research conducted generally on the market for technological expectations or specifically on the role of industry analysts in organising new technological fields. The few preliminary studies of industry analysts existing come from within the field of Information Systems (Mallach 1997; Ramiller & Swanson 2003; Firth & Swanson 2005; Burks 2006). Organisational scholarship on ‘management consultants’ is also an area where one might expect to find more detail on the specifics of this form of expertise but here scholars treat industry analysts as if they were like any other form of consultant (see Thrift [2001]) and thus the specific dynamics surrounding these actors has not been investigated.<sup>4</sup> Interestingly these actors have been discussed within STS but here scholars tend to adopt a more avowedly critical account. Drawing often on a limited empirical base, this latter work tends not to reflect the complexity of these organisations. Much research seems to take the presence and role of industry analysts at face value (see particularly Bloomfield & Vurdubakis [2002]; Borup *et al.* 2003; Rip [2006]).<sup>5</sup>

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<sup>4</sup> Insights about industry analysts can be gleaned from other domains also but space restrictions permit only a cursory mention. There is, for instance, an interesting and rich debate on innovation intermediaries which offers general insights into the nature and role of actors attempting to mediate between domains. Howells (2006) has produced a comprehensive typology of the different kinds of intermediaries operating in principally technology domains (though his list arguably lacks a category for industry analysts and the kind of activities described here). Bessant & Rush (1995) describe those intermediaries that facilitate knowledge transfer between firms; Stewart & Hyysalo (2008) discuss how intermediaries assist in the take-up and diffusion of technology. Van Lente *et al.* (2003) discuss the rise of new *systemic intermediaries* and how they appear to be successful in operating across broad complex sectoral terrains and interacting with a heterogeneous set of actors and factors. Indeed, we have found the work on intermediaries useful in conducting and analysing our study, though we fall short of attempting to contribute to this debate as our aims and questions are focused on understanding the performativity of industry analyst knowledge rather than their role as intermediaries.

<sup>5</sup> Till now STS has taken only a limited interest in this form of knowledge. Where discussed, scholars have typically focused on the simplistic nature of the knowledge. An example already noted is discussions of the Gartner ‘hype cycle’ which according to some commentators is deemed to be ‘too general’, not allowing for ‘variation’ in technological evolution, and a tool that produces a ‘highly linear understanding of a technology’s path dependency’ (Borup *et al.*, 2006, 291-2). These are fair criticisms – few would deny that the tools are anything but crude simplifications or deterministic. However, there are alternative (and perhaps more productive) way to view this kind of knowledge and set of actors. Rather than argue that Gartner should develop a more sophisticated hype cycle, for instance (which could be one reading of what the Borup *et al.* [2006] article is suggesting), we could attempt to understand the dual process of complexity and simplicity surrounding these tools. For instance, and this is very much a Callonian reading of these actors, how Gartner simultaneously engages with the market (and all its complexities) but is able to ensure that this complexity can be represented in a simple object. And also how they construct the tool through the creation of a distributed network of actors but can at the same control and manage these actors. We attempt this form of study here.

## **Promissory Organisations**

We have sought to work up the notion of a promissory organisation because we think there is a lacuna in existing understandings of the market for future oriented knowledge claims but also because it indicates a way of making sense of the twin key roles certain intermediaries play within this marketplace. This highlights how certain organisations articulate generic visions of the evolution of a technical field and also subject the promissory work of particular innovation players to scrutiny. We define a promissory organisation broadly as any form of intermediary that routinely and prodigiously produces future oriented knowledge claims. In explaining the significance they achieve we suggest that these intermediaries do not simply reflect or represent the state of affairs in a particular marketplace but actively contribute to its shaping in some way. Industry analysts operating within the IT sector are exemplary in this respect but there are clearly further examples in domains elsewhere. We anticipate that promissory-type organisations can be found especially in sectors dogged by high levels of uncertainty and change (such as the life sciences, energy, health and environmental domains, and so on<sup>6</sup>).

Promissory organisations have numerous characteristics of potential interest to those studying technologies and expectations. Latour (1987) has written that the modern scientific laboratory gains its strength as a place where diverse instruments are gathered together. Similarly, we argue that promissory organisations create themselves as centres of power through building a wide and variegated range of expectations as well as the machinery for their construction and communication. Industry analysts, in this respect, are prodigious in the production of research about the potential of emerging technologies. Many of the larger firms, for instance, make claims about a vast range of innovations and vendors almost on a daily basis (begging the question as to how such large-scale forms of promissory work are maintained). They communicate this research in various ways (from explicit written and verbal statements, through to the more infrastructural assessments that become embodied in durable and material form). Their work envelops different timescales (spanning the immediate to more long term futures). Moreover, whilst the popular conception of industry analysts and consultants is to see assessments as constructed by individual analysts (and the vagaries of individual discretion), the empirical material reported here shows they result from more observable social and distributed processes. Promissory organisations, it seems, have a variety of practices and processes in place for the production and dissemination of future oriented

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<sup>6</sup> See Mason (2007) for the example of these kinds of organisations within the energy sector. Also, for examples of analyst organisations operating in the biotech and health fields respectively, see BioCentury (<http://www.biocentury.com>) and Schwartz Communications (<http://www.schwartz-pr.com>).

knowledge. This includes the organisational mechanisms and networks to develop and communicate ‘successful’ claims and those needed to deal with more contentious, problematic and ‘failing’ forms of knowledge. In attending to this diversity of processes and outcomes of the business of expectations, we argue the need for empirical analysis. In what follows we discuss three examples of promissory work produced by one large industry analyst organisation, but before doing so we provide detail on the means by which we have conducted our study.

### ***Studying Promissory Behaviour***

Studying industry analyst firms and providing evidence of their (differential) promissory influence is extremely difficult indeed. It is not only that these actors tend to be highly reserved and reluctant to discuss the detail and provenance of their research but that they conduct their work both *within* and *across* various organisational spaces. One often has the sense when researching industry analysts of not being in the right place at the right time (a frequent problem for social science research into complex developments, see Law [1994] and Magolda [2000]). Important decisions or discussions appear to be taken or had elsewhere. Thus in terms of understanding the differential influence of industry analysts, we have had to be, by necessity, eclectic in terms of research design. Rather than study industry analysts in one socially/temporally bounded locale, we have tracked their influence in differing contexts and around different issues. Our study was designed as much through opportunism and ‘luck’ as through theoretically informed choices. Gartner was one of the ‘surprises’ that we came across whilst conducting research on the acquisition, design and use of large packaged software systems and once aware of their importance we attempted to study them whenever or wherever we could. In other words, we studied those places where we could negotiate access (and a difficulty with access is one reason for the relative paucity of studies) but also sought out particular sites. These choices, of course, were constantly being modified to address new phenomena and issues as they arose.

In this paper, we present three ‘vignettes’. (i) We were first initially introduced to the influence of Gartner whilst one of the authors of the paper was conducting participant observation research on the procurement of an IT system within a local government office in England. During this time, which lasted for almost a year, we viewed Gartner’s influence from the point of view of those who consume this type of knowledge. We were able to observe (and collect material about) the influence of Gartner’s recommendations and research whilst the procurement team debated the pros and cons of various solutions. (ii) We came

across Gartner's influence a few years later whilst conducting a three-year study on the design of large packaged software systems. Here we were able to observe how Gartner sought to construct one of its research documents (its so-called Magic Quadrant). We observed the shaping of this tool from the point of view of the various actors (IT vendors and users of IT systems) attempting to influence the assessment. (iii) The final episode we present stems from our choice to attend international IT conferences and venues where we knew Gartner to be present, our aim being to observe Gartner's interactions with the various other interests and participants gathered there.

We have now followed the Gartner Group for over several years and continue to monitor its influence and have widened our lens (under a further research programme on the Social Study of the Information Technology Marketplace) so as to carry out a comparative study of these organisations. Added to the above fieldwork, we have also conducted more formal interviews with vendors and IT practitioners to ask them about their involvement and relationship with Gartner. Moreover, we have had access to Gartner documentation and reports (some of which were available freely on the internet and others were sent to us by the Gartner clients we met during our research). This rich combination of data collection methods enabled detailed current analysis and comparisons between the different types of promissory work within different contexts. In analysing this data, particular emphasis has been given to understanding the differences between these activities in terms of type, influence and accountability.

### **The Gartner Group**

The Gartner Group is by far the largest and most influential of industry analysts (Firth & Swanson 2002; Burks 2006). Founded by Gideon Gartner in 1979, the Gartner Group has its headquarters in Stamford, Connecticut and offices all over the world. It has 4,300 associates of which 1,400 are described as 'expert analysts' and 'consultants'. Gartner identifies itself as predominantly a 'buy-side' organisation but one that also produces a significant amount of research for vendors. More specifically, Gartner's services are divided into three main parts. First, it organises 'events' that brings together vendors and users to discuss the latest technologies (such events are usually very well attended and admission can cost several thousands of pounds). Second, it offers 'consultancy' in the same way any other consultancy organisation might do (its analysts may work at a client site on a particular project for several months). Third, and this is the bulk of the work that it does, it produces two distinct types of research. This includes 'market research' type assessments, predictions and forecasts about where particular technologies or technology markets are going (this research is almost

exclusively sold to vendors). The other type of research that it produces, and this accounts for the bulk of the work Gartner does (60% of the analysts are employed here, and it produces 80% of the entire revenue), is that which is sold to users in order to help them make decisions. This involves research reports and analysis, briefings on specific vendors, as well as various forms of ranking devices.

## **Infrastructural Knowledge: Promissory-work Made Durable**

The first vignette relates to how Gartner names and classifies a new developing technology market. Categorisation has been one particular powerful way in which industry analysts shape new technologies. We see this as promissory work because innovations are named in the anticipation that they will develop along a certain trajectory, take on a particular shape, have certain functionality, that most exiting vendors will remain in and that new players will continue to enter the market, and that demand for the technology will continue to grow, and so on.<sup>7</sup> Importantly, and a further reason why we might think of classification as a form of promissory work, is that it is not uncommon for attempts to name and classify the characteristics of new markets to ‘fail’. Anticipated markets do not always emerge (or emerge in the shape suggested). Gartner, for instance, originally deemed the technology discussed below (‘Customer Relationship Management’) in a very different way (as ‘Technology Enabled Relationship Management’), but this vision did not catch on with the wider industry and was abandoned after only 18 months (see Author Study 2009). New technological categories are similar to the ‘buzzwords’ or ‘organising visions’ identified by Swanson & Ramiller (1997) in that they are subject to varying levels of support and momentum. However, if successful, it is also common for classifications to become something of an ‘infrastructure’ (in the way that Bowker & Star [1999] describe infrastructure as a resource used without question and becoming visible only upon breakdown). We encountered the operation of this kind of infrastructural knowledge in observing the influence of industry analyst Gartner in a study we undertook of the procurement of a complex information system by a local authority.

### ***The New Category of ‘CRM’***

‘Melchester Council’ (a pseudonym) is choosing a customer relationship management system (CRM) system as part of its e-government agenda. This is a system that today is a required

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<sup>7</sup> Gartner has in the past been highly influential in the naming and shaping of a number of important information technologies (such as enterprise resource planning [ERP] systems – see Mabert *et al.* 2001). In the case of ERP, Gartner went beyond initially coining the term ERP and mapped out visions of how this and related segments of the software market should develop (see Author Study 2009).

feature of the organisational landscape but when the fieldwork was being conducted was still shrouded in uncertainty concerning its necessity and shape. The procurement has been a protracted affair and to speed things up Melchester has engaged the services of the Gartner Group. In particular, they were hoping that the analysts would be able to provide some background information on the suitability of one particular vendor, which had emerged as the favourite to win the procurement contest. 'NewVendor' (a pseudonym) has done particularly well in its sales pitch and had the support of various staff from the Council. However, there appear to be some issues still to be resolved; for instance, no one from Melchester had previously heard of NewVendor. This lack of familiarity was causing uncertainty within the procurement team and there were fears about committing such an important project to an 'unknown quantity'. One apparently easy way to settle any uneasiness seemed to be to ask Gartner to provide a 'vendor rating'. This meant Gartner would provide information on the vendor's financial stability, previous performance, technical competence, and so on.

As they were long standing Gartner clients, one Melchester IT manager (Ron) contacted his usual Gartner analyst but was surprised to be told by someone called 'Ed' that he could not provide any details on NewVendor because he did not know them! The IT manager circulated his notes of the telephone conversation amongst the team:

Ed has a list of some 500 vendors of CRM, many of which [Ed] meets on a regular basis to track the development of their products. [NewVendor] is not on the list; he had not heard of them (IT Manager's circulated notes).

The analyst said he would cross check with US based colleagues and call back. A few days later, he phones to report how Melchester were also unknown to his US colleagues:

Ed has been in touch with his colleague in the USA, but [NewVendor] were unknown to him as well. Gartner can therefore not provide any research papers into the company or its products (IT Manager's circulated notes).

Shortly afterwards the analyst writes to the Council summarising the telephone conversations and drawing the following conclusions:

As a follow-on call we checked with two different CRM analysts in the U.S. both belong to the call centre team and neither had heard of [NewVendor]. They take about 400-500 calls from clients per year. One focuses on call centre applications and the other on call centre infrastructure... The Bottom Line is that...we do not believe the [NewVendor] proposal is necessarily in the best interests of [Melchester] (letter from Gartner).

What we see here is that Gartner cast doubt on NewVendor's standing - and going as far as to suggest that Melchester should reject this vendor. The episode does not finish there but takes an interesting turn when NewVendor, informed of Gartner's opinion, attempt to play down its significance by suggesting it results from a 'categorisation' difficulty:

Their comment when it was pointed out that they were unknown to Gartner was that in the two years the company has been in existence it has not spent any time or effort in making itself known to industry analysts. This is because at present these companies do not have a category for what they are offering (the integrated framework approach) (IT Manager's circulated notes).

NewVendor see the problem as residing with Gartner's particular classification of the CRM technology market, which they think is not comprehensive enough to include the kind of technology and services they offer. NewVendor's response was therefore to attempt to problematise Gartner's definition, through providing a detailed 'list' of just how their offering, which they described as the 'integrated framework approach', differed from the classification Gartner were operating with. To this, Gartner respond by refuting that this approach was indeed novel and pointing to how a number of other more established CRM providers already offered this kind of innovation. This does not end the discussion and there is further debate on the extent to which NewVendor's offering is different.

Meanwhile the Melchester team are increasingly confused. They decide the best way forward is that, if no briefing of NewVendor exists, then the easiest thing is to ask Gartner to carry out a vendor rating on their behalf. This duly happens and a US based Gartner analyst (Rachel) meets with NewVendor a week or two later. Interestingly the US analyst presents a somewhat more nuanced reading of the episode – emphasising how NewVendor potentially has a 'broader' offering that does not necessarily fit within Gartner's view of CRM. According to the circulated notes, the analyst was 'impressed' by NewVendor, especially their 'knowledge of their marketplace and their understanding of software evolution' (IT Managers circulated notes). She concludes by advocating that Melchester should perhaps 'not read too much into the fact they were not known to Gartner' (IT Managers circulated notes). Thus, as we can see, Gartner's second discussion is very different from their first in that they offer not only a more sophisticated but also more cautious set of opinions. This begs the question as to how all of this will be read back at the Council. However, amongst the procurement team there was little doubt about what all this meant – certain members had become highly sceptical of NewVendor and were marshalling support from other members so as to reject this vendor (see Author Study [2007] for a more detailed discussion). Indeed, this is what happens, and NewVendor is no longer considered a viable option and is thus *sifted from the table*.

To summarise, we have seen how during the period of study the notion of what a CRM technology 'was' or should 'be' was far from stable. Indeed, in its role as signposting the state of the industry and developments, Gartner were attempting to draw the boundary around the technology. We might further suggest that categories and the process of categorisation do not

simply allow industry analysts to represent the market/technology but also shape it. Gartner control these classifications preferring vendors to conform to existing ones. Even when those outside the classification attempt to fight their way in, for example by criticising those categories blind to the features of *their* technology, these attempts are rejected and the vendor is described as an anomaly with the result that it is effectively removed from the market-place (Zuckerman 1999; Beunza & Garud 2005). This kind of infrastructural knowledge has a strong and enduring influence on the marketplace (it is a strong form of performance). Thus, we might describe classifications as *promissory work made durable*.

## Visions Let Loose

This second vignette investigates the intriguing issue of how those who trade in future based knowledge claims manage 'failure'. One might imagine that these organisations have mechanisms for downplaying claims found to be inaccurate. This also begs the question as to what effect failure has on reputations and credibility (cf. Brown 2003).

## Demonstrations of Failure

Purely through chance we stumbled across a forum where Gartner dealt with failure.

Surprisingly, it was not in private but the most public of settings: in front of an audience of over 200 practitioners attending an annual international industry IT conference. One of the authors of this paper was sitting listening to a Gartner analyst give his keynote address, a talk he gave each year, when he pointed out how he wanted to do things a little differently this time around:

What I have decided this year, because several of you have said, 'You know it would be fun to take a look at some of the stuff you have said over the years, and if it makes sense today, or, if it doesn't make sense. Or what it was, and what we talked about over that period of time'. So I went back even pre-Gartner when I was at CAUSE and picked out some of the slides. And I thought that I would start from about 1992 partly because that's as early as my Power Point slide went back, I didn't have anything that was in a form that I could use.<sup>8</sup>

What he proposed to do was to go through claims made in recent years and see whether they were 'accurate' - which is what he sets about doing. He goes through old power point slides reading out the claims and continually stopping to insert anecdotes as well as to invite the audience to confirm the prediction's veracity through raising hands. The first claim is about e-learning and future of traditional higher education:

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<sup>8</sup> CAUSE is a US non-profit organisation that has as its mandate the promotion and increased diffusion of information and communication technologies (ICTs) within higher education. It is today known as 'EduCause'.

In my first year at CAUSE some of you asked ‘What are some of your recommendations and some of your strategic planning assumptions, what do they look like?’. Here is some of them from 1996, that’s really 10 years ago now.

‘By 2001 distance learning will be a mainstream activity on 80% of the campuses’.

How many of you think that one has come to pass? How many of you [very few hands raised]. How many of you think it hasn’t yet [many more hands raised]. Mainstream activity? Still not. OK.

With the first slide most of the audience appear to agree that the analysts’ prediction has *not* ‘come to pass’. At this, he pauses for a few seconds, before re-launching with a slightly different point:

How many of you though have a large percentage of either hybrid or blended courses on your campuses today? [A few more hands are raised]. Yeah. OK, so part of it is coming there....

From this he addresses his next prediction that ‘Western Governors University would have a dramatic impact upon higher education’. However before handing this claim over to the audience, he prefixes his point by asking:

“How many of you *remember* Western Governors University? [Laughter amongst audience] Oh, yes! Oh, yes! [More laughter]”.

The Western Governors University, like many of the other new for-profit virtual universities at the time, was largely a failure (Author Study 2003). Bob’s acknowledgement of this and seeming irreverence towards his prediction is greeted with much amusement among the audience. He continues:

Western Governors Association Initiative. At that time I was on the task force for the Western Governors. And I tell you, if you ever want to see panic in Presidents’ eyes, this one brought it about. The Western Governors, the idea that you have this group of states coming together in the form of a virtual university, *really* did have the attention of a lot of people. And I remember Presidents coming up to me and saying ‘Am I really going to find myself in a situation where I am going to have to compete with universities around the world?’

These institutions did not have the influence that Gartner predicted but this does not deter Bob from qualifying and defending his claim through pointing to the effects they did have:

The point is, Western Governors started to shake thing up. And at the time of this particular Gartner and EduCause update I said ‘If they never offer a course, Western Governors will be successful because they will have shaken up higher education to start thinking about technology and the role of technology in teaching and learning’. And I think that is true. The reality is that they haven’t done too much from the point of view of offering course work and becoming an institution, although they were accredited.

From then on his presentation begins to follow a familiar pattern. We are introduced to a past claim: “‘IT coupled with better business practices and co-operative arrangements can bring about both cost avoidance and significant savings’”. The analyst then ironises the claim: “Any of you *seen* any significant savings in your...?” [laughter]. “How about cost

avoidance?”. Having questioned the claim’s veracity he then attempts to convince the audience that the prediction contains elements of truth: “Sometimes, yeah, we have. And there I have to say there are times when people see savings. The problem I find is that as we have done some of these savings *we don’t get credit for them*”.

This episode is interesting because the audience is invited to evaluate Gartner’s research and to look at what they said *would* happen as compared with what *actually* happened. Gartner are airing their claims for scrutiny ‘after the event’ so to speak. Of course the particular analyst skillfully manages this process so that the fragilities surrounding this form of promissory work are never fully exposed and the claims are not strongly contested. Rather, in some respects, he attempts to recast the claim with the present day so that both prediction and present are more closely aligned. We might read this episode, following Brown and Michael (2003), as a set of unrealistic promissory activities that are later discursively re-adjusted to match the setting and vice versa – a process they describe as ‘retrospecting prospects’. However, while such a conclusion might be valid, we think the episode highlights a different point.

Callon (2007) has argued that theories are performative when they successfully bring about the ‘world’ to which they point (that is they create some form of ‘material reality’ or ‘obligatory point of passage’ others are forced to take into account). Applying this notion to this vignette, for instance, we might say that promissory work does not exist in isolation but has meaning and effect in the world it creates for itself. Successful promissory work would be actively engaged in the constitution of reality to which it points. However, in this case, Gartner neither build on nor defend this knowledge but simply let this claim go. Thus we might say that promissory organisations sometimes produce and communicate a kind of knowledge which they never attempt to do anything with. The performative reading of this is that some types of expectations based knowledge have limited or ‘temporary’ effects.<sup>9</sup> These expectations are simply launched into the ether. They are *visions let loose*.

## Statements and their World

In this final vignette we turn our attention to a device called the ‘Magic Quadrant’, which is developed to represent graphically the state of various technology sub-markets. In particular, it directly compares technology vendors against each other according to a mix of present day

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<sup>9</sup> Gartner’s predictions about the future of universities were believed by university presidents but only for a time (see Author Study [2003] for a discussion of the important but nevertheless limited effects of the idea of a virtual university). Whilst Gartner was amongst the first to set out such a view, it was quickly opposed by counteracting visions.

and future based criteria. It is developed with the aim of providing further information to IT decision makers concerning intangible issues regarding the current and future performance of technology vendors (will they survive?), their behaviour (will they invest in the market in coming years?), their understanding of the marketplace (do they know what their users' want?), and so on. It comes in the form of a 2\*2 and it ranks vendors according to two specific Gartner developed measures: these are a vendor's 'completeness of vision' and their 'ability to execute'. Depending on Gartner's assessment of these features, the vendor is then placed in one of the four boxes labelled 'niche player', 'challenger', 'visionary', or 'leader' (see Figure One).

Figure One about here

The Magic Quadrant is interesting to study as a form of promissory work as it is a 'dividing object' - meaning that it is both highly influential and contested (see Author Study 2009). A high ranking on the Magic Quadrant is said to guarantee a vendor more attention than rivals (Hind 2004); some argue that it has the power to 'make or break' a new technology (Violino & Levin 1997). However, it also has been denounced as devoid of 'intrinsic value', a mere 'marketing tool' (Howard 2004), it is said to be overly 'subjective' in the way compiled, leading to accusations of 'partiality' and 'bias' (Cant 2002), and there have been various critical discussions with respect to the limitations of the measures used for analysis (Columbus 2005; Greenemeier and McDougall 2006; Whitehorn 2007). This begs the question as to why, if the Magic Quadrant is a dividing object, has Gartner been able to build up such a large audience for this type of promissory work. We suggest the tool is influential because it is (re)configuring the technological field. In particular, we argue that Gartner are actively creating a new 'world'.

### ***Setting Out a New Terminology***

To give some indication of the new world the tool is setting out we present an extract from a presentation given by one Gartner analyst to a large audience of IT practitioners. He is talking about the history of decision making within information systems procurement. He begins by discussing how previously technology adopters had assessed systems prior to purchase:

...we put together [in the 1990s] an outline of how you should evaluate administrative applications...[A]nd what we said was that in a stable environment you would look at '*functionality*' ... That was pretty much what we were looking at. Why? Well a mainframe is a mainframe so technology wasn't that different from one to another, it was basically a vendor's box that you were buying but it was built around a common architecture...What we said in '97 was change. You need to look at *functionality* but most vendor packages are mature enough to

where there is at least common functionality, so it is a matter of *goodness of fit* that you are looking at... (*our emphasis*).

Here we see the problematisation of the traditional means by which people assess information systems. His critique focuses on the assessment criteria people currently use which, as he sees it, are no longer effective in sorting vendors out. He goes on to suggest:

And we started seeing that trend in the early 80s...that said we had ageing of systems, people were using these systems...whether they were proprietary or home-grown for 15, 20, 25 years... And, the point is that you had to look at buying software as being a partnership with a vendor, and that's a long-term relationship. It's not something short term.

The analyst also thinks it has now become necessary to replace current assessment measures as adopters tend to use the same solution for longer and as a result have 'partnerships' with suppliers. The implications of this being that organisational consumers need to assess not only systems but also increasingly vendors themselves:

And so, the *vision of the company* - do they understand the business of [specific sector]? Do they know where you were going? - and the *ability to execute*, those are still crucial. We still say it is about half of what your criteria should be... (*our emphasis*).

The analyst is suggesting a shift in decision making from the evaluation of functional and local concerns to more 'strategic' ones. In order to do this, he mentions how a consumer might apply Gartner's own evaluation criteria ('ability to execute' and 'completeness of vision') when evaluating vendors. In other words, the Magic Quadrant is transformative. However, the world that Gartner are attempting to set out also requires a research process. This turns out to be one of the most controversial aspects of the tool.

### ***Constructing a Research Process: A Calculative Network***

Gartner say the Magic Quadrant as based on information obtained from a variety of sources, which include actual research on vendors as well as discussions with 'client references'. 'Client references' are customers of the vendors under analysis and, in most cases but not always, subscribers to Gartner research. Gartner's relationship with this group is particularly interesting. We observed how one particular analyst had built up and was managing a large network of people with whom he interacted on a regular basis. These people would continuously feed-back judgements to him on the particular vendors they were working with. Based on our fieldwork, we observed how a vendor ranking is enacted within these interactions. We describe this network and the various interactions that go on within it, following Callon & Muniesa (2005), as a 'calculative network'.

At a conference, for instance, one of the authors was sitting conducting an interview with an IT manager when a Gartner analyst approached. The analyst, who had been interacting with

the IT manager for some months about the current performance of a software vendor we call 'SoftCo', begins to tell him how he has just heard that SoftCo were already having difficulties with another user organisation (WestOrg):

*Analyst:* Chris [from WestOrg] and I were just talking, she's, she has put some ultimatums out with them [SoftCo].

*IT Manager:* Yeah, the real problem with them, [WestOrg], is that they have always written their own systems and they have gone for BoB [best of breed] but when they start hitting sort of a [GenteSys] or a [SoftCo] they think that it is going to be straightforward....So, so she has got problems?

*Analyst:* She said that they are 2 million pounds over budget and they haven't *even* started implementation.

*IT Manager:* Oh, I think that a lot of that is going be, the guys from [SoftCo], the ones that I have been talking to. It is just that the account manager of the [nationality] is bloody useless.

*Analyst:* But that is a key...

This interchange was interesting because the Gartner analyst began the conversation by highlighting SoftCo's failings through invoking a kind of 'community' view (it was not him but Chris from WestOrg criticising SoftCo). In contrast, the IT manager attempted to defend SoftCo through shifting the focus back onto WestOrg's lack of experience with these kinds of large generic software packages. He also suggested that things were improving since SoftCo has just recruited 'some really good people'. This exchange went on for some in this manner with both providing contrasting evidence. The IT manager was forcing the analyst to both explain and defend his assessment of SoftCo, which he appeared able to do – *and in a robust manner*.

### ***Defending the New World***

We are arguing that Gartner is feeding these informal exchanges - what might be thought of as 'community knowledge' - back to the market. However, these kind of 'judgements' are not easily objectified (Porter 1995). For instance, during fieldwork we noted how Gartner often struggled to account for the provenance of the community knowledge and how there was a certain amount of ambiguity surrounding the methodological status of the tool. In its early life, for instance, we found more 'quantitative' aspects to be highlighted; and only some years later was it described as resulting from 'qualitative research'. Today it is described as having a mix of both aspects: "Gartner analysts use a combination of objective and subjective criteria to evaluate individual vendors..." (Soejarto & Karamouzis 2005: 5). When Gartner say the tool includes 'subjective criteria', we take it to mean it is shaped through analyst interactions with clients. Indeed one might think that incorporating this kind of knowledge increases the tool's credibility, for instance, giving weight to the argument that Gartner are 'close to the

action'. Yet, this is also seen as one of the weaknesses of the tool (particularly leading to accusations of 'partiality' and 'bias').

### **Partiality and Bias**

One issue appears to be the obfuscation existing around calculative networks and community knowledge. The fact that Gartner refuse to make the names of their sources public, for instance, is a cause of much concern. There is also little information on how specific customers are chosen as well as with the weight given to their views. During fieldwork, for instance, we spoke to a SoftCo customer who was critical of how, despite the claim that Gartner advertise that they consult widely when conducting their research, they had never solicited *his* views. When interviewed he described how he thought the particular Gartner analyst responsible for his sector had not been completely even handed when assessing SoftCo's solutions. Indeed the issue of 'bias' was an aspect voiced several times to us during fieldwork. It was, for instance, the focus of an email exchange between one SoftCo Solution Manager and a customer:

Up to now I perceived their [...] chief analyst being pretty vain - it is hard to turn his mind around just by facts. For the last Magic Quadrant we proved him being wrong in every single sentence of his comments to his (bad) assessment of [SoftCo], but I believe this has made him more negative about [SoftCo] than before (email from SoftCo to IT Manager, UserOrg).

One of the most striking features of these criticisms was their identification of 'authorship'. Gartner are a large, global organisation but nonetheless our informants identified one particular analyst as the source of 'negative' assessments. We mention this because it contrasts with the strategies Gartner are employing in an attempt to 'objectify' their knowledge. Whilst certain actors highlight the particularised nature of expertise, Gartner themselves are pushing in the opposite direction through attempting to demonstrate how these tools result not from individual but 'collective expertise'. For instance, in an interview with one Gartner analyst, it was described to us how Gartner were strongly committed to certain 'academic' principles:

We are pseudo-academic in the way we work. We have a very rigorous peer review, so if I write something, it takes me 42 days to get it out the door. I can't just write something, I can write it in a blog if I want, that is fine, but anything that is published within Gartner, I have to have two peer reviews followed by a manager, not a manager but a peer mandatory review, it is the kind of leader of that area who has to review. Then it goes up to a team manager, and then we can get down to things like editing etcetera. And if it is something real big and controversial then it will go through much more reviews like that. So up 16, 17 different individuals will review it, give you feedback on it, and kick it to bits... (author interview with Senior Gartner Analyst).

Notions like ‘peer review’, ‘research methodologies’, ‘data collection’ and so on are an increasingly common aspect of Gartner’s vocabulary.

To summarise, we have shown how this form of promissory work has a strong but contested influence on the marketplace. Indeed the principal contention pursued here is that the Magic Quadrant has become ‘successful’ because it is (re)configuring the technological field. In particular, we argue that Gartner are actively creating a new ‘world’, which includes a new terminology that has (partially) changed how vendors and others act during IT procurement. This world includes a research process whereby they can speak ‘authoritatively’ about the capacities and future potential of IT vendors. Importantly, and even though it is contested, Gartner appears able to defend this kind of knowledge through constructing a seemingly adequate research process; and through defending their assessments and the processes that sit behind it.

## Conclusions

The *business of technological expectations*, it appears, is increasingly commercial in orientation, product minded in ambition and potent in influence. Crucially, whilst there has been extensive research on the efforts of scientists and technology developers to mobilise *particular expectations* around their proposed technical advance (including particular visions of expected technologies and the social use) not much attention has been given to the intermediary organisations now dedicating themselves to the production, communication and selling of expectations-based products and services. We focused on the case of ‘industry analysts’ who routinely produce various types of future oriented knowledge that has consequences for the shaping of markets and products. We have termed these actors *promissory organisations* to capture how they are successful in mobilising support for *generic* promises and visions (deploying signposts about the state of the industry and its future evolution) but also increasingly in ‘organising’ expectations within procurement and innovation markets (subjecting the *particular* promissory work of innovation players to a certain level of scrutiny and accountability). In a context of growing competition between diverse technology suppliers, articulating claims about the current performance and further development of their highly complex products, which are extremely difficult for potential adopters to assess, promissory organisations serve to regulate and systematise that competition. The increasing influence of this kind of intermediary is changing the nature and dynamics of the promissory space.

Whilst the more substantive aims of the paper are to throw light on how industry analysts shape innovation and markets, our theoretical goals are to understand the extent to which their advice is 'performative'. How, and in what ways, does this form of promissory work 'push' or 'nudge' the direction of innovation and procurement choices? Arguably, current frameworks developed within the sociological research on expectations do not allow us to answer this in the comprehensive and nuanced manner necessary. Emerging technologies analysed through the notion of a self-fulfilling prophecy run the risk that they are seen as a direct *product* of expectation (van Lente 1993; Guice 1999; Brown *et al.* 2000; Brown *et al.* 2003; Rip 2006). Yet scientific and technological visions rarely demonstrate simple kind of performativity. Even if seemingly stable sets of beliefs are shared by relevant actors, one cannot write out the possibility of other actors and factors entering the field (Jørgensen & Sørensen 1999). Scholars need to ask, and this relates to a larger question about the nature and significance of technological expectations more generally, why some kinds of consensus or compelling vision come into being and are materialised and others not. Clearly not all expectations constitute innovation in the *same* way. Why is this? Why are some forms of promissory work more successful than others? These kinds of consideration underpin our insistence that of the need to develop more complex analytical registers for systematically tracking expectations with respect to its complicated and highly uneven levels of performativity. Richer analytical templates and more rigorous methodologies are required. The research challenge here concerned whether it is possible to construct a *typology of promissory behaviour* which characterises the unevenness of these commoditized forms of expectations.

Inspired by frameworks emerging from Economic Sociology and the Sociology of Finance, we identified within our empirical research at least three different kinds of promissory work (see Table One). First, there is what we have termed *infrastructural knowledge*, which is typically but not exclusively attempts to classify technology markets. This includes definitions of the technological field and the mapping of players within that arena. These classifications are institutionalised - meaning they exert a powerful and enduring influence on technological markets. They endure because they are rendered invisible in the way Bowker & Star (1999) describe 'infrastructure' (as visible only upon breakdown). Secondly, we find more transitory forms of intervention that might be described as *visions let loose*. These are typically provocative signposts drawn up about the state of the industry and future developments. These kinds of predictions appear not to be built in the same careful way as other kinds of research but can simply be 'launched into the ether' with resulting relatively

short lived levels of influence. Finally, there are what we have identified as *statements and their world* to describe where actors generate assessments of the relative location and future potential of various suppliers within the product market for different user sectors. Here the analysts attempt to actively make their research successful. As such, because of the active world-building conducted, these statements have a relatively strong but contested influence on the market.

Table One about here

We note also how different types of promissory work are subject to variegated forms and standards of accountability and verification. *Infrastructural knowledge*, for instance, advances in a slow and careful manner because here actors are attempting to define the technological field (in some cases, to say what the next generation of technologies will look like) and to organize change in the marketplace. It is a form of boundary work where analysts attempt to categorize technology vendors and markets in a very material way, according to existing classifications, which has the result that they may be blind to those that do not neatly fit their categories (Beunza & Garud 2005). Here assessments are ‘authoritative’. Whilst they could be (and often were) challenged, analysts tended to stick to original classifications (doing otherwise could diminish credibility – see Zuckerman [1999]). Similarly, *statements and their world* bring about ‘accountable’ change. This form of research has to be accountable because it produces ‘winners and losers’. Industry analysts are attempting to be categorical about which is the right technology to buy based on assessments of the current and future potential behavior and competences of vendors. *Visions let loose*, by contrast, are speculative and appear not to be subject to the same levels of rigorous accountability as other kinds of promissory work. In other words, what we have shown is that there seems to be a spectrum of promissory activity. At one end we find promissory work that is researched and defended robustly and which appears to ‘matter’ to promissory organisations and the various others who use it. At the other end, we found very different kinds of promissory work, which looked more like ‘provocations’ attempting to capture interest. Intriguingly, the failure of provocations appeared to be relatively unimportant. It might be speculated that they do not at least explicitly damage reputation in the way some have argued (Brown 2003). To the

contrary, we found there were public spaces and occasions where mistaken predictions could be openly discussed!<sup>10</sup>

We sought to answer *empirically* the question as to why certain kinds of promissory activities fail or succeed but we do not necessarily think it an issue that can only be assessed empirically or, more importantly, in *hindsight* (which tends to be the implication from sociological work on technological expectations). What we are arguing for is an empirical programme on the business of expectations, but with a view to creating a typology of promissory behaviour. We have identified at least three types of promissory behaviour (but there will certainly be others; meaning that a much more complex typology could be developed). To be clear, the aim of such a typology is not to improve our ability to decide on the accuracy of promissory work. We are not suggesting that the particular mode of analysis developed here provides us with privileged access to the future (Barben *et al.* 2007). It does not. Notwithstanding this, however, it may still allow us to say something about the promissory process (Geels 2007). This includes providing insights into the different moves and strategies by which promissory organisations work, which, in turn, could provide an understanding into the potential strength or weakness, robustness or fragility of particular claims; the upshot being that it allow us to delineate certain of the things underpinning their success or failure (Barden *et al.* 2007; Geels 2007). This perhaps can be seen most clearly in terms of the ‘webs of accountability’ identified above. Surrounding certain claims (*statements and their world* for instance) there appear to be dense arrays of knowledge linking players together as well as formalized and highly distributed processes by which data is gathered (resonating with what Callon & Muniesa [2005] have referred to as a ‘calculative network’). Moreover, this formal process is increasingly exposed to external scrutiny and comment. Whilst clearly not subject to the strict controls of independent ‘scientific’ or ‘academic’ knowledge, this kind of assessment does have its own particular forms of accountability that deserves further study (Keiser 2002; Preda 2005). Alternatively, compared to *visions let loose*, this reveals a much less dense web of accountability and altogether more fragile links with little in the way of defensible knowledge.

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<sup>10</sup> ‘Demonstrations of failure’ are, we would argue, an intrinsic part of the processing of market based expectations. Industry analysts at certain key times reflect back over predictions with an eye to extolling as well as critically assessing their work. Public demonstration of a level of self-criticism of some promises may serve to reinforce the robustness of others, and the membership of critic and audience in a mature calculative network.

## **Future Areas for Research**

We have called for more light to be thrown on the business of technological expectations. We speculate that in a context of accelerating technological innovation, that gives new challenges and uncertainties to potential innovators or adopters, and where the normal processes of decision making are deemed to be inadequate, there will be a growing number of promissory-type organisations attempting to organise the future in some form. Clearly not all these will influence innovation in the same way; only a small number will produce research that is seen to be accurate; only some will generate assessments that end up being performative. There is therefore a need for scholars to develop the analytical tools and frameworks to allow researchers to carry out a systematic and sophisticated study of their influence. Our work suggests we may need to address a possible *spectrum* of promissory organisations with, at one end of the scale, powerful bodies (like the industry analysts described here) which explicitly see themselves as organising promises, whilst at the other end actors and organisations which may be less central and may not necessarily even recognise their promissory role as such.<sup>11</sup> We have produced a study covering one part of the spectrum, where one group has managed to establish itself through commanding the centre of attention, but there are clearly many other kinds of promissory-type organisations that deserve to be studied.

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<sup>11</sup> Research councils, or those funding and developing research programmes, may be one example. For a discussion of Dutch research councils fulfilling this role see Van der Meulen and Rip (1998).

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Table One: The Business of Technological Expectations - A Typology of Promissory Behaviour

	<b>Kind</b>	<b>Effect</b>	<b>Accountability</b>
<b>Infrastructural Knowledge</b>	<ul style="list-style-type: none"> <li>- definitions &amp; classification of technology markets</li> <li>-strongly institutionalised (invisible until breakdown)</li> </ul>	<ul style="list-style-type: none"> <li>-organising change in the marketplace</li> <li>-strong and enduring influence (promissory-work made durable)</li> </ul>	<ul style="list-style-type: none"> <li>-advances in a slow &amp; careful manner</li> <li>-authoritative</li> </ul>
<b>Statements &amp; their World</b>	<ul style="list-style-type: none"> <li>-assessments of relative location of suppliers within product markets for different user sectors.</li> <li>- active attempt to make research successful</li> </ul>	<ul style="list-style-type: none"> <li>-strong but contested influence</li> <li>-creates winners &amp; losers</li> </ul>	<ul style="list-style-type: none"> <li>-brings about 'accountable' change</li> <li>-process behind tools robustly defended</li> </ul>
<b>Visions Let Loose</b>	<ul style="list-style-type: none"> <li>-signposts drawn up about the state of industry and future development (longitudinal predictions)</li> <li>-transient statements</li> </ul>	<ul style="list-style-type: none"> <li>-some but typically only 'temporary' influence</li> </ul>	<ul style="list-style-type: none"> <li>-speculative &amp; low in accountability</li> <li>-not subject to close scrutiny (or sanction)</li> </ul>

Figure One: The Magic Quadrant

