



<http://www.diva-portal.org>

## Postprint

This is the accepted version of a paper published in *Journal of Print and Media Technology Research*. This paper has been peer-reviewed but does not include the final publisher proof-corrections or journal pagination.

Citation for the original published paper (version of record):

Picha Edwardsson, M., Pargman, D. (2014)

Explorative scenarios of emerging media trends.

*Journal of Print and Media Technology Research*, 3(3): 195-206

Access to the published version may require subscription.

N.B. When citing this work, cite the original published paper.

Permanent link to this version:

<http://urn.kb.se/resolve?urn=urn:nbn:se:kth:diva-160031>

# Journal of Print and Media Technology Research

---

3-2014

---

September 2014



The information published in this journal is obtained from sources believed to be reliable and the sole responsibility on the contents of the published papers lies with their authors. The publishers can accept no legal liability for the contents of the papers, nor for any information contained therein, nor for conclusions drawn by any party from it.

Journal of Print and Media Technology Research is listed in:

Index Copernicus International  
PiraBase and PaperBase (by Smithers Pira)  
NSD - Norwegian Register of  
Scientific Journal, Series and Publishers

## Contents

### Scientific contributions

- Modeling optically induced halftone mottle from the variability of lateral light scattering by the unprinted paper surface  
*Abhijit Bhattacharya, Swati Bandyopadhyay, Phil Green* 155
- Life cycle oriented analysis of laminating films for the printing and packaging industry using a multi-level approach  
*Kirsten Radermacher, Ulrich Jung, Joachim M. Marzinkowski* 163
- An analysis of the motivation, structure and success factors of supply chain co-operation in the Sino-German printing industry  
*Hongzhen Diao, Suibeng Li, Alexander W. Roos* 175
- Narrative engagement and reading performance on digital and printed platforms  
*Olli Nurmi, Janne Laine, Timo Kula* 187
- Explorative scenarios of emerging media trends  
*Malin Picha Edwardsson, Daniel Pargman* 195

---

### Topicalities

*Edited by Mladen Lovreček*

- News & more 209
- Bookshelf 213
- Events 217



JPMTR 046 | 1406  
UDC 659.3:001.9

Research paper  
Received: 2014-03-31  
Accepted: 2014-06-10

## Explorative scenarios of emerging media trends

*Malin Picha Edwardsson and Daniel Pargman*

Media Technology and Interaction Design  
School of Computer Science and Communication  
and Centre for Sustainable Communications  
KTH Royal Institute of Technology  
SE-100 44 Stockholm, Sweden

E-mails: [picha@kth.se](mailto:picha@kth.se)  
[pargman@kth.se](mailto:pargman@kth.se)

### Abstract

Dealing with the on-going structural changes in the media landscape is one of the most urgent challenges in today's society, both for people working in the media industry and for consumers trying to adapt to a large and increasing number of new media technologies and services. In this article, we present and discuss a number of current media trends, outline possible future scenarios and evaluate and discuss these scenarios in terms of future media consumption, mainly focusing on the Nordic media market. The research questions are: What are the main media consumption trends today, and what could be the most important characteristics of media consumption in different future scenarios? We have used a combination of a future studies approach, semi-structured expert interviews and design fiction methodology. We have organized two reference group workshops and then interviewed 11 media experts, both from the media industry and the academic world, and combined the results of these interviews and workshops with the significant media trends generated through design fiction methodology in the project course "The Future of Media" at the KTH Royal Institute of Technology in Stockholm.

One of the conclusions drawn is that the mobile phone (smartphone) and other mobile devices such as tablets, etc., are playing an increasingly important role in current media consumption trends. We can see this through an increased number of mobile devices, an increased use of multiple devices (often used simultaneously) and in the fact that users tend to be "always connected and always synchronized". Another conclusion drawn is that there is an increased focus on personalized and individualized news with more co-creation and sharing of media content. The amount of non-text formats for news, e.g., video, is increasing, as well as the need for a high-speed, high-quality infrastructure/network. The news consumers are increasingly time-pressed, and commute more, which creates new and different demands on the media content, such as being easily accessible at all times and places. Finally, more data is collected by media companies about the consumption habits of media users and more surveillance is performed on citizens by governments and corporations. When interviewed about the scenarios and trends in this study, the experts considered the most desirable future society to have a balanced mix of governmental control and commercial powers. As an example, public service media was considered an important counterbalance to commercially oriented media companies. According to the experts that were interviewed, aspects of all four proposed scenarios could however become true in the future, depending on choices made both on an individual level and on a societal level.

**Keywords:** media consumption, media trends, scenarios, future, design fiction

## 1. Introduction and background

### 1.1 Introduction

What will the future of media in general and news in particular look like? Which of the major trends that exist today can give us a hint of tomorrow's media landscape? In this article, an attempt is made to answer these questions by first outlining possible scenarios and then evaluating them.

Dealing with the ongoing structural changes of the current media landscape is one of the most urgent

challenges in today's society for people working in the media industry trying to understand the ongoing processes. Consumers are also trying to adapt to a barrage of new media technologies and services. Dealing with the ongoing changes implies finding ways to grasp and understand the processes as well as learning more about what may be expected of the future of media.

In this article, we present results from a study of media consumption trends and future scenarios, performed at the KTH Royal Institute of Technology in Stockholm,

Sweden. The study builds on empirical results from workshops and interviews as well as on the results from a project course on "The Future of News" for fifth-year master level students. Several different methods have been used, and the results present a spectrum of thoughts and ideas centered on the future of media, but with special focus on the future of news. In this study, we mainly focus on the present trends and future scenarios of the Nordic media market.

By presenting the results of this study, we hope to elucidate what is happening in today's society in terms of media development, and to provide researchers and media content producers alike with useful input with regards to the ongoing structural changes.

## 1.2 Background

The media industry is a worldwide, multi-billion dollar industry comprising production and distribution of content in newspapers, internet portals, magazines, radio, TV, movies, books, online games and other related channels within the news and entertainment sector (Hadenius, Weibull and Wadbring, 2008). However, the development of the media landscape is today closely connected to the transformation of the ICT (information and communication technology) society (Kaye and Quinn, 2010). The business environment in which media companies exist today is rapidly evolving. "*For at least these past couple of decades, traditional media industries have been deeply engaged in a relentless process of change and adaptation*" (Hultén, Tjernström and Melesko, 2010, p. 9). According to Hultén, Tjernström and Melesko (2010), this process consists of responses to new technologies and to changes in the business operations of media companies, of which the most important are ownership consolidations and changes concerning the economic market. Examples of these responses include new media services for consumers (e.g., websites and mobile services), and the consolidation of media companies.

During the past 10 to 20 years, most media companies have worked hard to position themselves in relation to this ongoing change and to find (or create) their place in this evolving new media landscape (cf. McChesney and Pickard, 2011). In the media industry in particular, there is an uncertainty when it comes to what the future system of channels, platforms, media consumption, media content, and work methods will look like (Nygren and Wadbring, 2013). Consequently, it is important to deepen our general knowledge and understanding within this area.

According to Dannemand Andersen and Rasmussen (2012), there are changes in society that in the course of just a few years can cause dramatic changes in society's development, in enterprises and in our daily lives. They conclude that "*the ability to relate to future changes and pos-*

*sibilities is in many ways crucial.*" To them, the goal of foresight is to "*discover the perspectives of many different futures and make decisions today*" - rather than to predict the future (Dannemand Andersen and Rasmussen, 2012, p.3). Future studies pioneer Bertrand de Jouvenel has pointed out that the faster the pace of change is, the stronger is the need for future studies (de Jouvenel, 1967). If we accept de Jouvenel's statement, the need for future studies is indeed strong and pressing today.

The research field of future studies consists of a vast array of studies and approaches (Börjeson et al., 2006). According to Bell (2003), future studies involve systematic and explicit thinking about alternative futures, aiming to uncover future possibilities, to help prepare for the "unpredictable", and to increase human control over the future. According to Bell and Olick (1989, based on Amara, 1981), the aim of future studies is to discover and propose *possible, probable* and *preferable* futures, and to examine and evaluate these futures. Future studies can be described as studies aiming at analytically exploring different possible futures and preparing for them, or exploring possible and/or desirable alternatives attempting to suggest how such alternative futures can be reached.

A large number of research reports take current changes in the media landscape as their starting point (Carlsson and Facht, 2014; Sundin, 2013; Nygren and Wadbring, 2013; Kaye and Quinn 2010). Carlsson and Facht (2014) and Sundin (2013) present a detailed overview of the current media market in Sweden. Nygren and Wadbring (2013) relate today's trends and developments to future possibilities, and Kay and Quinn (2010) discuss how journalism can be funded in the digital age. As technology shapes society in complex ways, there are frequently multiple effects of technological change and these effects can also pull in different directions as well as contradict each other (Fuchs, 2011).

Digitalization is one important aspect of the transformation of the ICT society. According to Åkesson (2009), digital innovation has transformed the structure, processes and boundaries of the business landscape. "*A constant introduction of new digital technology, increased mobility, changing media consumption and advertising patterns as well as digital convergence are radically changing the media industry*" (Åkesson, 2009, p. 3). According to Hultén, Tjernström and Melesko (2010), old media industries are affected by digitalization in all their aspects: production, storage, distribution, audiences' mode of reception, and patterns of use. The digitalization of content and services affect all media companies, independent of their size. It also affects the consumers, both on a short and a long term basis. The ongoing shift in the Nordic media landscape primarily depends on two factors; the development of technology, and the development of journalism. The development of technology is closely linked to innova-

tion. "Innovation is the motor of technological advance, and organisations must innovate in order to respond to this advance," (Küng, in Storsul and Krumsvik, 2013, p.9).

"In large part, media firms' current pressing imperative to innovate stems from the unceasing technological advance that has become a permanent element of their strategic environment. As a result, technology and innovation have leap-frogged up the strategic agenda in media organisations - creating in the process strategic challenges that are not always perfectly mastered" (Ibid, p.9).

Schudson (2011) mentions a number of ways in which journalism has broadly developed. Some examples are that:

- the dividing line between reader and writer has blurred,
- the distinction among tweets, blog posts, newspaper stories, magazine articles, and books has blurred,
- the line between professionals and amateurs has blurred,
- the line between the newsroom and the business office within commercial news organizations has blurred,
- the line between old media and new media has blurred.

## 2. Theory and methods

### 2.1 Theory

We have, during the last few decades, moved from scarcity to abundance in area after area; texts, photos, music and moving images (Hylland Eriksen, 2001). Nothing in particular implies that we have reached the end state of such developments; it might be that when we look back on the present from a distance of 10 or 20 years from now, what we today perceive as a hectic pace will by then seem like a leisurely stroll in the park, much like the "heavy"<sup>1</sup> users of e-mail yesteryear received a mid-dling daily load of e-mail by today's standards.

Where we were once limited in acquiring media products of various kinds primarily by our economic means, we now live in an age of information overload and we are instead increasingly limited by the *time* we have at our disposal to consume media products. We live, in the words of business strategists Davenport and Beck (2001), in an "attention economy" - an economy where time and attention are the most important limiting factors instead of (for example) money or the volume of

Westlund (2011) writes that "journalism has always been intertwined with technology, from the invention of the printing press to the digitalization of the tools used to produce and distribute news" (p.5). As Jenkins (2006, p.13) expresses it: "History teaches us that old media never die. [...] What dies are simply the tools we use to access media content. [...] Delivery technologies become obsolete and get replaced; media, on the other hand, evolve."

Exploring the ongoing digitalization process, the shift in technology use and what this means for the future of journalism is an urgent task, to which we hope this article will contribute.

### 1.3 Definition of scope and research questions

The scope of this study is first to present and discuss a number of media consumption trends, then to outline a number of possible future scenarios and finally to evaluate and discuss these scenarios in terms of future media consumption with special focus on news consumption. The method used in this study is a combination of a future studies approach, semi-structured interviews and design fiction methodology. The scope includes media consumption in a Nordic perspective. The research questions are: What are the main media consumption trends of today? What could be the characteristics of media consumption in relation to different future scenarios?

content produced. What we here characterize as a shift from "scarcity" to "abundance" does strictly speaking not mean that we once and for all have "done away" with scarcity of all kinds, but rather that scarcity has moved from a relative paucity in terms of media products and in our abilities to acquire them to limitations on the time and attention needed to consume them, i.e., time and attention have replaced money as the most important bottlenecks. Still, the *effect* for media in general and for news in particular is indeed that it is hard to charge premium dollars (or Swedish kronor) for content in an increasingly saturated media market (cf. Picard, 2010).

Traditional print media products (newspapers, magazines, books) were structured and limited by the abilities and the characteristics of the machines that were used in the production process. A line-casting machine such as Linotype was immensely powerful compared to earlier technologies as it allowed a small number of operators to typeset a newspaper on a daily basis (Adams et al., 1988). Despite this, absolute physical limitations in terms of time and space and volume (a newspaper cannot be infinitely large or thick) determined the limits of the kind of products that the mechanical machines of the recent past produced. Above all, the daily output of such a machine was finite, as was the consumption of

<sup>1</sup> "Heavy" users of electronic mail were in an article from 1998 defined as people who either receive 20 or more, or who sent 9 or more email messages per day (Lantz, 1998).

the resulting product(s). It was easy to clearly discern a beginning (first page), a middle and an end for each newspaper, magazine or book.

Many of these limitations have disappeared with the arrival of digital technologies and the internet. Your internet newsfeed never "ends" and one link will inexorably lead to another - wherever your brand (in-)fidelity leads you.

The technology is infinitely flexible and the limitations that matter have less and less to do with characteristics or the ability of the technology in question and much more to do with business models, financial endurance and/or reader/consumer behaviour. Anything is possible as long as someone is willing to experiment and someone else is (perhaps) willing to pay for the resulting media product or service. Do note that these developments do not necessarily mean that the largest media conglomerates, with the deepest pockets and the most skilled staff, will be the ones who will ultimately stand victorious.

The Achilles' heel of such companies is that they also have very high fixed costs (Shirky, 2010). It might thus be the case that lone amateurs, working out of their homes and with tiny overhead costs, manage to explore and find business models that prove to be a better "fit" to this new media environment.

Again, the faster the pace of change is, the stronger the need for future studies (de Jouvenel, 1967) and there are many suggestions and predictions about what the future of journalism, newspapers, books or social media will be like (McChesney and Pickard, 2011; Kaye and Quinn, 2010; Nygren and Wadbring, 2013).

Perhaps unsurprisingly, the suggestions that come closest to the perspective represented in this article come from researchers, journalists, authors and pundits who point at the shift from scarcity to abundance and who examine a variety of ramifications of such trends.

Shirky (2008) notes that the price of coordination and organization has decreased and is continuing to do so, with the arrival of social media and the internet.

This quantitative change has also led to qualitative changes where things that were costly, hard or impossible to accomplish before can easily be solved today (e.g., to find a large number of pictures of a parade by searching for tagged photos on a photo-sharing service such as Flickr).

Benkler (2006) has looked at how alternative internet-based models of production ("commons-based peer production") harbour the promise (and the threat) of transforming both our economies and our societies (in his opinion mostly for the better) in the age of "the networked information economy".

Fleischer (2009) assumes that we will all soon have an infinite amount of music always available and asks the intriguing question of what happens then? How do you choose the next song to listen to when you could hit "random" and never hear the same song twice until the day you die? In fact, how do you even acquire a taste for a specific musical genre or manage to imbue certain artists or songs with meaning in an age of infinite abundance of music?

Sunstein (2002; 2007) worries that internet-induced information overload will make us *less* rather than *more* open to opinions that differ from the ones we already possess; we run the risk of constructing cyberspace "echo chambers" where our opinions are always affirmed/never challenged. This could then lead to a weakening of our ability to understand and sympathize with other opinions and could mean that democracy might be weakened as a system of governance.

Turkle (2011) is concerned about the effects of always-connected technologies on our relationships with other people, including with our nearest and dearest (spouses, children, parents). She also questions our ability to grow up and develop into independent human beings, able to make decisions and have opinions of our own in an age where your social network is never further away than your smartphone, but where people paradoxically prefer to "handle" other people (including friends and family members) from a distance rather than engage in more time consuming and demanding forms of face-to-face interaction.

Carr was concerned about his own seemingly deteriorating ability to concentrate and take in long texts and complicated arguments after years of skimming, skipping and jumping from one text to the next on the internet. His initial text, "Is Google making us stoopid?" (Carr, 2008), was later expanded into a book-length treatment (Carr, 2010) of the possible detrimental effects of abundance and information overload on cognition - including how the brain adapts and comes to expect fast-paced bit-sized vacuous news (or "news") on the internet.

Our intention in this article is not to "endorse" any specific trend or prediction, but rather to insist on the necessity of entertaining several parallel visions of the future of media, i.e., of exploring different scenarios of emerging media trends. In this respect, we believe the methods expounded on below are appropriately chosen.

## 2.2 Methods

Despite its name, the most important outcome of future studies is not knowledge and images of the future, but learning about today and what can be done now, for example in order to reach a desired future (Svenfelt and Höjer, 2012). According to Börjeson et al. (2006, p.

723), "one of the most basic, although contested, concepts in this field is 'scenario'. It can denote both descriptions of possible future states and descriptions of developments." Kosow and Gassner (2008, p.1) describe a scenario as a "description of a possible future situation, including the path of development leading to that situation. Scenarios are not intended to represent a full description of the future, but rather to highlight central elements of a possible future and to draw attention to the key factors that will drive future developments."

In this study, we first made a literature study and then used the future studies techniques of workshops and scenario discussions (Kosow and Gassner, 2008) in order to explore possible futures of media. The explorative scenarios used in this study aim at answering the question "What can happen?" as described by Börjeson et al. (2006). Explorative scenarios are considered to be the most appropriate choice here since the focus of the study is in exploring the consequences of alternative developments.

The process of scenario generation in this study was first carried out by a reference group consisting of three senior media experts within the fields of 1) digital media, 2) print media and 3) media technology development, and, in addition, 4) an environmental expert within the field of life cycle assessments of media products. At the first reference group meeting, in August 2013, significant media trends were singled out during a brainstorming session, partly based on parameters identified by Appelgren and Leckner (2013). Next, the trends were grouped into clusters and discussed. At the second reference group meeting, in September 2013, a so-called scenario cross was created to depict the most influential dimensions (based on van der Heijden, 1996), and the list of significant media trends was discussed and further refined.

As the next step, a total of 11 media experts, not including the reference group, were interviewed in this study - ten of the interviews were conducted in Sweden and one in Finland. The group of media experts consisted of a mix of people from the media industry and the academic world. They work at a variety of media companies, such as daily newspapers, business press, and public television, as well as at one media industry organization. The academics participating in this study are all senior researchers within the field of media studies but with different competencies, such as media development, mobile media, and media economics, and they come from different universities.

The media experts participating in this study were first asked to suggest and discuss significant media trends of today, based on a list of media trends presented to them. They were then asked to suggest and discuss a number of parameters which affect possible future media developments. The four scenarios were then presented to them. The experts were asked which of the scenarios

they believe could become true in the future, which of the scenarios they would like to become true in the future, and which of the scenarios they fear could become true in the future.

The experts gave their opinions and comments, and these led to some further changes, through a Delphi-like process (Kosow and Gassner, 2008). A Delphi-like process refers to a method where experts comment on research results and suggest improvements, which are then commented upon by the next round of experts, et cetera, in an iterative process.

Semi-structured interviews can be described as an interview situation where the interviewer has an agenda and leads the interview, while at the same time the interviewee is given some freedom to elaborate on the subject and bring up other points that are relevant to the current question, but without leaving the original subject entirely behind (Bryman and Bell, 2007).

When analyzing the result of the semi-structured interviews made with media experts in this study, the extrapolated trends from the design fiction project "The Future of News" were included in the analysis, as described below.

### 2.3 "The future of media as design fiction"

In the project course "The Future of Media", advanced graduate students in Media Technology and Media Management at KTH Royal Institute of Technology explore the relationships between technology, economy and social factors in processes of technological innovation and development.

This is done by developing different visions of the future of media. In 2013, ten project groups with 5-6 students in each group analyzed, reflected upon, reviewed, refined and further developed visions of the future of news and the news of the future from a media technology perspective.

Part of the work included the creation of practical "design representations", such as for example movies and prototypes of different applications and services.

Design fiction is a method that tries to envision the future through the use of semi-fictional narratives, concepts, prototypes, movies, etc. (Wakkary et al., 2014), and can be seen as a continuation of the use of:

- 1) simple fictional vignettes to frame research (Carroll, 1999),
- 2) scenarios that illustrate the use of soon-to-be-developed technologies (Weiser, 1991) and
- 3) fictive, made up "personas" (prototype users) with designated gender, age, professions and habits (Eriksson, Artman and Swartling, 2013).

During an intense six week long start-up phase (from the beginning of September to mid-October, 2013), the whole class read selected literature about news, worked with news-related issues in seminars, and welcomed around 20 guest lecturers from industry and academia. These guests had a variety of backgrounds and presented the students with a wide variety of perspectives, over-all giving them a well-rounded picture of the history of news, the present state of news, as well as suggestions for trends and possible future developments.

At the end of this start-up phase, ten project groups were formed around the course participants' emerging interests. During the second half of the autumn semester (from mid-October to December), these groups independently explored different aspects of "the future of news" and "news of the future" through the use of design fiction, i.e., "the deliberate use of diegetic prototypes to suspend disbelief about change" (Sterling, 2013).

Despite the fact that these project groups generated widely different ideas and scenarios, there were a number of trends that all ten project groups had to position themselves in relation to. These trends were "extracted" through a Delphi/wisdom of crowds-like process (Surowiecki, 2005), where the ten project groups each suggested a variety of trends that they thought described important premises from which they built their own

particular scenario. This process resulted in a list of trends that all groups could relate to. The resulting 11 trends are presented below (see section 3.1).

Each of the ten project groups in the Future of Media course created a scenario that illuminated some aspect of the future of news, including the creation of prototypes of future systems or movies that envisioned the use of their proposed future systems. Some aspects of "the future of news" that were explored include but are not limited to: responsive news that adapts to the changing physical contexts that you move through in the course of a day, geographically anchored news services, collaborative crowd sourced news, automated bias detection software for news stories, and the use of second screens to supplement the main (computer, TV) screen.

The computer science researcher Alan Kay famously said that "the best way to predict the future is to invent it" (Brand, 1988). Design fiction does not live up to Kay's high standards of *actually* inventing and building the systems of the future, but it explores multiple possible futures through the use of fiction and a variety of supporting media products (texts, images, movies and prototypes). We believe that design fiction is a very exciting method to explore and visualize scenarios of emerging media trends.

### 3. Results

#### 3.1 Current media trends

Based on literature (cf. Schudson, 2011; Carlsson and Facht, 2014; Sundin, 2013; Nygren and Wadbring 2013; Kaye and Quinn 2010), interviews, workshops and the design fiction practices used in this study, we propose the following significant media development trends.

The list does not aim at being complete ("prediction is difficult, especially about the future", as physicist Niels Bohr once joked) but we believe that it addresses some of the most important trends at play in current media development. Below is an attempt to briefly describe these trends and relate them to future developments.

##### 1. More mobile devices

We are using more mobile devices, such as smartphones, tablets, etc. Just as virtually everyone today owns a mobile phone, people will own a smartphone and/or a tablet in the future, and will to a large extent use these devices for media consumption.

##### 2. Multiple devices used

People are using and switching between multiple devices depending on their moment-to-moment situation. Even when moving between different rooms at home, people are switching between different devices. This is leading to

a high demand for shared or uniform security and "sensible" subscription or other payment plans.

##### 3. Always connected, always synchronized

As we are using our mobile devices more and switching between different devices, there is a higher demand for seamless connection solutions. Devices need to be always connected and perfectly synchronized with each other. These always-connected, always-synchronized devices will be a natural choice for consuming media.

##### 4. More news channels

In addition to currently available media channels, there are more alternative channels. These could, for example, include individual channels, such as "ordinary" persons publishing blogs or podcasts, or "non-media" corporations starting a TV-channel (banks, chain stores, etc.), or non-governmental agencies with their own social media channels.

##### 5. More (co-)creation and sharing

There is an increasing volume and variety in the news landscape, because of more co-creation and sharing of content, for example, via blogs and other social media. "Ordinary" persons who cannot be regarded as fullfledged news channels (see above), will produce news related content that will be shared among smaller or larger groups of people.

#### 6. Personalized/individualized news

Beyond mass media, there is more individualization of news according to each individual's interests and preferences. While there are some attempts to go in this direction today, we have really only seen the beginning of this development. In the future, you will read well-curated articles on topics which are exactly what you are interested in, but from sources that you have not heard of before.

#### 7. More non-text formats for news

News is to a larger extent consumed through non-text formats, such as video, images, and audio. Today's popular cat images and YouTube videos hint at this growing trend. In a time-pressed future, short news items will win out over long complicated in-depth stories.

#### 8. Increased need for high-speed, high-quality infrastructure/networks

In order to cater for higher volumes of data traffic, there is an increased need for a better infrastructure. The amount of traffic is expected to increase and the broadcast network will be at ultra-high speed and ubiquitous.

#### 9. Hurried, time-pressed news consumers

The future is high-paced, with hectic lifestyles and impatient users. This implies a need for shorter, visual news items and more overviews (rather than in-depth coverage). Multitasking, such as simultaneous consumption of several media channels, is on the rise, which will lead to an increased use of media while simultaneously performing other tasks.

#### 10. More commuting

People are spending more time commuting, both by car and by public transportation, due to continued urbanization and a continued spatial and geographical expansion of cities (cf. Ax:son Johnson, 2013). This trend implies that we will increasingly access and consume news on the move; in cars, in subways, on buses, etc. This will also be a driver for using more mobile devices in society.

#### 11. Big data and surveillance

More data is collected and more surveillance is performed - for good and for bad. More data will be collected by media companies about the consumption habits of media users and more surveillance will be performed on citizens by governments and corporations (cf. Karlsten, 2013). This has important and serious implications for issues having to do with integrity, but it also brings about possibilities for more convenience and better service in many different areas of society.

### 3.2 Scenarios of the future

Appelgren and Leckner (2013) discuss what parameters influence the development of media. They conclude

that social, cultural, economic, juridical, political and technical parameters are the most important ones. In this study, these parameters were used at the first workshop when formulating and discussing a list of external factors. The interviews and workshops made in this study support the conclusions made by Appelgren and Leckner. We have further developed and specified these parameters into external factors influencing the media development as the following:

- Laws in the media area, on a national and global level, for example regarding copyright, broadcasting rights, publishing rights, news aggregation, behavioural targeting, integrity laws, censorship, taxes on media content, and advertisement taxes.
- Political developments in the Nordic countries and the rest of the world.
- The development of the world economy, the fundamental technical development and the ability of Nordic and international companies to innovate new products and services.
- Electricity supply, electricity consumption, and energy costs for companies and private citizens.
- (Partly dependent on the bullet points above) Consumer habits, consumers' media consumption and the general demand for emerging and existing media products and services.

Hvitfelt and Nygren (2008) further claim that media consumption in general depends on the consumers' age, where they live, what their household looks like, what personal interests they have, how educated they are and, finally, how much time and money they have at their disposal.

In the scenario generation process described above, a total of four future scenarios were created. A so-called scenario cross was created to map out the most influential dimensions, based on van der Heijden (1996) who discusses scenario creation.

We have made the assumption that the amount of influence from the government in combination with the strength of commercial powers strongly affects the future of media, based on Hultén et al. (2010) who discuss the duality between government regulations and the market.

Thus, the scenario cross presented in Table 1 is not orthogonal with regard to the descriptive parameters, but constructed around the four possible combinations of this duality.

Table 1: The four scenarios, based on the four possible combinations in the scenario cross

	Strong governmental control	Weak governmental control
Strong commercial powers	Scenario 2	Scenario 3
Weak commercial powers	Scenario 1	Scenario 4

Below is a short description of each of the four media scenarios developed in this study.

### **Scenario 1, "Strong governmental control, weak commercial powers"**

*The government is controlling or monitoring media content producers to an increasing degree, often justifying this control in terms of "defence against terrorism". Foreign companies are controlled by the government, which means that they have limited influence and limited possibilities to expand in the domestic media market. Public service is used for the dissemination of government information (propaganda), and news shows are controlled by government authorities. Public service and printed newspapers receive governmental support to help them survive even though most people are not so interested in watching or reading them. Critical voices in society are controlled and limited by the government. Debates in social media and other types of forums are read and controlled by the government.*

### **Scenario 2, "Strong governmental control, strong commercial powers"**

*Press freedom is guaranteed by the government, which encourages free and independent media, but stops monopolies and cartels formed by foreign or national media companies. Media companies continue to consolidate, which increases the amount of meetings. The increased amount of meetings leads to more trips for the staff as well as more meetings with online tools. Smart phones become increasingly important in society for media use in general. Moving images/video is consumed on large or small platforms, independent of time and space. The lifecycle of new media devices becomes shorter, and the consumers have an interest in new technology. The amount of e-waste increases every year. Energy prices increase in society. This has the effect that the distribution of printed newspapers become more expensive, and that newspapers consider printing fewer copies per week and with less content (fewer pages). The distribution of morning papers go down/go through radical changes. The increased energy price also leads to the introduction of new technical devices with low energy consumption and an overall low environmental impact becomes increasingly important in society.*

### **Scenario 3, "Weak governmental control, strong commercial powers"**

*The government has little or no control over media, media content and the organization of media companies. Most of the news media content and societal information is available on the web. The largest sites are run by citizen journalists, or get their content from crowdsourcing of information, and they exist side by side with large multinational media companies. Public service is shut down, and the TV license fee and other media taxes are gone. Multinational media conglomerates dominate the Nordic media market, as they own the majority of the Nordic sites. These companies do not have journalism as their guiding star, but operate strictly according to their economic interests. Foreign companies strive towards a monopoly on the Nordic market. Media content broadcast (on TV and radio) or published on the web becomes increasingly focused on entertainment. Very little documentary or*

*informational material is broadcast as the focus is mainly on entertainment. The level of general knowledge in society decreases while social gaps increase. Moving images, such as video, are becoming increasingly important and more common in relation to text based media content. The consumers' attention span gets shorter - they have little patience with consuming complex media content. The digital market for advertising is dominated by large companies. The media market is increasingly agile.*

### **Scenario 4, "Weak governmental control, weak commercial powers"**

*In this scenario, news updates with large amounts of user generated content is mainly found online. Most of the traditional media content as well as social forums and societal information can be found online, free of charge and without any restrictions. The largest web sites are run by citizen journalists. Crowdsourcing is an important source for information. Multi-national companies have played out their role in society at large. The government has very little influence over the media market. Bloggers and smaller media players dominate, or work together in network structures. Web sites where consumers sell and buy goods and services from each other dominate the net trade. People like to share resources, often by using social media channels to communicate.*

### 3.3 Reactions to the trends and scenarios

The list of media trends and the four scenarios were presented to the 11 media experts with whom we conducted semi-structured interviews, as described above. The experts were specifically asked:

1. Which of the scenarios do you *believe* could become true in the future?
2. Which of the scenarios would you *like* to become true in the future?
3. Which of the scenarios do you *fear* could become true in the future?

There was a surprisingly strong consensus among the experts regarding the scenarios. Scenario 1 was considered the most improbable. None of the experts could imagine a future where media worked as in scenario 1 - even though this could be a description of the current media situation in some countries outside of (and not so far away from) Scandinavia. The only possibility for scenario 1 to become true in the Nordic region was, according to the experts, if there was a global war, a deep, turbulent and long-lasting economic crisis or some other similar major unexpected global or regional crisis. Such an unexpected crisis was not something that these experts feared.

Scenario 2 was considered the most probable of the four scenarios. The experts agreed that this is what the future would look like if current media trends continue to follow their trajectories. This scenario was also regarded as the most desirable by a majority of the experts.

Scenario 3 was considered probable by some of the experts, but not by all. On the other hand, many of the media experts thought that this scenario was the most frightening, due to the high amount of commercialism and general lack of governmental control. This scenario created a sense of unease among many of the interviewed experts, due to a general uncertainty about what direction this kind of society would take, when commercial powers are free to dominate.

Some experts thought that scenario 4 was the most desirable, especially from an environmental point of view. However, few thought that scenario 4 was very probable, since it entails both weak commercial powers and weak government control and this was deemed very unlikely to happen. Some experts considered scenario 4 to be problematic because it necessitates citizens who are good at exerting source criticism in order for this type of network society to function well. This is usually not the case, according to the experts. In scenario 4, all citizens would also have to work towards everyone else's best interest. The experts were very sceptical as to the probability of this happening, based on the belief that there are strong ideological powers in society that could affect the development negatively.

The conclusion drawn by some of the experts was that the most desirable future society combines a balanced mix of governmental control and commercial powers. The ideal seems to be neither too much governmental control nor too little governmental control. A combination of "healthy" governmental control and "healthy" commercial influence would be the most optimal future, according to the experts. As an example, these experts found it important to keep public service media organizations as a counter-balance to the commercial powers in the media sector. Interestingly enough, the media experts working in the newspaper industry found this particularly important.

#### 4. Analysis and discussion

In this study, we have presented 11 media consumption trends and outlined four possible future scenarios. By using future studies methodologies combined with semi-structured interviews and design fiction, we believe that we have obtained a good understanding of what media experts today think about the future. However, we must consider that media experts tend to have a certain bias, since they are working within an industry that they naturally would like to see as successful in the future. Despite this, the general impression from the interviews was that the media experts had very "realistic" and sometimes even pessimistic views of the future of traditional media, for example printed newspapers. They were aware of the fact that the media industry they know and have worked in for decades is on the rim of a total transformation (and not necessarily for the better, from

In addition to the trends already mentioned in this article, the experts considered the following three media trends to play an important role in relation to future developments:

- Economic interests are increasingly important for media content producers.
- The amount and proportion of entertainment in media content is increasing, except in news media.
- General knowledge in society, for example, what can be assumed that most citizens have general knowledge of, is shifting and the knowledge gap between different groups in society is increasing.

The experts pointed out that we have, historically, seen the same patterns of consumer behaviour as we see today, but now there are new media tools and new technologies that take advantage of this behaviour in new ways (cf. Jenkins, 2006; Nygren and Wadbring, 2013). Some examples of this behaviour are: the sharing of information, and the sense of fellowship and community in social forums and communities of interest. To an increasing extent, information today is shared via social media channels, while it was more common earlier to share information at physical meetings or via the telephone. The same goes for communities of interest which were earlier maintained via physical meetings, and where social media tools today play an increasingly important role. As a result, the geographical location of the community participants is less important today as communities of interest become increasingly global.

The experts agreed that if the main media trends of today follow their current trajectories, we will see a future closest to our scenario 2 (above), or something that is situated between scenarios 2 and 3. However, aspects of all four scenarios could become true in the future, depending on choices made both on an individual and a societal level, according to the experts.

their point of view.) We cannot really say that any of the experts had an unrealistically positive view of the future of media.

When it comes to the future of media, we argue that it will most likely entail parts of all the scenarios described above. The future will furthermore play out differently for different people. It will depend on their age, where in the country they live, what their household looks like, what personal interests they have, how well educated they are, as well as how much time and money they have at their disposal (based on Hvitfelt and Nygren, 2008). With this study, we have aimed at increasing our general understanding and awareness of what is happening in our society today. We believe that one of the greatest challenges for media companies today and in the future

is to adapt content and services to consumers' varying demands and needs. Consumers have different needs (wishes), and all consumers take for granted that their demands and needs will be taken into consideration in one way or another - and hopefully as soon as possible.

Another important aspect of the future of media is the question of environmental sustainability. Which of the four scenarios would be the most beneficial (or least harmful) for the environment? Can anything be done to facilitate developments that would decrease the environ-

## 5. Conclusions

In this study, the aim was to present and discuss a number of media consumption trends, then outline possible future scenarios and finally evaluate and discuss these scenarios in terms of future media consumption. We have tried to answer the following questions: What are the main media consumption trends today? What could be the characteristics of media consumption in relation to different future scenarios?

One of the conclusions drawn about the main media consumption trends of today is that the mobile phone (smartphone) and other mobile devices are playing an increasingly important role. This can be seen in the quickly increasing number of mobile devices, in the increased use of multiple devices, often used simultaneously, and in the fact that users tend to be "always connected and always synchronized". Other conclusions about media trends are that in addition to current media channels, there are more alternative media channels, such as "ordinary" persons publishing blogs or podcasts, corporations starting a TV-channel, or non-governmental agencies with their own social media channels. There is an increased focus on personalized and individualized news with more co-creation and sharing of media content. The amount of non-text formats for news, for example video, is increasing, as well as the need for a high-speed, high-quality infrastructure/network. The news consumers are increasingly pressed for

mental impact of media consumption? That perspective in combination with the results of this study could generate interesting questions to be explored in a future study.

Taking this into consideration, it might be possible to work in a more environmentally beneficial direction by choosing certain paths rather than other paths, also taking into account parameters such as democracy, freedom of expression, etc. This is an important task for future research and a future study of ours.

time and commute more, which creates new and different demands on the media content, such as being easily accessible at all times and places. Finally, more data is collected by media companies about the consumption habits of media users and more surveillance is performed on citizens by governments and corporations.

When it comes to the characteristics of media consumption in relation to different future scenarios, the conclusions drawn from interviewing experts are that scenario 2 (strong governmental control and strong commercial powers) was considered the most probable of the four scenarios.

The experts agreed that this is what the future would most probably look like if current media trends and other trends continue to follow their trajectories. This was also regarded as the most desirable scenario by a majority of the experts. The experts considered the most desirable future society to have a balanced mix of governmental control and commercial powers. Neither too much governmental control nor too little governmental control seems to be the ideal. As an example, public service media was considered an important counterbalance to commercially oriented media companies. A combination of healthy governmental control and healthy commercial influence would be the most optimal future, according to the experts.

## Acknowledgments

We would like to thank the master level students at the project course "The Future of News" at KTH Royal Institute of Technology and all media experts participating in this study. Our thanks also go to Malin Picha Edwardsson's supervisors Johan Stenberg, Nils Enlund and Åsa Moberg, and to our colleagues at the Department for Media Technology and Interaction Design and at the Centre for Sustainable Communications at KTH Royal Institute of Technology in Stockholm, Sweden. Thank you all for your valuable input!

## References

- Adams, J. M., Fauz, D. D. and Rieber, L. J., 1988. *Printing Technology*. 3<sup>rd</sup> ed. New York: Delmar Publishers Inc.
- Amara, R., 1981. The futures field: searching for definitions and boundaries. *The Futurist*, XV, February 1981, pp. 25-29
- Appelgren, E. and Leckner, S., 2013. Tröga processer i en snabb medievärld - en introduktion till att förutspå medieutveckling. In: Nygren, G. and Wadbring, I., eds., 2013. *På väg mot medievärlden 2020 - Journalistik, teknik, marknad*. Lund: Studentlitteratur
- Ax:son Johnson, V., 2013. Utmaning: Att bygga framtidens urbana stad. In: Strömbäck, J., ed., 2013. *Framtidsutmaningar, det nya Sverige*. Stockholm: 8otto
- Bell, W., 2003. *Foundations of Futures studies - History, Purposes and Knowledge*, vol 1. New Brunswick, N. J.: Transaction
- Benkler, Y., 2006. *The wealth of nations: How social production transforms markets and freedom*. Yale: University Press
- Bell, W. and Olick, J. K., 1989. An epistemology for the futures field: Problems and possibilities of prediction. *Futures*, 21(2), pp. 115-135
- Brand, S., 1988. *The Media Lab: Inventing the future at MIT*. New York: Penguin Books
- Bryman, A. and Bell, E., 2007. *Business research methods*. New York: Oxford University Press
- Börjesson, L., Höjer, M., Dreborg, K.-H., Ekvall, T. and Finnveden, G., 2006. Scenario types and techniques: Towards a user's guide. *Futures*, 38(7), pp. 723-739
- Carlsson, U. and Facht, U., eds., 2014. *Mediesverige 2014. Statistik och analys*. Göteborg: Nordicom-Sverige, Göteborgs universitet
- Carr, N., 2008. Is Google making us stupid? *The Atlantic*, 301(6), July/August
- Carr, N., 2010. *The shallows: What the Internet is doing to our brains*. New York: W.W. Norton
- Carroll, J. M., 1999. Scenario-based design. In: Helander, M., Landauer, T. K. and Prabhu, P., eds., 1999. *Handbook of Human-Computer Interaction*. Amsterdam: Elsevier
- Dannemand Andersen, P. and Rasmussen, B., 2012. *Introduction to foresight and foresight processes in practice*. Course notes based on *Fremsyn: Metoder, praksis og erfaringer*. Styrelsen for Forskning og Innovation. Copenhagen: Technical University of Denmark
- Davenport, T. H. and Beck, J. C., 2001. *The attention economy: Understanding the new currency of business*. Boston: Harvard Business School Press
- de Jouvenel, B., 1967. *The Art of Conjecture*. New York: Basic Books
- Eriksson, E., Artman, H. and Swartling, A., 2013. The secret life of a persona: When the personal becomes private. *CHI'13 Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pp.2677-2686
- Fleischer, R., 2009. *Det postdigitala manifestet: Hur musik äger rum*. Stockholm: Ink Bokförlag
- Fuchs, C., 2011. *Foundations of Critical Media and Information Studies*. London: Routledge
- Hadenius, S., Weibull, L. and Wadbring, I., 2008. *Massmedier - Press, radio och tv i den digitala tidsåldern*. Stockholm: Ekerlids förlag
- Hultén, O., Tjernström, S. and Melesko, S., 2010. *Media Mergers and the Defence of Pluralism*. Göteborg: Nordicom, University of Gothenburg
- Hvitfelt, H. and Nygren, G., eds., 2008. *På väg mot medievärlden 2020. Journalistik, teknik, marknad*. Lund: Studentlitteratur
- Hylland Erikson, T., 2001. *Tyranny of the moment: Fast and slow time in the information age*. London: Pluto Press
- Jenkins, H., 2006. *Convergence Culture - Where old and new media collide*. New York: New York University Press
- Karlsten, E., 2013. Utmaning: Integriteten och samhällsutvecklingen. In: Strömbäck, J., ed., 2013. *Framtidsutmaningar, det nya Sverige*. Stockholm: 8otto.
- Kaye, J. and Quinn, S., 2010. *Funding journalism in the digital age*. New York: Peter Lang Publishing.
- Kosow, H. and Gassner, R., 2008. *Methods of Future and Scenario Analysis. Overview, Assessment and Selection Criteria*. Bonn: German Development Institute, DIE
- Küng, L., 2013. Innovation, technology and organizational change - Legacy Media's Big Challenges in Media Innovations. In: Storsul, T. and Krumsvik, A.H., eds., 2013. *Media Innovations - A multidisciplinary study of change*. Göteborg: Nordicom
- Lantz, A., 1998. Heavy users of electronic mail. *International Journal of Human-Computer Interaction*, 10(4), pp. 361-379
- McChesney, R. and Pickard, V., eds., 2011. *Will the last reporter please turn out the lights - the collapse of journalism and what can be done to fix it*. New York: The new press
- Nygren, G. and Wadbring, I., eds., 2013. *På väg mot medievärlden 2020 - Journalistik, teknik, marknad, femte upplagan*. Lund: Studentlitteratur
- Picard, R. G., 2010. A business perspective on challenges facing journalism. In: Levy, D. A. L. and Kleis Nielsen, R., eds., 2010. *The changing business of journalism and its implications for democracy*. Oxford: Reuters Institute for the Study of Journalism. pp. 17-24
- Shirky, C., 2008. *Here comes everybody: The power of organizing without organizations*. New York: Penguin Group

- Shirky, C., 2010. *The collapse of complex business models*. [online] Available at: <<http://www.shirky.com/weblog/2010/04/the-collapse-of-complex-business-models/>> [Accessed March 28, 2014]
- Schudson, M., 2011. *The sociology of news*. New York: Columbia University, W. W Norton & Company
- Sterling B., 2013. *Fantasy prototypes and real disruption*. Keynote NEXT Berlin 2013. [video online] Available at: <<http://www.youtube.com/watch?v=2VioRYPZk68>> [Accessed March 28, 2014]
- Sundin, S., 2013. *Den svenska mediemarknaden 2013*. Medienotiser nr 3, Nordicom. Göteborg: Göteborgs universitet
- Sunstein, C., 2002. *Republic.com*. Princeton: Princeton University Press
- Sunstein, C., 2007. *Republic.com 2.0*. Princeton: Princeton University Press
- Surowiecki, J., 2005. *The wisdom of crowds*. New York: Random House LLC
- Svenfelt, Å. and Höjer, M., 2012. Framtidsstudier och osäkerheter. In: Alm, S., Palme, J. and Westholm, E., eds., 2012. *Att utforska framtiden: valda perspektiv*. Stockholm: Dialogos Förlag. pp. 1-255
- Turkle, S., 2011. *Alone together: Why we expect more from technology and less from each other*. New York: Basic books
- van der Heijden, K., 1996. *Scenarios: The Art of Strategic Conversation*. London: John Wiley and Sons
- Wakkary, R., Desjardins, A., Hauser, S. and Maestri, L., 2014. A sustainable design fiction: Green practices. *ACM Transactions on Computer-Human Interaction*. 20(4)
- Weiser, M., 1991. The computer for the 21<sup>st</sup> century. *Scientific American*, 265(3), pp. 66-75
- Westlund, O., 2011. *Cross-media news work - Sensemaking of the mobile Media (R)evolution*. PhD. University of Gothenburg
- Åkesson, M., 2009. *Digital Innovation in the Value Networks of Newspapers*. PhD. University of Gothenburg. Gothenburg Studies in Informatics, Report 42