

***ASSESSMENT OF INNOVATION:
THE GEOMETRIES OF STRATEGY***

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ABSTRACT:

Innovation as a core driver of industrial development needs careful consideration, since not each innovation holds the same degree of novelty and impact on the market place. Additionally, innovation is too often taken as a synonym for imitation and amongst many authors Trott complains about the ambiguous use of the term innovation (2007). As evidence provided by own research has shown, there is no clear and precise taxonomy for the field of innovation, which is considered a major disadvantage, since the gaining of mutually accepted knowledge and understanding is deprived (Oestreicher. 2011²).

An opportunity of assessing innovation arises by using Keidel's framework of geometries of strategy, in which triangular thinking is considered as the most robust tool of assessment (2010). In a three dimensional approach a variety of determinants can be used, but three logics seem to be favourable, when considering the following research findings (Keidel. 2010):

- Dimension₁ *Collaboration*: Innovation is rarely an isolated novelty, usually it consists of inputs of various parties (Hargadon. 2003); innovation consists (frequently) of product/service, infrastructure and ecosystem (Adomavicius et al. 2008).
- Dimension₂ *Autonomy*: Innovation is formed by two forces, technology and market linkages leading to the thesis that any commercial innovation in technology is ultimately only as good as its impact on the marketplace (Abernathy et al. 1983, 1984).
- Dimension₃ *Control*: Control can represent various meanings; one of the explanations is presented by Christensen et al. in their resources, process and values theory, another explanation is market control, which is executed by domination or patents [e.g. domination by Microsoft applications or industrial control by Sony with its patent of the Blu-ray technology] (2004).

Oestreicher and Oestreicher et al. have presented their research findings in two earlier papers, which addressed the Home Entertainment Industry as an exemplary study about product failure with regard to the jobs-to-be-done theory and why – due to the TRIZ theory – the Blu-ray disc is not the Ideal Final Result for the consumption of Home Entertainment content (2009, 2010, Christensen et al. 2004, Domb cited in Oestreicher et al. 2010). The research presented in this paper is based on this earlier argumentation. It constitutes a concluding assessment of the Home Entertainment Industry's innovation, or better survival strategies in its battle against the disruptive invader presented by new entrants into an established market. With reference to its present structure we use data collected in a long-term qualitative research for the assessment that managers of the Home Entertainment's replication industry made substantial strategic mistakes, which will, as even industry insiders expect by now, lead to this industry sector's obsolescence in the near future.

With regard to the assessment of innovation, as interviews state, the replication industry has missed the opportunity to innovate itself.

The geometry of strategy provides a research-based three-dimensional insight into the problematic of fighting with marginal tools against a radical invader. Keidel's strategy framework is extended by Kim et al's framework of conventional logic and value innovation logic offering a denser assessment particularly with regard to market impacts (2010, 1998, 2005).

Key words: Geometry of strategy, innovation assessment, conventional logic, value innovation logic, Home Entertainment Industry, path-dependency

INTRODUCTION

The Home Entertainment Industry can be explained as an ecosystem of a high number of value adding services and products. The Home Entertainment Industry is a comparably small, but globally acting industry representing a multi-billion \$ business (Renaud cited in Oestreicher. 2011²). The management of this industry has become extremely difficult, since its dominant product the optical disc, various formats of CD and DVD, is in permanent decline and expected to become obsolescent.

The Basic Triangular Structure

At the beginning there is the production of content, which can be represented by music, movies, electronic games, spoken word and the like. In the past 100 years the typical business model comprised the exploitation of such content by labels of the three main fields, represented by music companies, film studios and game developers. These firms can be considered as the distributors of the content. The manufacturers of different formats of optical discs provide the medium of transport – the product level – for the distribution chain. The second level or tangent targeting consumption is the infrastructure, which is provided by a different set of industries and adds players, screens, loudspeakers and so on. Many of the organisational actors on both levels are international, some even global companies, e.g., Sony, Toshiba, Universal, Twentieth Century Fox, Technicolor or Cinram. This consideration already forms an essential part (but not yet complete triangle) of globally acting and interacting sub-components or subsystems of an ecosystem. Two tangents of a triangle needing the third, the final point of consumption (consumers).

This way, the Home Entertainment Industry itself must be seen in different layers of what Cassia et al. define as habitats (2006). These layers are interdependent in their infra-structural closed market offers, but independent in their differing organisational interests. For consumers, the Home Entertainment Industry structure represents an oligopoly whose market control was nearly perfect – from artists and producers to the consumer – since the industry decided, what consumers could hear and see and by which means consumption was enabled (Oestreicher. 2011²). Internationally, the business models became harmonised over time and served all habitats of the industry perfectly. This constructs a second triangle, which is formed by *control* (the physical global market place), *collaboration* (within the infrastructure first and only secondly with the demand side) and *autonomy*, which is defined here as the autonomy of each member of the ecosystem to find a favourable outcome within such collaboration and interaction.

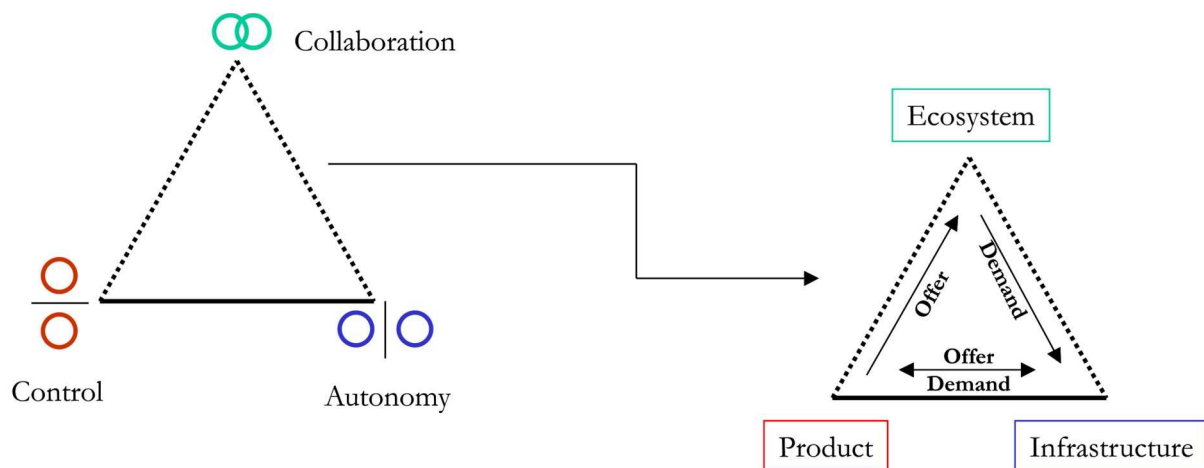


Figure 1: The Foundation of the Triangular Construction

The basic tangent represents what Cassia et al. have defined as part of the offer. It targets two tangents, product and infrastructure, the essential point of consumption (collaboration with consumers, the point of demand), which ultimately creates and makes the ecosystem viable, (Cassia et al. 2006). Hence it is suggested that through an institutional perspective this triangle is based on product and infrastructure. The demand side closes the triangle, since it adds the necessary ROI. The conclusion is that without the point of demand, the triangle will not be stable.

Based on Keidel's Geometries of Strategy, these two triangles (figure 1) are suggested to be the conceptual starting point around and on which all following argumentation will be focused (2010, Oestreicher. 2011²). As we will argue:

- Ecosystems in the era of the Internet are not depending on national boundaries; especially in the Home Entertainment Industry *autonomous* consumers can and do *collaborate* without any national limitations or boundaries.

- Institutional *control* mechanisms are increasingly rejected and circumvented beyond legal impacts; the institutional participants from the offer side are frequently excluded from the collaboration.
- The previously existing ecosystem of the Home Entertainment Industry is (already) lost and cannot be restored anymore; hence control has shifted towards the demand side and its prior institutional agents of various habitats have become obsolescent, while the autonomy of the offer side is losing more and more ground. The prior triangle becomes unstable, because its tangents are weakened.
- For institutional managerial thinking and essential organisational decision-making processes this means that triangular strategic thinking is a necessity for survival; compared to the past, very different ways need to be created immediately.

We will discuss Keidel's argumentation that managers (here in the Home Entertainment Industry) tend to frequently oversimplify and especially prefer to think in point (black: uncomfortable / white: comfortable) or just linear in shades of grey, translated here into managers' conviction that a simple product improvement like Blu-ray (marginal innovation) will restore the status quo via control and thereby cure their disappearing ecosystem.

Oestreicher and Oestreicher et al. have undertaken long-term studies in this specific industry, which has resulted in substantial evidence supporting this hypothesis (2011^{1,2}, 2009; 2011, 2010).

Dependencies and Interdependencies

Whether it be a CD or a DVD being manufactured by a replication company, they are nothing without content. The content cannot be consumed without a player, loud-speakers, a screen and other technical apparels. However, as the latest ICT-based developments provided evidence for, content as a digital file, does not need an optical disc for its consumption, nor does it need the physical distribution chain in order to access it. iPod *and* iTunes is just one example of how the market place can be shifted to the virtual space. By doing so, well-established industries are threatened with obsolescence, if they do not renew their market offer in a form that meets the requests of the final point of consumption, the consumer being the decisive arbitrator nowadays. As Kotler et al. declare, the consumer is no longer a market objective, but a market power (2002).

In a number of previous papers, we have argued, why the latest innovation of the HEI, the Blu-ray Disc, is likely not the product expected by the consumer (the decisive power for demand) and why Blu-ray is the wrong innovation (Oestreicher et al. 2011, 2009, Oestreicher et al. 2010). This leaves one field open to finding explanations for the question: Why are managers and organisations innovating in a form not aligned to shifting consumer expectations?

- Since the first paper in 2009, Blu-ray has not made significant progress in its global acceptance. As evidence provided by a number of interviews in the industry itself shows, substantial doubts about any remarkable success of this format exist, by now even inside the industry itself the expectation is a maximum of 40% of the total DVD-market volume (Oestreicher. 2011², 2009).
- Despite the fact that consumers (as the demand side in the ecosystem) are distinctly reluctant to adopt Blu-ray, the side of the offer has started a new effort, 3-D, as a next attempt to cure the disturbed ecosystem (Oestreicher. 2011).
- Again, many indicators seem to contradict this industry's hopes as the core of 3-D is already expected to shift to mobile phones and tablet PCs (Walton et al. 2011).

The Blu-ray disc and now Blu-ray 3-D are just two examples proving that managers of an internationally disappearing industry tend to simplify (Oestreicher. 2011²). Managers desiring to create a sustainable continuation for their organisations, when attacked by hostile disruptive innovation, need very different approaches and a more complex strategic thinking in comparison to those times, when their technology was successful. However, as much research in other industries has concluded, they will fail by such simplification in conventional logic (Utterback. 1996, Christensen. 2003, Christensen et al. 2003, 2004, Kim et al. 1998, 2005).

GEOMETRIES OF STRATEGY

Following the aforementioned argumentation further, the current plight of the Home Entertainment Industry can be viewed from both the three dimensions of Keidel's (2010) theories but also from the perspective of a declining ecosystem that is structured according to three tiers, namely: (1) the content production level (2) the product level and (3) the infrastructure level.

This paper will now analyse how Keidel's three dimensions of strategy apply to leading technology entrepreneurs and companies that have developed a new internet-based technology ecosystem (see Table 1 below), which challenges the existing Home Entertainment Industry ecosystem in terms of its structure, traditional business model and even the survival of many of its well-established companies (2010). The entrepreneurs and case study companies that have been key drivers of the new internet-based technology ecosystem are Steve Jobs (Apple), Jeff Bezos (Amazon) and Larry Page and Sergey Brin (Google) (Harvard Business School 1993; 2003). Although Microsoft played an early role during the battle for the PC industry standard, the company now appears to be pursuing a hybrid strategy which is partly related to the new Internet-based technology ecosystem and the older Home Entertainment Industry ecosystem.

Table 1: The new internet-based technology ecosystem (Walton et al. 2011)

Foundation Stage (1976 -1991)	Growth Stage 1 (1992-2000)	Growth Stage 2 (2000-2011)
Key Technologies	Key Technologies	Key Technologies
<ul style="list-style-type: none"> ▪ Microprocessor ▪ MS Dos/Killer Apps ▪ Intel 486 & Pentium chips 	<ul style="list-style-type: none"> ▪ World Wide Web ▪ Digitisation ▪ Fibre optic cable ▪ Encryption 	<ul style="list-style-type: none"> ▪ Linux ▪ 3G Smartphones ▪ Phone Apps
Key Developments	Key Developments	Key Developments
<ul style="list-style-type: none"> ▪ Birth of the PC industry ▪ 1976-1977: Apple 1-2 ▪ IBM open architecture/clones ▪ Industry standard – WINTEL 	<ul style="list-style-type: none"> ▪ E-commerce ▪ Dot Com boom ▪ Early search engines 	<ul style="list-style-type: none"> ▪ Digital downloads and streaming ▪ Open source software ▪ Cloud computing ▪ Web 2.0

KEIDEL'S THREE DIMENSIONAL APPROACH

- **Dimension 1 - Collaboration:** *Innovation is rarely an isolated novelty, usually it consists of inputs of various parties; innovation consists (frequently) of product/service, infrastructure and ecosystem* (Hargadon. 2003, Adomavicius et al. 2008).

The two key drivers of the new Internet-based technology ecosystem were the widespread adoption and ownership of the personal computer based on a common industry standard (Foundation Stage – table 1) and the development of the world wide web and acceptance of e-commerce as an acceptable way to purchase goods and services (Growth Stages 1 & 2 – table 1). The technologies behind these developments and the monetisation of these technologies were not carried out by the same people nor were they implemented by the same companies or firms. For example, the leading technology companies in Silicon Valley during the 1970s said that there was no market for the personal computer, i.e. Xerox PARC's and Hewlett Packard. Although the personal computer had been invented, no-one saw an opportunity to commercialise the invention. It was therefore left to the Silicon Valley entrepreneurs, Steve Jobs and Steve Wozniak, who launched the PC industry in 1976 when they formed Apple computer. Although IBM played a major role in establishing an early standard (at the expense of Apple), it was the entrepreneurs who created the PC industry and this ultimately led to the widespread ownership and diffusion of personal computers on a global scale. This involved high levels of collaboration and co-opetition between rivals including inputs from hardware, software and chip vendors based on an open vs.

proprietary standard (Branden et al. 1997). Although Apple did not win control of the industry standard this was achieved by two other high growth entrepreneurial firms, Microsoft and Intel. However, the role of personal computers and laptops was still confined to processing information for personal and commercial use. The industry life cycle was therefore showing signs of early maturity. The increased growth of the PC and wider market linkages therefore appeared to be limited. This could be termed the Foundation Stage of the 'New Internet-based Technology Ecosystem' (see table 1).

- **Dimension 2 - Autonomy:** *Innovation is formed by two forces, technology and market linkages leading to the thesis that any commercial innovation in technology is finally only as good as its impact on the marketplace (Abernathy et al. 1983, 1984).*

The inception of the Internet was the key driver in the development of extensive market linkages between the original PC and the broader consumer marketplace (via new substitute appliances such as laptops and a broad range of portable devices). The new ecosystem took on another layer of sophistication with the use of digital technologies, encryption and the global roll out of fibre-optic cable/broadband networks. All these were unforeseen preparations, which impacted on the Home Entertainment Industry later.

Tim Berners-Lee's development of the World Wide Web and Steve Jobs' software development inputs at Next were instrumental in the ICT Internet-driven revolution. This also illustrated the importance of *Dimension 1 - Collaboration* where technology developed for a military application [the Internet] was monetised by entrepreneurs and formed the next stage in the new technology ecosystem (see table 1 – Growth Stage 1).

Jeff Bezos (Amazon) played a pioneering role in developing state of the art e-commerce software platforms and therefore popularised the concept of online trading. The new Internet-based technology ecosystem also developed further with the advent of the search-engine. The market linkages then grew exponentially as the Dot Com boom exploded and Google's Brin and Page introduced a new business model to search engine technology that was based on ad words. Brin and Page (*Dimension 1 – Collaboration*) were not the innovators of the search engine but were building incrementally on existing technologies with a search engine that was at least 20% better. The major aspect of their innovation was the funding model based on advertising (Kieft et al. 2003).

An additional and almost incidental development also occurred when Shawn Fanning formed Napster and commenced the file sharing of popular music over the Internet. Apple's Steve Jobs saw this as an opportunity to monetise downloadable digital content which was to have a widespread impact.

- **Dimension 3 - Control:** *Control can represent various meanings; one of the explanations is presented by Christensen et al. in their resources, process and values theory, another explanation is market control, which is executed by domination or patents [e.g. domination by Microsoft applications or industrial control by Sony with its patent of the Blu-ray technology] (2004).*

During the early stages of the development of the new ecosystem (Foundation Stage – table 1) control was based on the battle for the industry standard in personal computers. This was won by Microsoft and Intel (Wintel standard). This created a near monopoly in both PC software and microprocessors. This led to both companies becoming locked into an existing resource configuration and business model based on the sale of PCs with pre-installed software and microprocessors in a traditional supplier-customer relationship. These resources were protected through IPR/patents and defended vigorously. However, as the new ecosystem moved into its Internet phase (Growth Stages 2 and 3 – table 1) the nature and dimensions of control began to change. Free content from Napster and Google (both illegal and legal) and the growth of open source innovation led to changes in attitudes (von Hippel. 2005). Streaming and digital downloads meant that consumers were now happy to 'rent' rather than own content which was virtually impossible to protect. The development of Web 2.0 and social networking also played a significant role in these developments.

The impact of the new Internet-based technology ecosystem on the three levels of the home entertainment industry are also quite significant (Oestreicher. 2011², Walton et al. 2011):

- **The first level:** *At the beginning there is the production of content, which can be represented by music, movies, electronic games, spoken word and alike. In the past 100 years the typical business model comprised the exploitation of such content by labels of the three main fields, represented by music companies, film studios and game developers.*

Content is still critical to both the new Internet based technology ecosystem and the incumbent ecosystem of the Home Entertainment Industry. However, the economic underpinning and business models relating to the management of content are changing due to the popularity of digital downloads and streaming; the free availability of content and the monetisation of its delivery via Apple and Amazon. This is having a significant impact on record labels and many film studios. The development of cloud computing is also another aspect of the new eco system which will dictate how content is managed in the future (see also Third Level – Infrastructure). The range of content has also been extended to include the phone app. developed by Apple plus the release of open source software and browsers from Google.

- **The second level:** *These firms can be considered as the distributors of content, to which added the manufacturers of different formats of physical products – the product level– and the whole distribution chain until the final point of consumption, the consumers.*

At this level the incumbent players are encountering strong pressures of disintermediation and obsolescence. Not only is the need for bricks and mortar resellers removed but the manufacturers of hard copy discs could also become obsolete.

- **The third level** *of consumption is the infrastructure, which was provided by a different set of industries and includes players, screens, loud-speakers and so on. Many of these actors are international, some even global companies to which belong, Sony, Universal, Twentieth Century Fox, Technicolor or Cinram.*

The companies belonging to the new ecosystem have now developed new devices including the e-readers such as the Kindle, the iPods and smart phones (iPhones) and iPads. The mobility of these devices has been a very significant development. However, the new ecosystem has added a new dimension to both content and infrastructure in the form of cloud computing. As data accessibility and sharing proliferates the need to access this on a range of different devices (particularly of a mobile nature) means that cloud communities will now develop, which effectively lock consumers into specific client technologies such as the Apple iCloud, the Google Cloud or the Amazon Cloud. Integration will therefore become critical.

These developments appear to have resulted in the formation of a number of different strategic groups with each cluster pursuing different strategies (McGee et al 1995). In one strategic group there are the new Internet-based technology ecosystem companies such as Apple, Google and Amazon and in the other strategic group there are the older ecosystem companies such as Sony for Blue Ray and the major film studios. On the other hand, Microsoft appear to be holding a hybrid position straddling both strategic groups.

It is evident from this analysis that the incumbent Home Entertainment Industry companies are still trying to pursue an industry structure approach to strategy based on Porter's Five Forces framework of industry competition utilising red ocean strategies (2004, Kim et al. 2005). However, this approach is no longer suitable for the current technological and economic environment. The traditional industry boundaries have now become irrelevant as indirect competitors enter the Home Entertainment from previously unrelated markets. The traditional barriers to entry such as high capital costs and access to distribution channels are no longer relevant due to the high levels of disintermediation. Supplier power is non-existent and buyer power has become the primary driver. Finally, it is the substitution of hard copy products with digital content which threatens the future existence of the incumbent industry rivals.

Instead of mono- or oligopolistic competition between traditional firms based on high bargaining power and high barriers to entry the new ecosystem companies are now seeking strategic space (figure 2) using blue ocean strategies (Tidd et al. 2009, Kim et al. 2005). This innovation space has been exploited on four dimensions through new product/service and processes (these have been inseparable where digital distribution of content is concerned); through positioning and marketing innovation (Google ads, free -

or inexpensive - books, music, software and browsers) and paradigm innovation ('rental' not ownership and free or very low cost).

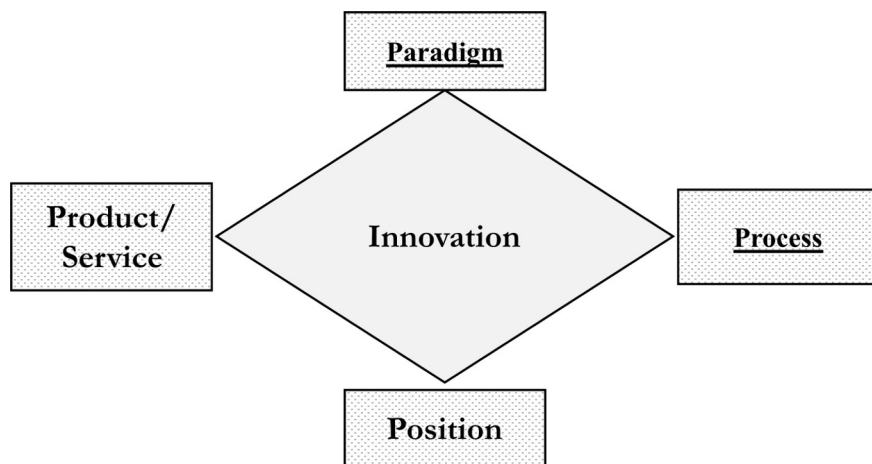


Figure 2 – 4Ps of Innovation Space (Tidd et al. 2009)

The hyper competitive nature of the new ecosystem and the Schumpeterian nature of its creative destruction have made competitive responses from the managers of old ecosystem firms very difficult (D'Aveni. 1998, Schumpeter. 1975). Not only are traditional products being substituted but the existing processes of delivery and manufacture are also being made obsolete. This requires the development of new competencies but the scale of the disruptive innovation makes such responses economically unviable (Christensen. 2003).

Résumé

In this section we have not only carefully outlined the underlying reasons, of how toxically new entrants into the HEI have offered a superior value chain to the demand side, which – as the rapid growth figures on all international market places show – are more attractive. Consumers leave the old ecosystem in masses, refuse to or only reluctantly adopt (by terms of innovation marginally) improved product offers, forcing them once again (after Blu-ray) in investments for a new infrastructure (3-D).

But for the following discussion attention is drawn to the fact, how many triangular structures were elaborated and presented, which will find now a closer consideration.

Linear Thinking

As explained above, Keidel holds that managers tend to simplify. If the thinking in 'point' of black and white (uncomfortable / comfortable) is not possible, i.e. such simplification can usually not be a centre of the strategic decision making process, then the next (still too simplifying stage) is frequently a simple extension by linking these two points by a line leading from black to white – the strategic thinking in shades of grey (Keidel. 2010, Oestreicher. 2011²).

But it would be another simplification to just assume that managers are making it too easy for themselves. Nevertheless, the world has become extremely complex. Any replication factory (manufacturers of optical discs like Blu-ray) in the world has developed a sound set of processes, based on available resources, around the production of optical discs. The values of the organisations manufacturing these physical products have developed over a long period of time. Shifting all that exists, has been invested in and presently builds the self-understanding of this globally acting and by formats unified industrial sector, would mean to sacrifice nearly everything, that has emerged over more than 100 years (Oestreicher. 2011²). This represents an industrial and managerial dilemma, which Oestreicher has already explained by Christensen et al.'s resources, processes, values theory (2009, 2004).

In this vicious circle further explanation can be found in path-dependency: Over these 100 years, the example of the Home Entertainment manufacturing industry shows a rather linear path (see figure 3). After the era of cylinders, it was one record or disc format to the next. One may even argue that the present optical discs are just another form of the previous vinyl discs, in which the technology has 'just' changed from analogue to digital.

Of course the situation is not quite that easy, but two criteria need to be highlighted:

1. There is a clear 100 year line from one disc format to the next, which has always presented and represented what Utterback calls the dominant design (1996). The formats of this whole business were globally fixed and at the centre of all business models.
2. In the past, there have been crises (e.g. the introduction of the radio, the sidelines of magnetic tapes, audio and video, the big shift from analogue to digital), but two criteria always remained the same: Very few new entrants and the pattern of consumption did not change.

The aforesaid crises were more internal adjustments, new orientations and sometimes it may be argued using Porter's Five Forces a new orientation within the Degree of Rivalry (2004). However, the stable factor was the consumer. He/she never had any real alternative to buying what the institution Home Entertainment Industry presented to him/her. The consumer was captured by an industry-centred business model. The consumer was a marketing objective (Kotler et al. 2002). From an internal perspective of a micro-ecosystem, composed by the industrial players only, it can be suggested that there was no real need for managers to think really differently, than in terms of technological innovation. Now, as explained before, for the first time extra-industrial elements were brought to this micro-ecosystem and much of its hotbed has been disturbed by a previously unknown toxic factor. Again Porter's Five Forces (power of substitution) can help to explain the new era, in which the consumer became a market power globally more and more rejecting the latest formats. This can find further explanations in Christensen et al.'s jobs-to-be-done theory (2003, 2004).

The argument is that managers were used to thinking linearly and one may argue that this was fully sufficient. But now they need to think in new ways, which may be found in a more complex three dimensional logic. Managers may find this challenge very demanding. There is a second factor influencing what is now a different game: All the prior path-dependant developments of physical formats have another factor in common: It was from one type or form of production to the next. For content owners (major music labels, Hollywood studios and game developers) it was from one form of physical distribution (a very important part of their [extended] value chain) to the next. The new game, which presently takes place, is not only the competition against new and different entrants (Apple and the likes), for the first time it is also the transition from manufacturing to non-manufacturing and from distribution to dissemination. This change or shift is suggested as a clear point-effect affecting managers all around the world without any difference:

- White – manufacturing / distribution = comfortable
- Black – non-manufacturing / dissemination = uncomfortable

If, what cannot be excluded, since all statistics provide sufficient evidence, the developments on the global markets will continue this way, a linear development will be symbolised by the shades of grey, from white, the production/ distribution, to black, the end of production / distribution. As Oestreicher has found much evidence, this endgame scenario presently takes place and there are at this moment no signs on the horizon, which allow a different assessment (2011²). By Kim et al.'s explanation of red and blue ocean strategies, conventional logic (red ocean) is no longer sufficient to enable the manufacturing industry's survival in the Home Entertainment Industry (1998, 2005, Oestreicher. 2011²).

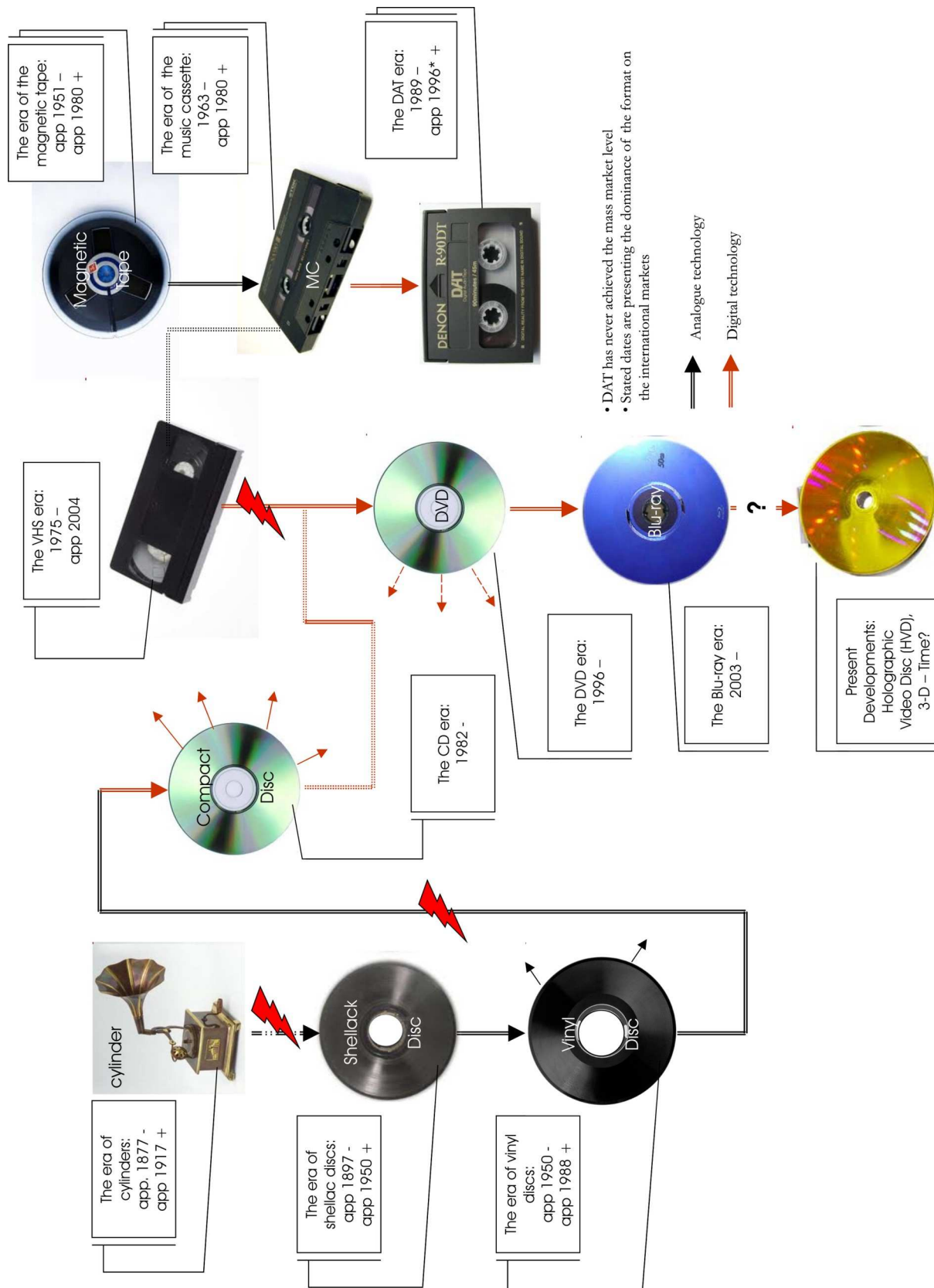


Figure 3: The path-dependence of the Home Entertainment formats (Oestreicher. 2011²)

Résumé

Clearly visible signs on the horizon of all international markets provided sufficient evidence to show managers that the rules of the 100 year old game were changing. As explained, sufficient theories exist to help managers around the world to understand that there is a major shift. Especially seeing as this time the shift was not in their range of control, managers were no longer the driving party. However, within the Home Entertainment Industry the same game took place once again, just like in many other industries before. What Utterback, Christensen, Christensen et al. and others have researched happened again, managers waited until it was too late (1996, 2003, 2003, 2004).

The proposition is that their understanding is based on linear thinking – from one format to the next improved format – and to some extent on angular thinking based on the control of markets, products and content (variable A) and the autonomy of their decisions (variable B). Based on Keidel's arguments, it is suggested that even the improved angular thinking of strategy is not sufficient, since it neglects the crucial variable C, here the consumers (2010).

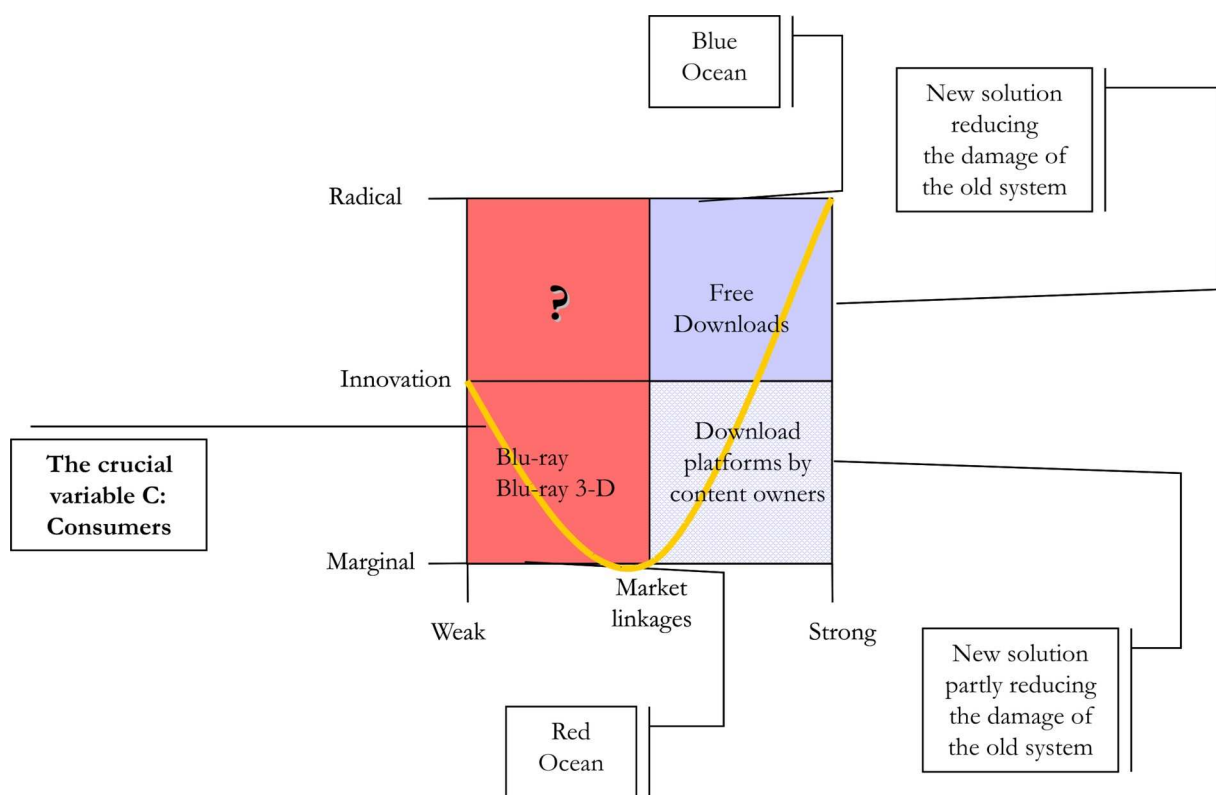


Figure 4: Angular strategic thinking including the neglected variable C

Figure 4 shows a synthesis of the discussed theories and adds to the angular thinking in variable A and B not only the decisive component, variable C, but explains further, how a threatening separation per se between the Home Entertainments's manufacturing industry and content owners may take place. Oestreicher et al. have discussed using the TRIZ theory that consumers are looking for the Ideal Final Result, a new market offer, which reduces the damage of the anterior system: What I want, where I want it, when I want it and free of cost (Oestreicher et al. 2010).

This additional theory shows that content owners, which also includes TV-stations, have presented their own download platforms. Some are already fully operational, while others can be expected soon. There is still the problematic that the physical product contributes substantially, often enough by a majority to content owners' revenues, nevertheless all around the globe content owners increasingly prepare for the final stage of the expected shift towards the dematerialised product. Except 'free of cost', content owners' platforms fulfill the demand of the Ideal Final Result (Oestreicher et al. 2010). This disadvantage competes with (legal) platforms, where content is fully free. However on the latter platforms – as long as

they are legal – e.g. for the movie industry, latest blockbusters are not often available. Here value innovation logic takes place, i.e., a ‘light type’ of a blue ocean strategy (Kim et al. 2005).

The true centre of the manufacturers’ dilemma sits in the upper left hand quadrant. They do not have a radical innovation. Their best move so far, 3-D Blu-ray technology, may be a radical step by their inside-out perspective, but in reality it is nothing more than a further step on the path-dependant ladder of a product improvement. And, using TRIZ theory further, even 3-D Blu-ray discs possess all the same disadvantages of the prior system(s). Therefore we argue that manufacturers lack a solution to radically approach the Ideal Final Result. Hence the curve of the variable C is not able to reach this upper left hand quadrant.

Our proposition therefore is the forecast that the Home Entertainment Industry’s manufacturers will lose their market linkages in two ways:

1. They no longer reach consumers with regard to a mass market product offer.
2. They will be disconnected from their primary client base, content owners, who are preparing a new dematerialised dissemination (replacing physical distribution).

As strategists know a two-front war is rarely advantageous (Sun-Tsu cited in Oestreicher. 2011²).

Persona, Performance, Paradigm, Puzzle

The given restrictions of this paper do not allow to explore these four criteria in much depth, which offer further opportunities for explaining the dilemma of new physical products against the dematerialised, virtual products. However, to understand three-dimensional strategic thinking – or the lack thereof – they need at least some discussion.

Persona

▪ Who are we?

For the manufacturing sector of the Home Entertainment Industry, this question seems to find a relatively easy answer: Managers consider themselves mainly as *manufacturers* of optical discs. Nevertheless, over time, they have extended their market offers by adding further services. But these services offer usually little more than an exploitation of marketing add-ons or distribution and editing services focused on and around their core product, the optical disc.

As Oestreicher’s research in the manufacturing sector has concluded, most replication factories are continuing to focus on their existing physical product (2011²). This focus may find additional explanations by this question, who are we? – manufacturers and service providers of optical discs.

In a globally shifting market, in which the final point of consumption turns towards new, different solutions, such understanding is likely insufficient. The ecosystem is changing. The triangle of product, infrastructure and ecosystem of the past (optical disc – player – disc manufacturers, content owners, manufacturers of players, loudspeakers, screens, etc.) is dissolving. A new triangle emerges, content (virtual product) – convergent technologies – an ecosystem consisting of content producers and/or owners and consumers evolved. The question *who* manufacturers are, does not play a role in this ecosystem, but with regard to market linkages, this different ecosystem is preparing itself to dominate (Walton et al. 2011, Oestreicher et al. 2011, Oestreicher. 2011²). New players with new devices, from smart phones to Kindle have much disruptive power, or as Walton et al. argue by a biological perspective, add toxic factors to the old ecosystem, which have sufficient power to poison it (2011).

The concluding suggestion is that if the manufacturing side wants to survive (a reference is drawn to figure 4’s upper left hand quadrant), it must develop its own new ecosystem. But the expectation is that this will require a rather different orientation, outside the traditional (red ocean) environment of Home Entertainment. The final expectation is that the united industry, i.e. its united understanding of ‘who we are’ is unlikely to survive. The researched orientation of the manufacturing sector provides little evidence

that this new orientation is sufficiently strong to enable the survival of this industry, whether on a national, international or global scale. As interviews with replication managers and industry insiders prove managers were strategically too linearly or too angularly oriented (neglecting the variable C) (Oestreicher. 2011²).

Performance

▪ *What do we measure?*

Based on this long-term research in this industry, replicators of optical discs measure the same criteria as any other factories of other products. It is about production capacities, their use, the financial performance, economies of scale, efficiencies and so on. Such attitude is normal and not surprising, provided that the game is (still) about manufacturing.

But what does this mean, when the competitive paradigm (red ocean) changes, when the new competition is against dematerialised products (blue ocean) (Kim et al. 2005). The increasing shift from the physical to the virtual marketplace does no longer count in capacities or their exploitation (Oestreicher. 2011¹). Competitive advantages against a competitor may count with regard to an extended survival in a declining marketplace, but in the holistic picture of new competitive paradigms offering progress against a radical invader, these industrial factors mean little. This supports Kim et al.'s work, who argue that in such an environment blue ocean strategies, value innovation logic, is required (2005). This then means that new methods of measuring are required. But the unsolved question is which are the right methods, when the internal focus on manufacturing remains unchanged?

With regard to established resources, processes and values, the managerial attitude is understandable, but not likely to be sustainable. The underlying problematic is once again that linear and angular strategic thinking do not sufficiently address the core of the problematic. But when 'what do we measure' is a point of importance, then it should be essential, too, to measure market linkages by market acceptance. This is nothing more than the normal routine of market research. But here the manufacturing side suffers some disadvantage:

- It has no direct link to the final point of consumption, its clientèle is the sector of content owners. Of course the size of orders, which content owners place with replicators is an indicator, but it is filtered.
- Returning to path-dependency a further way of explanation becomes possible. Over all the decades mutual institutional control has worked. When market or consumer demand declined, a new and improved format helped to revitalise the demand. The side of the offer could stimulate the demand side (Cassia et al. 2006). This is no longer possible, since the demand side can exclude collaboration with the institutional offer and can act and interact autonomously. These two tangents of the triangle result in one dilemma, the institutional side has lost its nearly perfected control (Oestreicher. 2011²).

Therefore it is suggested that the measurement needs some adjustment. What can still be controlled, to which extent and how much time is left? This is a very different proposition and probably a rather strange form of measurement for a previously successful manufacturing industry. However, this industry is neither the first, nor the only industry in such innovation-driven and demanding environments, which needs to address such questions. Questions, which cannot be expected to find answers in shades of grey (linear thinking) and angular simplification within just two variables.

Paradigm

▪ *How do we compete?*

As argued before, the manufacturing industry knows the conventional competition. Prices, capacities, distribution, in another word, the full range of the marketing mix can be applied. But against a disruptive invader (download) it is difficult to compete by traditional means. A superior technology and (by

consideration of the TRIZ theory) a stronger new system lever the traditional understanding of competition (Oestreicher et al. 2011).

We argue by geometric assessment that two ways of competition are taking place at the same time:

1. Linear Competition: Replicator vs other replicators
2. Angular Competition: Replicators (variable A) vs virtual offers (variable B) facilitated by new entrants with substituting market offer with strong effects on consumers (variable C)

Within traditional, red ocean competition, an extension by format is possible, which may be considered as a linear continuum: DVD ■ Blu-ray ■ 3-D Blu-ray. It must be highlighted that long-term decline and intense price wars have weakened a good number of companies, regardless of their size (Oestreicher. 2011²). DVD for most factories is a standard manufacture. But the substantial investment in Blu-ray manufacturing lines and peripheral equipment in combination with an unexpected low consumer adoption rate has made many replicators reluctant (or did not allow them) to invest in Blu-ray manufacturing equipment. Furthermore it needs to be understood that not all content is compatible for Blu-ray. Here the clientèle is of importance. Blu-ray compatible content is mainly owned by Hollywood Studios, but these only use carefully selected replicators such as, Technicolor, Cinram or Sony DADC for capacity and service reasons and international or even global presence of sites. Smaller replicators' customers simply do not have sufficient content for Blu-ray (Auger cited in Oestreicher. 2011²). When it comes to manufacturing capacities, Sony DADC (Sony is the owner of Blu-ray technology, all others are licensees) could theoretically fulfill the global demand alone. This scenario has important implications on 'how we compete' and likely on the remaining time in which individual replicators remain viable (Oestreicher. 2011²).

Once more, in a permanently declining market these considerations are of importance, when a true exit strategy, as Harrigan et al. argue, is adopted (cited in Oestreicher. 2011²). But little evidence was found so far that a majority has adopted such a strategy. Most replicators try marginal improvements by service extensions. In an environment, which competes internally and in addition externally against new entrants, a radical technology and shifting market and consumption patterns, managerial thinking should address exit strategies. Traditional strategic thinking will not be sufficient, since once again it is a battle at two fronts.

Puzzle

- *What surprises us?*

After the permanently increasing acceptance of the virtual product, one of the biggest surprises for the institution was that Blu-ray found so little acceptance. Nevertheless this is not really surprising. Against the (TRIZ-)improvements of the virtual product (presenting therefore a superiority) an ultimately marginal improvement, the result of linear thinking, is not strong enough (Oestreicher et al. 2011, Oestreicher. 2011²). What would be really surprising is if 3-D Blu-ray or the ready format of the Holographic Versatile Disc (HVD) would turn the situation around. But there is little evidence to suggest this might happen. Even acknowledged industry insiders like Renaud or Auger, but also managers of international replication companies not only expect the industry's dissolution within the next three to four years, it is also expected that Blu-ray will be the last physical format (cited in Oestreicher. 2011²).

On the other hand, it is surprising that again a large group of managers around the globe has believed for such a long time that it can withstand a radically new technology with marginal improvements. For a long time researchers have studied a variety of different industries, which faced disruptive new technologies and lost the battle this way. Therefore it is on the one hand not surprising that the pattern is repeated, but on the other hand it is nevertheless surprising that the lessons of the past were ignored.

Do managers of different industries believe that their circumstances and environment are so unique and different that they have a better chance against disruptive technologies? It must be returned to the studies of Abernathy et al. (1983, 1984). It is already a difficult battle to compete against a disruptive technology, but if technology and market linkages are both radical and united – as in the case of the Home

Entertainment Industry – in a disruptive new market offer, then the odds are strongly against any established industry.

This way, to repeat the presented argument, it is not surprising that a number of key managers and insiders of this industry no longer believe in its survival (Oestreicher. 2011²).

Triangular Strategic Thinking

As argued and based on Keidel's framework, linear and angular thinking are not strong enough to fight in a disruptive environment (2010). The extensive collection of data and evidence suggests that for the manufacturing side of the Home Entertainment Industry within its present structure the battle must be considered as lost (Oestreicher. 2011²). But it is not only about this specific industry and its products, new threats are emerging in which the physical book-market vs Kindle is no more than one example.

Keidel argues that managers tend to simplify and do not consider the full picture of the threat to which Christensen et al.'s disruptive innovation theory contributes (2010, 2004): A disruptive threat finds marginal improvements by the established industry, incumbents flee up-market, like the progression path DVD ► Blu-ray ► 3-D Blu-ray provides evidence. HVD, a next path-dependent format, is expected, if ever realized, to play only a minimal role as a means for data storage, which does not fulfill the needs for a global industry oriented on mass production.

Within three-dimensional strategic thinking two triangles can be considered as a base for covering the complexities of today's management (Keidel. 2010):

- Strategy – Technology – Organisation
- Control – Autonomy – Collaboration

Based on the argumentation presented in this paper a third (sub-)triangle is suggested consisting for this specific industry of *mass production – mass market – protection of copyrights*. Especially the last factor causes substantial problems. The meanwhile common consumer behaviour of file sharing is one of the major external threats for various habitats of the Home Entertainment Industry. The discussion about the reasons, why consumers are so easily prepared to violate intellectual property is part of an intensive discussion in relevant literature needing in-depth research on its own. Nevertheless there is a good number of studied indicators that consumers have little sympathies for the incumbents of the Home Entertainment Industry due to its long-term exploitation via factor control (Oestreicher. 2011^{1,2}). However it must be considered, too, that the frequent question about the value of information, here content, influences such behaviour as well. For whatever the reasons the triggering factor is of less importance here, but they cause a multi-billion damage for this industry each year.

Important is that these three triangles are not isolated considerations within managerial planning and thinking, but interacting components influencing – by a SWOT understanding – the allocation of organisational resources and a substantial weakness is added, since the fight against the disruptive technology is additionally increased by the damage of illegal downloads. This consumer behaviour reduces organisational opportunities and increases the factor of threats. Despite the many attempts by managers all around the globe to stop illegal downloads through government interference and an international approach to forbidding downloads, consumers were not discouraged and continue with their P2P file sharing behaviour. This way the determinant 'control' gains a double-sided importance. On the one hand there is a permanently reducing market control in the understanding of the increasing acceptance of virtual products and there is an additional substantial loss of control with regard to stop illegal downloads by the application of legal regulations. The mere quantity of daily illegal downloads overloads the opportunity of legal interventions.

This way the subdivision of a SWOT-based reflection of controllable and uncontrollable factors provides further evidence that this industry loses control, while consumers gain it increasingly. Therefore it is suggested that the concept of the empowered consumer does not stop in front of Home Entertainment and that legal intervention alone may not be sufficient to regain ground, when values of sympathy are missing (Oestreicher. 2011^{1,2}).

The proposition is that the Home Entertainment Industry has meanwhile reached a fully defensive position. Its ecosystem is dissolving, its infrastructure is permanently weakening and the mass product optical discs is in rapid decline. This leads to the data-based hypothesis that all tangents control (product, content, markets, infrastructure), autonomy (strategy by reach, scope and format decision) and collaboration (market linkages replicators with content owners, and market linkages with consumers, but also technology [new entrants vs incumbents]) have reached an endgame scenario (Harrigan et al. cited in Oestreicher. 2011²). Therefore the suggestion is that the present stage of this industry supports Keidel's framework

- That linear and angular strategic thinking of managers is insufficient and also
- that managers simplify complexities (2010).

With regard to empirical validity and reliability this statement needs counter-evidence by researching a (comparable) industry, whose managers have acted differently and adopted triangular strategic thinking. But common managerial practice makes such direct comparison rather unlikely. It must be assumed that this problematic complicates the finding of valid explanations of why industries become obsolescent, despite indicators being obvious for managers. Such research would be helpful in finding a new theory.

The interdependent allocation of the three triangles represents the managerial behaviour and actions:

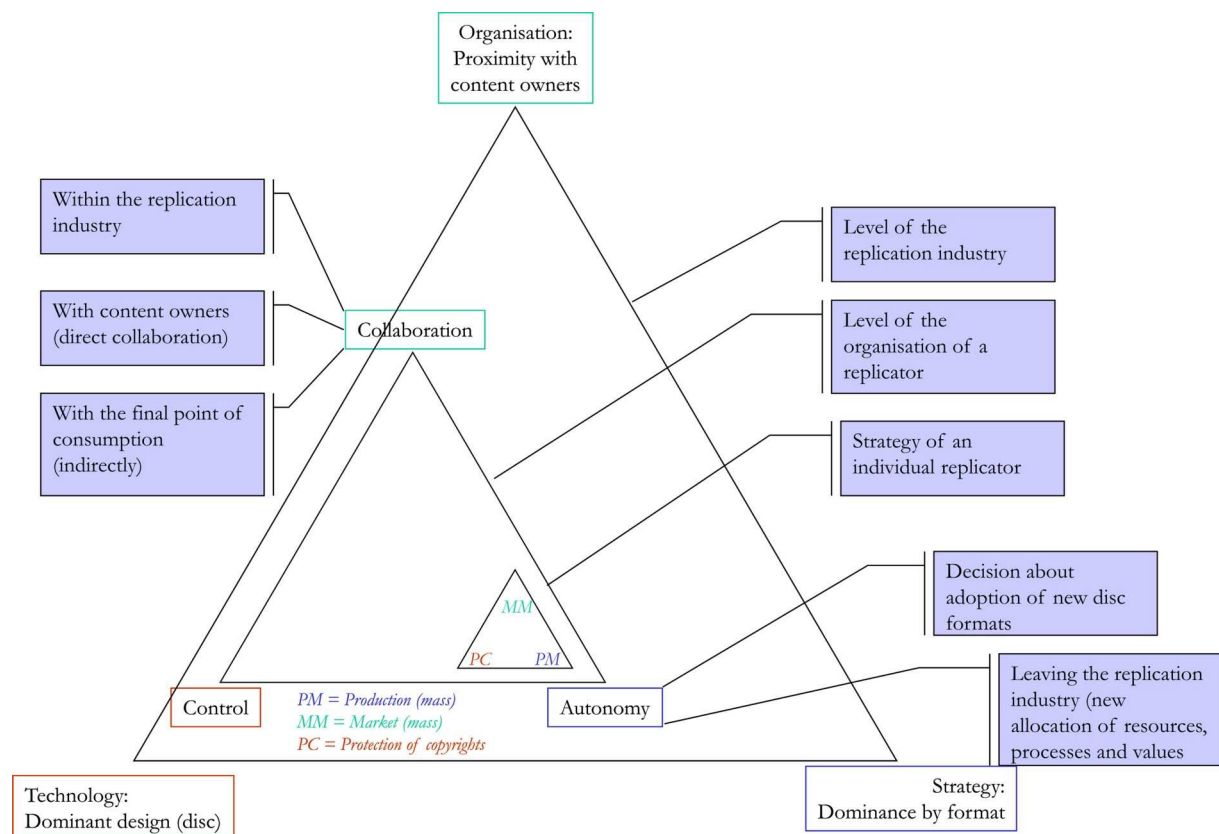


Figure 5: Interdependent triangular determinants of the Home Entertainment's replication industry (Oestreicher. 2011²)

This allocation suggests that a major issue can be found in the determining factor of control in the outer triangle. As we argued before, path-dependency is of influence. It is proposed that path-dependency is not only created by the pathway of one disc to the next, but also by the knowledge that when only the technology changed and market linkages remained intact, consumers had to adopt the new format. When the market linkages with content owners led to market offers, which were only available on the new format, consumers had no choice. But in the radically changing and threatening new environment autonomy is either to continue, i.e. by adopting a sound exit strategy or (which is also an exit strategy) by orientating resources, processes and values towards a new and different industry. The latter strategy leaves

managers with the decisive question in which new industry they may find acceptance, i.e. not a (full) red ocean, and which resources, processes and values may be secured or have to be abandoned or newly adopted for the new industry? All this under the restraining pressure that the past was defined by mass products for a mass market.

This allocation needs further refinement as presented in figure 6. It shows the dilemma for a manufacturer of optical discs with regard to its existing client base and the threat constituted by the permanent decline. Figure 6 is suggested as an indicative allocation that strategic options become narrow, when the decline – as for this industry – has already weakened organisations and/or the industrial level. The loss of essential resources, especially in finances, reduces the strategic options. This allocation supports Christensen et al.'s conclusion of 'waiting until it is too late' (cited in Oestreicher et al. 2011).

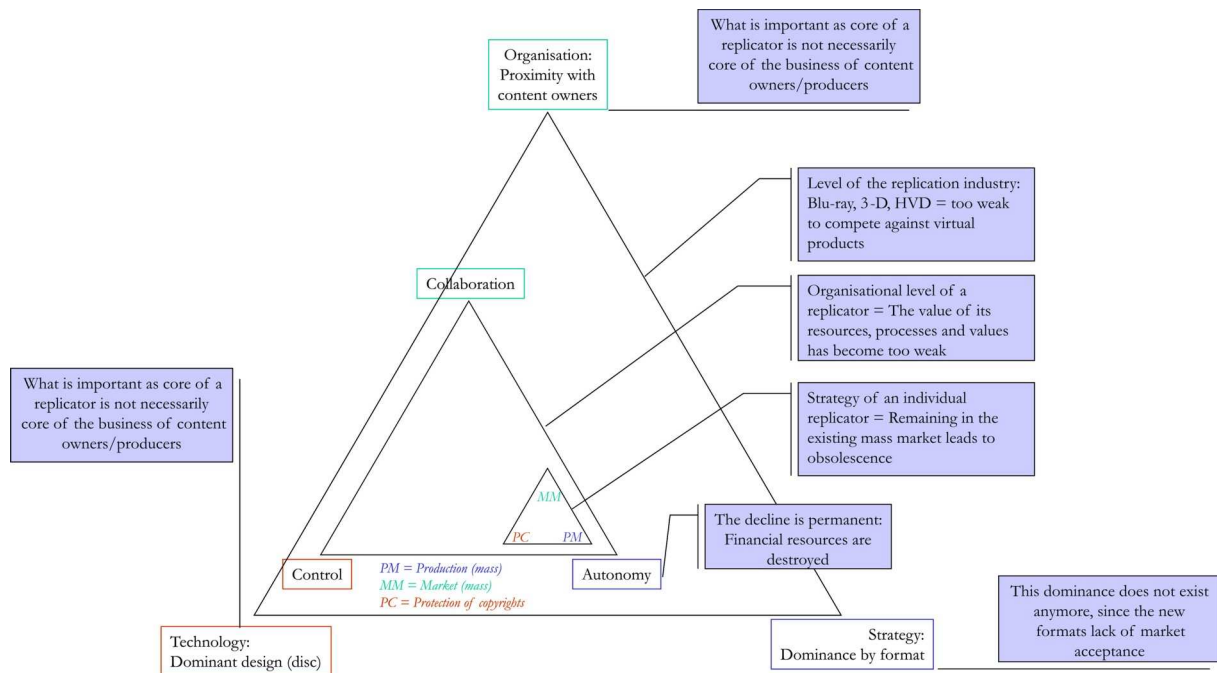


Figure 6: Strategic allocation in a declining market (Oestreicher. 2011²)

For the consolidation of the two allocations the perspective of persona, puzzle, performance and paradigm is added, which provides evidence that the replication sector of the Home Entertainment Industry is left with little choice and hope for survival. What has started with an explanation about product failure and then continued with perspectives on the Ideal Final Result for what consumers look for, finds a third perspective by geometric allocation of strategy (Oestreicher. 2009, Oestreicher et al. 2010). This suggests that managers of this globally acting industry made crucial mistakes.

The basic managerial assumption that a simple new (path-dependant) format will be strong enough to compete with a disruptive technology supported by different resources, processes and values of new entrants with different strategies is therefore considered as disproved. This again is in line with the research of Utterback, Christensen and Christensen et al. (1996, 2003, 2003, 2004). It also shows that obviously the industry can be different, but the result does not differ. It is still too early and the empirical evidence is still too little to allow generalising conclusions. However the paradigm gets additional evidence within another industry.

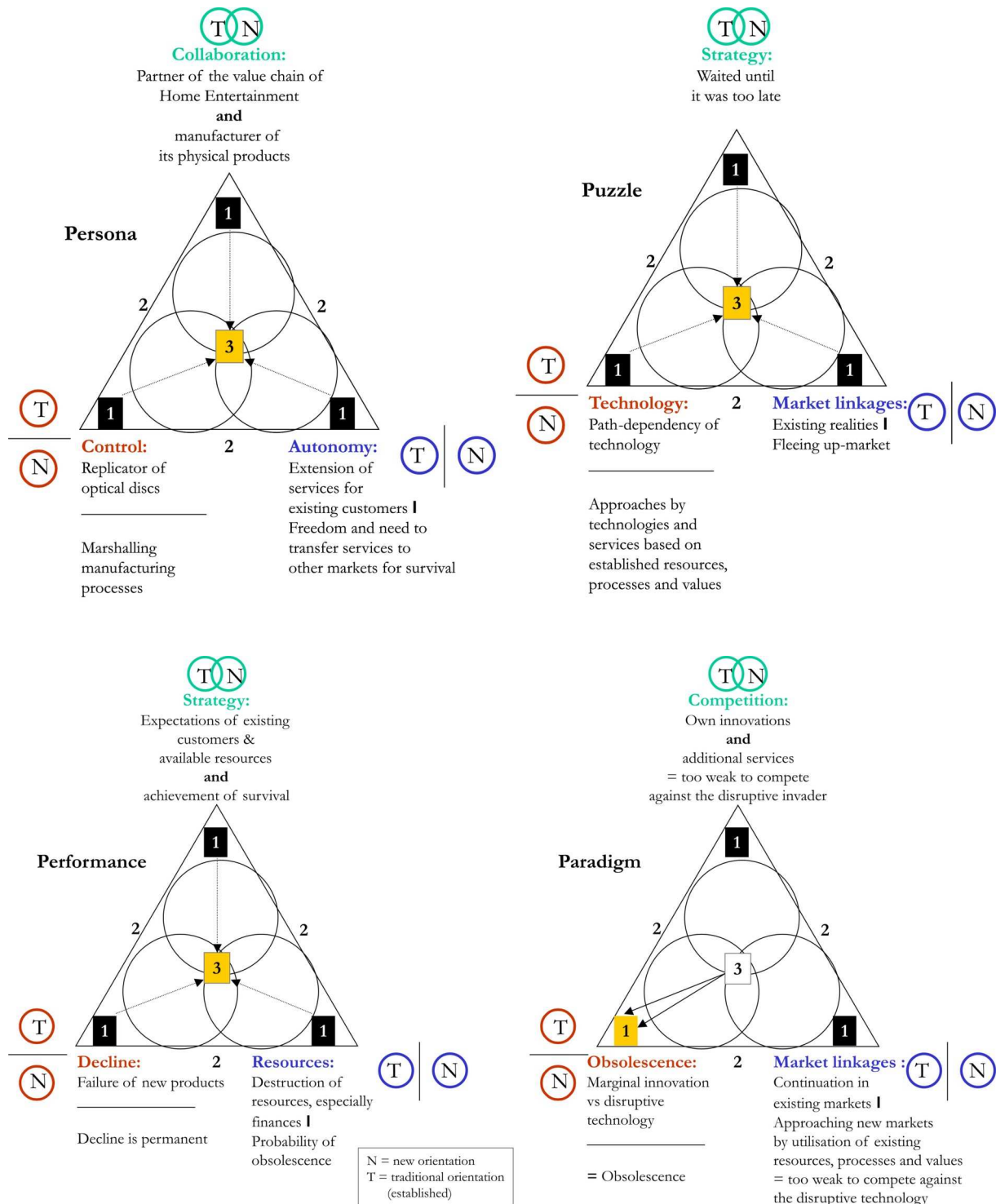


Figure 7: Allocation by persona, puzzle, performance and paradigm (Oestreicher. 2011²)

Figure 7 presents the actual behaviour of how the vast majority of replication companies behaves and innovates. The presented triangles are now extended by a potential strategic position from 1 to 3. 1 means a clear strategic priority, while 3 represents a lock-in effect in the middle of a triangle; i.e. no clear position is preferred. This position 3 may mean that the adopted strategic position does not provide what Johnson et al. suggest as organisational direction (2009). One may even argue that the position 3 has parallels to what Wilson et al. indicate as confused positioning (2008). On the other hand, if a clear position (1) is adopted it may nevertheless misdirect an organisation or even industry, when it is located at the wrong angle or point of the triangle.

Résumé

The allocation of the replication industry's position within persona, puzzle, performance and paradigm is based on evidence of long-term qualitative studies made within this industry (Oestreicher. 2011²). It is a visualisation of the collected data, which indicates once again that this industry has made severe strategic mistakes. The results are that obsolescence is a likely option in the very near future. This way this industry will follow other industries, e.g. analogue photography or typewriters. Based on the research within the many studies other researchers have conducted, the behavioural managerial pattern is comparable. Hence the decisive questions are, why is this pattern being repeated and why do managers in various countries, with different cultural and social backgrounds, education and experiences in a wide diversity of market environments act similar? These questions are of importance since a more and more technology driven marketplace does not support path-dependency, when disruptive technologies emerge and even more so, when market linkages are shifting towards a new ecosystem.

It is understandable that managers want to protect the existence of their organisations and try to invest valuable resources in established ways based on experiences gained. As the history of the Home Entertainment Industry clearly shows this has resulted in a continuum as long as the ecosystem remained intact. Products and their infrastructure have developed over time, but the ecosystem as such remained remarkably stable with regard to the final point of consumption having had no alternatives. This equation is now being interrupted. New entrants with a disruptive technology and based on strong strategies created such alternatives. The old ecosystem started to dissolve and all power of control and industrial autonomy built in over 100 years was not able to support or regain the status quo. If a conclusion can be suggested, then that if a new technology creates new market opportunities and starts to interfere in the established ecosystem, managers cannot think linear or angular. They need a very different allocation of resources, processes and values. This may result in abandoning a long tradition and the adoption of a radically new orientation for survival.

Amazon was not a book publisher, but Kindle has started to create a new ecosystem, brought highly toxic elements into the established ecosystem and, based on latest figures, shows strong tendencies to creating a new ecosystem, in which book publishers play a different role and book printers and bookbinders have hardly a place (Walton et al. 2011). This is just one further example to which many others can be added (Oestreicher et al. 2011).

CONCLUSION

“Each organisation must serve a market purpose” and if corporate strategists do not act as market(ing) strategists, they may not be able to formulate the right strategies (Baker cited in Oestreicher et al. 2011).

In this paper, we have used the concept of product – infrastructure – ecosystem, which Adomavicius et al. have elaborated (2008). Our emphasis is on the ecosystem as a determining factor for products and their infrastructure. These three factors form one triangle, which can be transferred to control – autonomy – collaboration, the framework of which has been developed by Keidel(2010). Based on long-term qualitative studies, we argue that linear and angular strategic thinking is not sufficient in dealing with the complexities in modern economy. Managers, and especially those in declining markets cannot simplify. Our conclusion is that for organisational and institutional survival a full three-dimensional picture of strategy is essential.

Path-dependency can become a decisive weakness, when a radical invader shifts participants of the established ecosystem into a newly forming one. Marginal product improvements will then be too weak to compete with such new market propositions. Should managers wait too long, the essential resources will already be destroyed and the chance for survival will be reduced.

The triangle is considered as the most stable geometric form, but this requires that its three tangents are capable of reinforcing each other (Keidel. 2010). If the strategic choice in such a threatening environment weakens even one tangent, then this geometric structure is expected to fail. For the Home Entertainment's replication industry this is considered as a major strategic failure and here even with regard to all three tangents.

The provided triangular allocation is in all its possible and necessary assessments far more complex, than it could be presented here. The lack of such full presentation can correctly be seen as a weakness of this discussion. On the other hand, if such a merely basic allocation shows the dilemma and problematic, then we argue that it should be evident for managers of an established industry that discontinuous elements with poisoning power are shifting their ecosystem to a new one, in which they might not find a place.

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