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Distributed Reflection of Capabilities as an Aspect of Innovation

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DISTRIBUTED REFLECTION OF CAPABILITIES AS AN ASPECT OF INNOVATION

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Abstract

Innovation is poorly understood. Generally, it is presented as a rational process of matching a brilliant idea with market needs via a sustainable business model. In business schools and entrepreneurial programs everywhere, future innovators are taught how to represent this stylized process in business plans. This approach is flawed inasmuch as it ignores the reflexive behaviour of the innovators themselves and the ways in which innovation and information systems development is shaped by that. This paper instead shows how innovators work by maintaining and extending their innovability, rather than by promoting a particular innovation.

Keywords: Innovation, Information systems development, telecommunications, mobile services.

1 INTRODUCTION

There seems to be no end to the failures of predicting the outcome of consumer-oriented telecommunications and service development[2]. The unexpected success of SMS[3] has become iconic as one example of how difficult it is to understand what the market wants (Xu, Teo and Wang 2003). Similarly, actors in many European countries have found the success of *i-mode* in Japan hard to replicate[4], and even to understand and describe consistently. WAP is currently undergoing a surprising renaissance after having been touted for many years as the most obvious failure of telecommunications[5]. With the massive amount of financing required to develop, deploy and upgrade the required infrastructure, as well as seeing the number of jobs at stake and the income connected to the usage of, for instance, mobile telephony, clearly we must have the ambition of understanding such processes much better.

Our case is not a typical example of technology which concern innovation and diffusion theories. Usually, they are devoted to grander things: the diffusion of modern mathematics and the birth of the modern computer (Rogers 1962), pasteurization (Latour 1988), and electricity network architectures (Hughes 1983). In this perspective, innovations are usually seen as carrying global impact, in and by themselves (Hugill 2003). This paper, instead, covers the more regularly occurring innovation processes with which many entrepreneurial firms are inconspicuously involved, in order to examine exactly what makes them appear as innovative.

The case in question is a comparably significant actor within the conception and development of innovative mobile services. We look at the co-ordination and implementation of a series of event within *Multimedia.com*[6], a company which focus on various forms of mobile content distribution. Two

[1] The research described in this paper was conducted while the author was a post-doc at the University of Oslo
[2] http://www.cellular-news.com/story/14708.php
[3] Short Message Service
[4] http://www.theinquirer.net/?article=27477
[5] http://www.pfeifferreport.com/trends/ett_wap.html
[6] Names have been changed for anonymity

of its operations are described here: *MultimediaContent.com*, which is a content aggregator and *Media Labs*, who do streaming video.

Multimedia.com was part of the massive growth in business related to the Internet and mobile content towards the end of the nineties, and they have already seen their share of ups and downs. The company was founded in 1993 as a small start-up with grand ambitions and only two owners, both of which were employees. At the time of writing the company has around 120 shareholders. In 1996, the focus was on Internet-technology, PC games, direct marketing and animation. At that time, they had many promising technologies which were patented or pending, but no real sources of income. Today, the company is successfully engaged in the aggregation and distribution of mobile content, none of which rely on their own original technologies.

Thus, this paper is not about spectacular innovations. It is a presentation of one company's activities, hand-in-hand with their ambitions to become innovative. Innovation abated by market dissonance or reverse salients, which are deep-seated within the technological design itself (Hughes 1983), do not stand out from our observations. Moreover, the services in question is perhaps too infotainment-oriented and far-fetched for most users to be assessed by users in terms of perceived or experienced usability or usefulness (Davis, Bagozzi and Warshaw 1989). One might argue that acceptance of innovation need to build on an installed base (Ciborra and Hanseth 1998), or that technology in itself could be perceived as creating a disruptive momentum of its own by enabling a value proposition to fringe customers and early adopters (Christensen 1997).

In this paper, we do not contradict any of the perspectives outlined above, as such. However, we do not find them sufficiently concerned with innovation in a scenario where there seems to be no existing base and no obviously unfulfilled needs, at least not in traditional or rational terms. In our case it does not seem suitable, as most innovation theorists seem to favour, to see innovative *technology* as the factor which alone makes a firm successful somehow. Indeed, the technology in question for our case is neither new nor particularly advanced. Rather, the success stems from many other factors, one of which is the set of activities with which the firm routinely engages to appear as innovative and thus facilitate a successful set of development trajectories for themselves.

This paper therefore complements the existing body of research on innovation diffusion and adoption by looking at innovation from another perspective. We aim to be taking into account the practically achieved socio-technical co-ordination and continuous re-orientation between actors based on the opportunities that sporadically and arbitrarily arise, rather than looking at innovation as something essentially a property of the technology, or as a relationship between the market and the technology. Similarly, in this perspective, externalities are seen not as properties of an innovative technology (Katz and Shapiro 1985), they are much more aspects of 'actively achieving innovativeness' that companies orient their technological resources towards when they do the work that they need to do to become innovative.

2 RESEARCH METHOD AND ANALYTICAL FRAMEWORK

This paper is based on a study that was carried out in 2005. It started out with the objective of identifying the links between documentation practices, design and innovation. The company which we studied is involved in the development and aggregation of mobile content, as well as the technological development of platforms for games and messaging. Their primary customers are operators and "storefronts," by which it is meant the actors who market and manage branded portals on the world-wide web. It is not by international measures a very large corporation. They employed at the time of our investigation approximately a hundred people, of which half were software developers in an Eastern European country. The locally based operation is mainly occupied with sales and marketing, targeting customers all over the world and clearly just as successful in the US as in Europe, and even more so in East Asia. In East Asia, moreover, they have an outsourcing relationship (from the point-of-view of their East-European subsidiary) going with a smaller development organization.

The case was selected for several reasons. Multimedia.com is one of the most successful companies in the country within the business of service provisioning. They are developing their own content, as well as aggregating from other developers, validating formats and platform adaptations, plus they have a wide range of subsidiaries. The firm has been through the highs of dot.com and survived the crash afterwards. Therefore it is representative of many types of companies, in content production as well as technical development and bigger as well as smaller enterprises. Moreover, the company is well known to the researchers involved in the project. They have always been supportive of research and without any strings attached they have allowed the examination of their archives and access to top-level managers.

The data collection for this paper by consisted of face-to-face interviews with all the central managers at various levels from CEO to consultant at the local site of the company, plus questionnaires. Some of the managers were interviewed twice. The interviews were structured by an interview guide, which aimed to bring about coverage of questions regarding the use of methods, documentation practices and innovation in the company. In addition, a study of the documentation produced and maintained throughout the life-cycle of all of the company's projects in the period between 1999 and 2004 was carried out, of which two large projects in particular was analyzed in-depth. The interviews were recorded on mini-disc and documentation could freely be accessed from a dedicated user account set up for research purposes.

It is important to emphasize that the aim of the interviews was not to perform a quantitative analysis or inductively generalize from the samples onto a more general model of innovation. Rather, the aim was to allow the actors' own interpretations and documentation of their experiences with developing mobile services, to be subjected to interpretative analysis. This corresponds to the notion of interpretative research (Walsham 1995). To the extent that there is a consistent and stable pattern emerging, the hypothesis of the research reported here was that it might contest some of the classical tenets of more entrepreneurial innovation theories.

Of course, the study still only concerns one organization and future work ought to include a broader sample in order to provide a stronger external validity. However, since the results reported here are not concerned with establishing correlations and relationship between observations emerging from the fieldwork. Therefore, the lack of statistical generalisability does not in itself invalidate the study as long as the case is representative, for which it was argued above on the background of the history and current market position of this company.

The analytical framework of this paper is different from much of the previous work on innovation theories, which has taken a much more macro perspective. It is based on the participants' own reflection, accounts and 'shared-and-taken-for-granted' knowledge of the situation. In this respect, it is also heavily influenced by ethnomethodology. However, the data collection in not based on participant observation which is usually seen as exactly the type of data needed to do an ethnomethodological analysis (Crabtree, Nichols, O'Brien, Rouncefield and Twidale 2000). The question (and perhaps objection), then, becomes naturally, is it possible to do an ethnomethodologically informed analysis based on a mix of interview-based approaches? There is support for our approach in (Garfinkel 2002), where it is stated that ethnomethodological analysis is not to be identified with a particular research methodology. Also, we refer to the rich variety of experimental approaches and interviews applied in ethnomethodology (Garfinkel 1967).

It is important to bear in mind, then, that, participating in an interview (or responding to a questionnaire) in itself can be seen, of course, as an everyday, locally situated and accountable activity, from which we can learn, ethnomethodologically speaking, just as much or more about what people do in those particular settings, as one can learn about their work. This is not an attempt to promote a naïve punch-line along the lines that people do not say exactly what they mean when they are interviewed or respond to web-based questionnaire (although that is probably the case as well, from time to time). It means that utterances by the subject in an interview rather than being treated as a positive imprint of the external world could be seen as data in itself, as indeed is the case for this

paper, and subjected to a reflexive analysis (Walsham 1995). The research presented here is based on a single case. That is a limitation, but it does not, for the reasons just given, invalidate it in methodological terms.

3 THEORETICAL BACKGROUND OF INNOVATION

Innovation theory is a large area with rich and useful contributions of theory as well as case studies. It is impossible to cover the area entirely and justly in a conference paper such as this, and the brief summary of some of best-known contributions which follows is bound to be found lacking by some readers. This does not mean that we take theory lightly. Innovation theory usually set the criteria firmly for what is to be considered the making of novel technologies and corresponding change of the state-of-affairs in society. Management structures and competencies influenced thereby, interact with technological systems development in a heterogeneous engineering process (Law 1987). In this perspective, a theory of innovation itself becomes part of innovation.

A groundbreaking theory of technological innovation and its adoption into a market was introduced in the early sixties by Rogers (1962). He created a topology of adopters of any new idea or invention, according to which, members of a market could then be described either as innovators, early adopters, early majority, late majority and laggards, roughly around a normal distribution. Rogers (together with Kincaid) have also made more recent contributions to the design of social research, in particular pertaining to communication networks and their influence on human behaviour (Rogers and Kincaid 1981). It can be seen as representing a market perspective. As such it is concerned primarily with how the individual consumer's perception of innovation will facilitate the adoption of a new idea.

Other models take a similar point of view, such as the Technology Acceptance Model (TAM) (Davis, Bagozzi and Warshaw 1989) and others in the same tradition such as the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis and Davis 2003). TAM was constructed to be used to predict the acceptance and usage of IS in organizations. This model hypothesizes that *perceived usefulness* and *perceived ease of use* are fundamental determinants of user acceptance. There are a number of studies which confirm this hypothesis, with perceived usefulness appearing to be the dominant factor. In the original work on TAM, Davis (1989) indicated that of this pair, perceived usefulness could be an antecedent factor which, in its turn, influenced the other.

Thomas P. Hughes talks about the development of large technological systems which evolve in accordance with a loosely defined pattern. Implicitly, the theory of large systems innovation, thus, concerns systems which evolve, or expand, in "phases in which the activity named predominates: invention, development, innovation, transfer and growth, competition and consolidation (Hughes 1987)". One core concept in Hughes's theory is that of a "reverse salient". A salient is a protuberance in a line which separates one advancing phenomenon from one that retracts due to those advancements. Hughes uses a weather front or the surf of a wave as an example. A reverse salient, then, is a point on the line of advancement where the opposition is still stronger and core components of the new system are lagging or out of phase with the rest of the related technology (Hughes 1987). The examples given by Hughes are technological, typically ones of changing specifications or performances on behalf of one component necessitates changes in others. A reverse salient induces change. It can either be improved within the context of the existing system, or it represents an entirely new opportunity for radical change by a new system emerging.

The notion of disruptive technology has most noticeably been attributed to Christensen (1997). It describes a product or service that eventually take the dominant position in the market from an incumbent, despite being unusual and underperforming compared to existing solutions. It might also be serving customers who have not previously been targeted by the dominant provider for instance by not needing the volume or being able to afford to mandatory service agreements. Since technology developments regularly take place at a much faster rate than customer requirements develop, even from such a marginal niche the innovator can then move upward and take greater market shares as the

technology improves and prices are reduced. Due to their installed base of profitable customers and organizational culture, the leading actors will not be willing to aim for radical innovations in the first place, nor will they be able to change fast enough to compete once their position has been overtaken. Ideas of a disruptive technology might seem heavily technology deterministic, but in later works, Christensen et al. (2004) turn slightly toward the development strategies of disruptive innovation *instead*, agreeing that few technologies (according to this modified theory) are essentially disruptive or sustaining as such. The disruptive impacts of new innovation are equally a consequence, for instance, of infrastructure, market orientation and the implementation of product plans.

For many technologies, the net benefit of adoption increases with the number of adopters (Katz and Shapiro 1985). It may directly influence the perceived and experienced usefulness and quality of the product, such as in the telling example of the telephone, which depends (clearly) on the number of subscribers that exist in the network. More indirectly, the number of adopters of a certain enabling platform will, in the next instance, influence the quality and number of the applications that it is targeted by. The hardware-software paradigm is often used as an example, illustrated well by the width and depth of programs that are available for the most popular platforms, such as the Intel-based PC. Another externality that arises from the numbers of consumers and users) is the calibration of the service network, which typically will improve in coverage with the number of customers that indirectly or directly contribute to funding it. Mainstream innovation theories and diffusion models seem to be concerned mainly with the relationship between the individual or group of users and the technology (see Figure 1). It sees the technology as an object to be promoted towards adoption. It sees the market has hosting the needs of users. The challenge is to identify and manage the fit, or align needs with technologies.

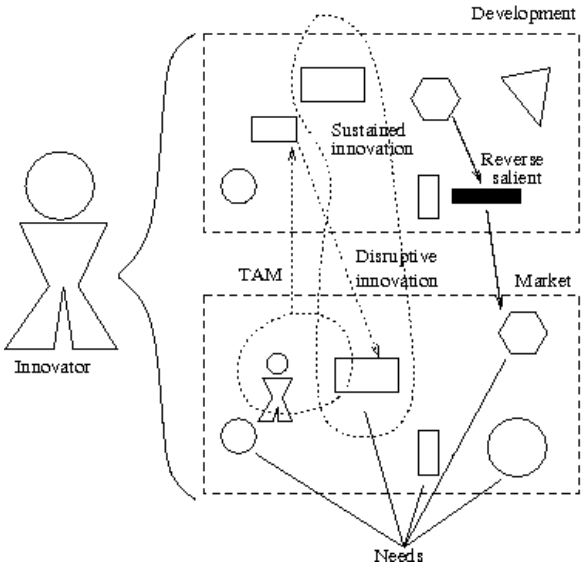

Figure 1: Common theories of innovation all fit in a perspective of innovation as external to technology and technology as external to the market needs

To some extent, one finds that many theories of innovation are mainly concerned with technology, leaning amicably towards a technological determinism perspective taking the stance that essential qualities of technology will to a significant degree influence the adoption. Others look at the user on an individual level mainly, departing from ideas of usefulness and usability to predict adoption (for instance TAM). The theories of network externalities look at the relationship between users and the installed base from the opposite direction of disruptive technologies (and, indeed, from technological determinism). It sees adoption partly depending on successful adoption itself, in a cycle of increasing returns from a growing number of users. Thus, good technology can fail for social reasons. Hughes (1987) does not dismiss such socially induced reverse salients. However, in his theory of large-scale

systems innovation, the innovators' many roles are construed as concerned with improving, evolving and sponsoring particular *technologies* (rather than adoption). In other words, the roles, competencies, the organization of work and co-ordination of enterprises, etc, are subject to the needs of the technology and it is the technology that advances in salients rather than the other way around. This is, indeed, an intuitive and rational common denominator for the conceptualization of innovation. But is this how it really takes place, and can it proactively be supported in this fashion? In this paper we offer an alternative perspective. We believe that there is a need to investigate innovation from a broader perspective, including reflexively the innovator as an actor in the heterogeneous network of innovations that we study, rather as seeing the innovator as outside and above the actor-network which constitutes the technology that is at the core of the innovation endeavour. Moreover, the conceptual distinction between provider and adopter of technology seems simplified and influenced (understandably perhaps) by large-scale success or failure stories related to consumer products. But of course, innovators of technology are also users of those very same (and related) technologies. Before we go into the detailed model, we will describe a case providing the background and rationale for our alternative conceptualization of "innovation work" along these lines. The next part of the paper describes the practical involvement of a company in a process which we see them as working to *become* innovators, rather than innovators at work.

4 THE MOBILE MULTIMEDIA CASE STUDY

We now turn to our case. Multiemedia.com has today a going operation that arguably must be considered a reasonably successful business venture of mobile content provisioning. This is not where it started. From the beginning in 1993, this company was much more modestly engaged in developing simple games and direct marketing strategies for the Internet. The firm had many seemingly unrelated ideas for technologically-founded breakthroughs, some of which were quite appropriately timed. For instance, they were engaged in making an Internet browser entirely in Java, a search engine (this was before *Google* and *Fast*), an MP3-player, advertising software, etc., but they never really managed to get anywhere with these projects, mainly due to a lack of funding, according to the owners.

These entrepreneurs originally came from a background in the film industry, and had been doing production work in Hollywood and Oslo, when they were given the opportunity to do the modelling and special effects for a cartoon feature film, which became a nice hit in Norway. They got themselves a name in the press and then came along dot.com with a much more viable source of funding for research-based development. With UMTS[7] on the drawing board and the PDA[8] on the face of it finally getting ready for prime time, the timing was good and Multimedia.com had exactly the right technology.

Already working with cartoons had set up Multimedia.com to work with modelling in 3D through one of the firm's subsidiaries. Talking heads a la *Max Headroom,* which became a generation icon for many, had by now come and gone from the TV-sets and the PC was, de-facto, a full-fledged multimedia terminal with proper video already. The mobile phone, on the other hand, had neither the bandwidth nor the processing power to do that. Multimedia.com had developed a technique to animate a model of a human being locally using their own algorithm library for 3D-rendering, and they thought they could do it with the CPUs of next generation telephones. They made such talking heads move their lips and cheeks by extrapolating mouth and head movements between vowel instructions. Thus, it was extremely gentle on bandwidth compared to the competition, which relied on transferring the compressed frames. The ambition of Multimedia.com in 1999 was therefore to deliver a personal broadcast, end-to-end, across the mobile network.

[7] Universal Mobile Telecommunications System
[8] Personal Digital Assistant

By 1999, they had been trying for a while to get the attention of possible customer for this product; in particular the founders saw that a market was developing in the centre of Scandinavian mobile telephony development at the time, Kista outside Stockholm in Sweden. They were actively seeking out opportunities with the business developers and project managers at Ericsson. They found a great environment for it in a handheld terminal division working to develop a 32-bit EPOC-based smartphone with an Arm 9 CPU. Ericsson needed a conceptual demonstrator to show off it capabilities. The engineers and consultants at Multimedia.com interacted deeply with Ericsson Research and Development in Kista as well as in Chapel Hill. Finally, they agreed to create an interactive news application, with four updates a day of BBC news, with a talking head as the anchor men or -women. At CeBit six months later, they had it running on the mobile device.

Soon later, they found themselves in the midst of the heated attention of dot.com. Approximately 250 people were in their employment in offices around the world. The firm was working closely with some of the big players in the industry such as Ericsson, Intel and BBC. The technology was all new and patented or pending as well. The firm had developed 3D animation for mobile handsets. Unfortunately, Ericsson never managed to get their smartphone into the shops, and their project was abandoned. The focus of operators for a while turned to WAP. WAP was seen as one way of getting a standard client platform out there which would not tie operators to proprietary solutions such as Multimedia.com's. Multimedia.com had to prove that their solution could stand on its own two feet. They got their hands on a large batch of a model called the R380 and they went into a pilot with a really limited version of their news application. The market did not respond favourable, however, it seemed. This coincided roughly with the big dot.com crash of course; dwarfed again by 9/11 one year later and it effectively put a stop to Multimedia.com's expansion. The end of fresh venture capital was a problem of course, but not the only one, and in this case, not the significant one. Multimedia.com continued developing their talking head application and eventually got a quite nice one out on IPAQ PDA, with regular news production from a studio abroad, based on news from ITV[9]. However, it was still no big hit, for a number of reasons. The terminals sold in relatively small numbers and the people who used the devices did not subscribe to the service. News is relatively easily available worldwide from a number of sources which hold high and unique editorial qualities. Mobilemedia.com was a start-up and an incubator, not journalists, and they failed to get unique content out quickly and cheaply enough. In their case and in this business, technology simply did not seem to be sufficiently much of a differentiator. By now, however, the company had set up operations in London, Preston, Colombo, Hong Kong and Beijing in addition to Romania. They were by now a large number of handsomely paid people working in multiple locations and although there was probably nothing wrong with neither their ideas nor their battle plans, it slowly came to a halt.

Multimedia.com started looking for new opportunities and ended up for a while producing and deploying consumer oriented content to mobile phones: logos, ring tones and games. This activity mainly came out of a subsidiary *MultimediaContent.com Ltd*, which had (and are still mainly in the business of managing) distribution agreements with several operators and storefronts on the web worldwide (Norway, China, Italy, Hungary, etc.). Over 100 content providers have entered into signed agreements with MultimediaContent.com Ltd, and they also signed an exclusive five year commercial agreement with one of the larger divisions of a Chinese operator to provide premium SMS and data services. MultimediaContent.com developed a technology-independent platform for mobile content management, provisioning and distribution, based on experiences from another subsidiary of Multimedia.com, DigitalMobility.com Ltd, which they bought a few months earlier when that firm effectively went bankrupt trying to do this on their own.

The technology involved is really simple, but the business is risky. No-one knows in advance exactly which applications (ring tones, games, logos, etc.) will bring in enough money to defend development costs (and recover sunk costs for failed attempts). When the first-movers successfully established

[9] http://www.itv.com/

themselves in this business, the costs of development were lower; there was less competition and the consumers were less demanding. Now, one must look at the co-ordination between actors in this setting from a different angle, for instance, as parts of a political and tactical positioning towards a more mature market. The actors need to do continuous practical alignment with other firms in the business segment, since the competencies and access rights that are required to implement an end-to-end service is not readily available to anybody. This is to a large extent due to the telecommunications infrastructure operators' stronghold on the network and billing for services. The companies with an ambition to become innovators in this area do not only have to invent and re-invent technologies, they need to implement risk management (and risk sharing) strategies, since succeeding with a end-to-end service requires a much greater investment than what each party can afford individually (given that they do not know in advance what exactly will become a success in the market), etc. Therefore, co-ordination in the commercial context of this case is a lot more involved and intricate than it used to be. It does the work of orchestrating many small contributions into a larger offering that the market, in sum, just might end up paying enough for. Multimedia.com might not have been successful in this endeavour at all, in this sense, had it not been exactly because they for much too long had been struggling to make ends meet in this market.

Towards the end of 2003 the outlook was still quite sinister, and a venture company with links to the biggest national operator acquired control (for all practical purposes) of the company in a placement of €425 000 for one third of the company. The purchase was, arguably, part of a defensive strategy on the operator's behalf of gathering all of its new media involvements under one venture investment administration. At the same time, the venture company independently also made further investments along the lines of a more aggressive "roll-in and consolidate" strategy, seeing reasonably priced opportunities in a sombre market.

In the summer of 2005, Multimedia.com reached their objectives from the initiation of their great expansion, not by successfully developing their own animation technology until it reached production quality, but by buying a small company that we shall call Media Labs, which, for a while and quite successfully, had promoted their streaming video solution in the mobile phone market. The money to buy this company came from their new owner, the operator's former venture department. Media Labs is a small spin-off from the national broadcaster NB[10]. NB had been experimenting with complimentary services to their TV-shows since the beginning of this technology, first on the web and more recently oriented towards ubiquitous computing and mobile telephony. It could, however, not easily be integrated into their government-funded, public license-based operation, so the engineers left to set up this company.

5 INNOVATION AS DISTRIBUTED CAPABILITY REFLECTION

It seems from our case that ordinary and haphazard innovation is not uncommon, as it 'happens to' a lot of companies. It then becomes pertinent to ask what we can learn from it. It does not seem that the theories most commonly applied to innovation processes would have matched our case very well. Especially, the notion that first a technological invention comes along, and then the actors assume roles and take the measures that are necessary to turn that invention into a successful product, does not seem to be entirely general. Our case instead indicates that invention is sometimes the main *ambition* of some actors, who then 'achieve it' almost regardless of the technology. Technology as such plays a role, of course, albeit not in technical terms and certainly not in technology-deterministic fashions. It is, rather, a resource that is drawn upon to feed a more general set of visions. Eventually, such visions is of course realized using "technology in technical terms," but the selection and development thereof is subject to so many other aspects of "being entrepreneurial." There is great fascination in our society with innovation and technology. In some sense, a permanent disclaimer seems to be needed, since

[10] National Broadcaster

quite strong arguments are made about the ability of technology as a change agent (Malone 2004). Our stories show that technology plays a more modest role, without of course being entirely powerless in terms of implicating change. Most importantly, however, and perhaps in an interesting contrast to the perspectives outlined above, much of the technology that is involved in innovation processes is deeply underutilized. Sometimes it is, indeed, only a solution looking for a problem, but describing it simply as that glosses to a large extent the practices involved in defining and implementing a product as something that goes beyond technology. Not everything that people want is about solving problems, after all. But what we seem to find is that great technological potential and nice ideas about how to use it in applications are put to the side, in order for actors to push forward and pursue status as sufficiently innovative to make money instead of developing the technology further.

The core, we believe, of many of our findings is that organizations *as and when* they develop technology, not only redefine themselves in terms of the technology and the opportunities that it offers, until they find a fitting role that can contribute to getting the technology launched, as it were, but also the other way around. In light of their ambitions, as and when they develop themselves, *they redefine their 'innovation' in terms of candidate technologies and the opportunities that they offer, until they find a matching set.* This is what we mean by distributed reflection of capabilities, as illustrated in Figure 2 below.

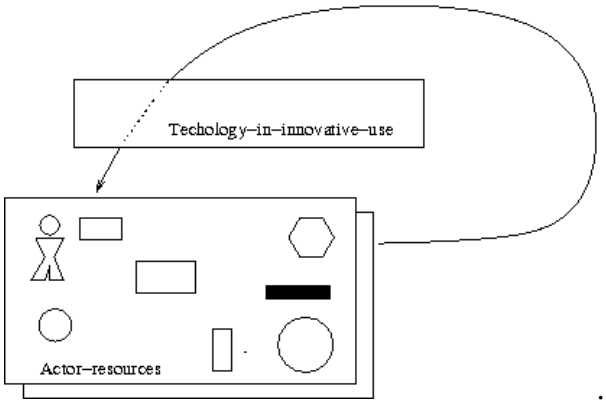

Figure 2: A reflexive view of capabilities means that the actors are using the view of themselves together with actor-resources, as input for the next iteration of innovation

The "wannabe-innovators" reflexively analyze their capabilities and look for a match with the observable patterns of similar or related innovatively-oriented activities by actors in their environment. The technologies that they know are actor-resources. Other actors are actor-reserves, and they themselves are actor-resources. Actor-resources are strung chronologically together by the actions that they take and choices that they make. Putting it all but too bluntly, what the organization can do with what it has is a continuous "corporate re-reflection of self" which is matched against possible courses of action with known actor-resources within and in the environment. In this perspective, innovation is pattern-matching and a match of patterns means that the library of temples in the reflection of capabilities can be adapted and improved. For Multimedia.com this entailed redefining their role from a technology incubator to an agent, from which the operators and storefronts could get a broad and proven collection of logos and ring tones and java games and eventually, videos that they could offer to their customers. It meant maintaining a certain and distinct path "independency" when it came to the roles that they assumed, of course, as well as the technology. In doing this, they also had to realize that success could not come from making a radically new invention, a disruptive technology that would deconstruct and reconstruct the value chain. Instead they had to reinvent themselves to be a much more modest contributor to the status quo.

Doing empirical studies of innovation processes seems necessary to understand the ways in which the very notion of innovation glosses achievements that are not particularly novel and technologies that are not particularly ingenious. This does not make their position less interesting or profitable, nor does

it imply that these technologies have any less impact. This paper indicates, just as interestingly we think, that one needs to look at precisely *when* and *why* a set of activities in technology and business development is nominated as exactly innovations in order to understand how they came about as such. It is "lock, stock and barrel" of successfully becoming an innovator'.

6 DISCUSSION

The traditional way of teaching entrepreneurship departs from the idea of a great idea, i.e., that there is a problem for which a technical solution has already been identified and that the technical solution needs to be sufficiently refined, adapted and strategically launched into its righteous slot in the market. Instead we maintain that innovation often happens through "the idea of having a great idea".

The largest body of research in innovation theory has started from the perspective of innovation as a property of the technology that is being promoted. This can perhaps be seen most clearly in the early publications from Christensen on disruptive technologies (Christensen 1997; Christensen and Raynor 2003), and although the later works from the same research group include the much-needed notion of *choice* in their predictive framework (Christensen, Roth and Anthony 2004), this choice is still strategic and rational. This research reported in this paper has on the other side shown that it counts just as much who you know and the resources that you acquire, and that the *micro*-level history of past performances in individual project count towards setting the stage for innovation to emerge. There are some alternative approaches presented in recent literature. Similarly to this paper, MacInnes et al. look at innovation as a transformation of the industry (MacInnes, Moneta, Caraballo and Sarni 2002). Their research is much more oriented towards the strategic choices of network providers in order to leverage their profits, however, whilst this paper has emphasized the ad-hoc choices within mobile services provision. Although both sets of processes need to lead to improved coordination between the actors, MacInnes et al. definitely see a more rational unfolding of events than what has been presented in this paper. This can bee seen clearly in the case of Multimedia.com, who have been striving to become entrepreneurial since their origin, and, when they finally reached that goal, it came through two inventions that were completely in-sourced. They bought the content management platform from another dot.com almost gone bust, and the video streaming platform they acquired from a spin-off from NB.

The position that innovation is man-made, not only from technology, but also from the appropriation of competencies and relationships, history and a good deal of luck, might seem too obvious, but the point that we are trying to make here goes a little bit further. It is not just that good products can fail (Norman 1998), but the "goodness" of a product might simply not be all that relevant, compared to its non-functional qualities, availability, marketability and the fit in an ecology of actors which co-ordinate their everyday business to the needs of those just-now-managing that particular "technology". Castells has written very nicely about the new economy and e-business based on the Internet, and just like the Internet affords "scalability, interactivity, management of flexibility, branding and customization in a networked business world (Castells 2001)" so does the next generation of cellular networks. But the contribution of this paper is also to show that such properties emerge *from* the co-ownership, and co-ordination of firms, rather than as essential properties of the technology. It constitutes an innovation infrastructure, rather than a technical one. Such networks of innovation have been made the subject of studies as elsewhere as well, for instance by Maitland et al. (2005), who found that the rapid change in the telecommunications sector is causing change, for instance by increasing the interdependence of its firms. It is in line with our research when they come to the conclusion that the revenue sharing mechanisms and governance become less standardized as the relationship between providers and consumers become less tightly coupled. At Multimedia.com, national standardization was seen as making life easier for their product development departments, at the same time as the strong co-ordination activities and flexibility of the company made it possible for them to integrate content across standards. On the other hand, Maitland et al claim that the revenue model and nature of network membership will shape the service network (Maitland, Van De Kar, De

Montalvo and Bouwman 2005), and the opposite seems to be the case for our research. Multimedia.com maintain a homogeneous service network across their partners and subsidiaries, even with the same technological platforms implementing it, even across national and regulatory border which implicate very different business models.

There is a greater achievement in integrating business models across such boundaries, than we might think at first glance. Haaker et al. look at the business model as "[…] a blueprint for how a network of organizations co-operates in creating and capturing value from new (…) services and products. Designing business models is a complex issue (Haaker, Faber and Bouwman 2004)." From the research that we have reported in this paper, it seems natural to add that business models are so much more, in one sense, inasmuch as they need to cover co-ordination aspects beyond services, technology, organization and finance, which are also the domains that are recommended by Haaker et al (2004). Conversely, it seems reasonable to claim that business models are at the same time "much less," since they do not seem to be *designed* as such, and should be thought of as blueprints for a business only to the extent that they document a process of continuous and opportune co-ordination with regards to such external factors and resources. It could be argued that the conception of a business model does not fit the external factors and resources represented by the historic structures of previous projects, mergers between form and technological arrangements made simply to make the application work across a multitude of handset. On the other hand, it is hardly possible to see innovation *of* the business without a glance toward such factors, and it would therefore in future research be tempting to try to apply the resource dependence perspective of Pfeffer and Salancik (1978). It is a seminal work which points toward including, amongst other factors, political lobbying and social influence as well as merger within and without the firms own control in an analysis such as this. It offers a detailed argumentation about the role of information in the dynamics involving a firm and the external forces that it has to deal with. It is a future ambition of the work presented here to present a more detailed view of external factors influencing ex-technology innovation, than can be found in most entrepreneurial literature on this topic. Keeping in line with the ethnomethodological ambition of this paper, it is not the point that there *are* external factors which influence the firm; rather it is *how* they are dealt with, in this instance, by actors in such a way that it makes them innovative.

This paper indicates the non-linear nature of such ordinary and practical innovation as and when it comes out of as well as necessitates co-ordination. It explicates ordinary processes leading to extraordinary results, and show how a network of innovation-oriented actors thus recalibrate and reorient their work to adapt in a non-linear fashion to the changing circumstances. The roles that actors play are, in this respect, much better conceptualized as resources in these actors struggle to *become* innovators rather than an implication of essential qualities of 'innovative technology'. In this paper we maintain that a wide range of innovation processes are not shaped by innovation technology, rather, it is the other way around. *Technology is selected, and socially and practically constructed in order for companies to become innovators.*

This paper contributes to the theory of innovation. The practical application of our results ought to intrigue administrators and regulators of technological markets, policy-makers and politicians who increasingly aim to encourage industrial innovation to make sure that people have good jobs in the future, as well as the academic institutions who have designed education programs of innovation around the notion of extraordinary technological ideas. The conclusion of this paper is that this is perhaps not the most relevant perspective of innovation, since much innovation seems to be so very ordinary.

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