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## Combining Actor Network Theory and Genre Theory to Understand the Evolution of Digital Genres

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### Abstract

In this paper we argue that a combination of Actor-Network Theory (ANT) and Genre Theory can constitute a theoretical framework for understanding how digital genres evolve. Genre theory states that genres evolve over time through reciprocal interaction between institutionalized practices and individual action; that they develop from actors' responses to recurrent situations, and are shaped around characteristics as content, form, functionality and purpose. Genres emerge out of practice and at the same time they shape that practice. While genre theory can describe the characteristics of a genre, it cannot handle the process of how a genre is formed and what powers and forces are involved in this shaping process. In order to address this problem, several authors have incorporated structuration theory into genre analysis. However, structuration theory can only catch these constitutional processes of genre in a very broad manner. As a genre is evolving and stabilizing over time in interplay with different actors, it goes beyond what is possible to explain only by means of structuration theory. Instead, ANT could work as a tool to capture the process of how a genre takes form in negotiations with different stakeholders. In this paper we discuss how genre theory and ANT can be combined in a framework for analyzing emerging genres. We apply this theoretical framework on an e-newspaper project that embodies a new genre in the making. We will here show how evolving genre characteristics are developed, formed and stabilized in a negotiation and struggle between the involved actors when they translate their interests in ways that finally are resulting in a new genre.

**Keywords:** Actor Network Theory, Genre Theory, Evolution of Digital Genres

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## Combining Actor Network Theory and Genre Theory to understand the Evolution of Digital Genres

*In this paper we argue that a combination of Actor-Network Theory (ANT) and Genre Theory can constitute a theoretical framework for understanding how digital genres evolve. Genre theory states that genres evolve over time through reciprocal interaction between institutionalized practices and individual action; that they develop from actors' responses to recurrent situations, and are shaped around characteristics as content, form, functionality and purpose. Genres emerge out of practice and at the same time they shape that practice. While genre theory can describe the characteristics of a genre, it cannot handle the process of how a genre is formed and what powers and forces are involved in this shaping process. In order to address this problem, several authors have incorporated structuration theory into genre analysis. However, structuration theory can only catch these constitutional processes of genre in a very broad manner. As a genre is evolving and stabilizing over time in interplay with different actors, it goes beyond what is possible to explain only by means of structuration theory. Instead, ANT could work as a tool to capture the process of how a genre takes form in negotiations with different stakeholders. In this paper we discuss how genre theory and ANT can be combined in a framework for analyzing emerging genres. We apply this theoretical framework on an e-newspaper project that embodies a new genre in the making. We will here show how evolving genre characteristics are developed, formed and stabilized in a negotiation and struggle between the involved actors when they translate their interests in ways that finally are resulting in a new genre.*

**Keywords:** Actor Network Theory, Genre Theory, Evolution of Digital Genres

## 1. Introduction

In this paper we argue that a combination of concepts from Actor-Network Theory (ANT) and Genre Theory can constitute a useful theoretical framework for understanding how digital genres evolve. Genre theory and genre analysis are rooted in the traditions of folklore studies, literature studies, linguistics and rhetoric. It has gradually been incorporated to other fields, arriving to the IS field in the early nineties as an analytical tool to understand organizational communication. Here genre could be defined as “a distinctive type of communicative action, characterized by a socially recognized communicative purpose and common aspects of form” (Yates and Orlikowski, 1992; Orlikowski and Yates, 1994, p. 543). Genres are relatively stable in terms of form and purpose, but when being used and reproduced they are also changed over time.

Genre theory states that genres evolve over time through reciprocal interaction between institutionalized practices and individual action; that they develop from actors’ responses to recurrent situations, and are shaped around characteristics as content, form, functionality and purpose. When we engage in organizational or disciplinary genres, we constitute social structures and simultaneously reproduce these structures in professional, institutional and organizational contexts. Genres emerge out of practice and at the same time shape that practice. This has been an important insight because it gives an understanding of the process of how genres are structured in relation to different institutionally defined practices.

Genre theory in itself does not give any theoretical tool for understanding what powers and forces are involved in this shaping process. While genre theory can describe the characteristics of a genre, it cannot handle the process of forming a genre. Several authors have for this reason incorporated structuration theory in the genre analysis. However, structuration theory can only catch these constitutional processes of genre in a very broad manner. How a genre is evolving and stabilizing and how different actors are linked to this

process is not possible to explain only by means of structuration theory. Furthermore the role of different actors in this process is not possible to handle. When studying such a process it becomes obvious that different actors' activities and their ability to shape the process (by using various means) are of great importance for how a genre is structured. Here ANT could provide the analytical tools to capture the process of how a genre takes form in negotiations between different stakeholders. The purpose of this paper is to develop a theoretical framework that combines important insights from genre theory and actor network theory, and apply this framework in the analysis of an e-newspaper project that embodies the formation of a digital genre.

We have chosen the evolution of news genres as an illustration of such a framework, because news constitutes a specific genre under rapid development, in a newspaper industry under change. The technical innovation enabling the new genre is e-paper technology (see e.g. Ihlström *et al.*, 2005; Åkesson & Ihlström, 2006; Ihlström Eriksson *et al.*, 2007; Ihlström Eriksson & Svensson, 2007). E-paper technology can on a basic level be described as a reflecting display technology with properties very close to newspaper print on paper in terms of contrast and readability. In recent years this technology has raised an interest among different actors related to the newspaper industry, that by engaging in this technology, see a possible strategic advantage for themselves in the future newspaper industry. In this process a plethora of actors is found: media houses, newspapers, standards, journalists, advertisers, technology vendors, infrastructure providers, the audience and the genre in itself. Studying a genre in the making is studying the process where different actors, sharing visions and views of future directions, align their interest into a “common purpose”, and the competition to become the actor that defines such a common purpose, and thereby defines the genre. The theoretical contribution of this paper is to show how ANT can complement genre theory in

order to more fully understand the process of how genres, and more specifically digital genres, are constituted.

## 2. Genre Theory

The term genre comes from Latin (*genus*) and dates back to classical philosophy, where it was used in the sphere of classification. According to the online version of Encyclopedia Britannica (2007), genre is defined as “a distinctive type or category of literary composition, such as the epic, tragedy, comedy, novel and short story”. Genre as a scientific concept is rooted in the traditions of folklore studies, literature studies, linguistics and rhetoric. In literary studies the concept can be traced back to Aristotle (Bazerman, 1988). Genre includes both speech events and written text types, i.e. it is a classification of types of generic forms of spoken or written discourse.

There are a number of competing definitions. Miller (1984) defines genres as “typified rhetorical actions based in recurrent situations.” Swales (1990) is emphasizing the role of communicative purpose, i.e. a collection of communicative events are becoming a genre due to a shared set of communicative purposes. These purposes are recognized by the discourse community owning the genre. Recipes for example are straightforward instructional texts, designed to ensure a gastronomic outcome. Examination and cross-examination of witnesses carried out by lawyers in court are structured to elicit the facts of the case (Swales, 1990).

Gradually, genre theory has been elaborated within other fields as discourse analysis, language use in professional settings, and disciplinary communication (e.g. Swales, 1990; Berkenkotter and Huckin, 1995; Paltridge, 1997, Bhatia, 1993). The notion of genre in organizational communication and the Information Systems (IS) field was introduced by Yates and Orlikowski (Yates, 1989; Yates and Orlikowski, 1992), by applying it as an analytical tool for understanding the communicative practices going on in organizations. A

genre of organizational communication is here seen as a typified communicative action invoked in response to a recurrent situation (Yates and Orlikowski 1992). It accomplishes social action in particular and recurrent situations with similarities in purpose, audience and form. Examples of such genres are the memo, e-mail and groupware. The memo genre history can be traced from paper-based memos to contemporary mail and groupware systems.

Genres are produced, reproduced and changed over time. When changes to established genres become widely shared among members of a community, genre variants or even new genres may emerge. Such changes may be triggered by the introduction of a new communication medium (Yates and Orlikowski, 1992; Yates et al., 1997).

The combination of computing devices and the Internet has broadened the genre research agenda beyond organizational communication to include digital genres (Shepherd and Watters, 1998; Crowston and Williams, 2000; Ihlström and Lundberg, 2004, Ihlström and Henfridsson, 2005; Breure, 2001). Examples of this are studies of the evolution of online newspapers (Shepherd and Watters, 1998, 1999; Greer and Mensing, 2004) as well as other Internet genres, (Bauman, 1999).

Shepherd and Watters (1998) coined the term “cybergenre” and have proposed a taxonomy of cybergenre evolution. They have divided the cybergenre into two classes of subgenres; extant and novel. Extant genres are based on existing genres in other media that have been transferred into the digital media. Novel genres are fully dependent on the digital media.

Drivers of new genres to emerge could be new technology and media, new communities, new recurrent situations and problems, and institutional changes. Often several drivers interrelate in the development of a new genre. Replicated subgenres can be described as following the content and form of the counterpart genre in other media with little new functionality added by the new medium. In variant subgenres the content and form are

somewhat different, with substantial new functionality added. An emergent subgenre has evolved from the variant subgenre to the extent that it is only marginally recognizable as the original genre. Significant difference in content and form, and most importantly, a level of functionality that makes it fully dependent on the new media has been added. Spontaneous subgenres are novel cybergenres that do not have any counterpart in other media.

Specific genre characteristics are recognized a priori in the process of communication, thereby reducing the cognitive need for information and interpretation. Several ways of structuring these characteristics have been suggested in the literature. A genre can, for example, be characterized by having similarities in substance and form (Yates and Orlikowski, 1992), where substance refers to themes and topics and form refers to observable features such as a) structural features, b) communication medium and c) language or symbol system. Others have characterized genre by its purpose and form (e.g. Swales, 1990; Orlikowski and Yates, 1994). Although often implicit in the use of genre (e.g. Yates and Orlikowski, 1992) any genre reflects a communicative purpose, a rationale or reason for enacting the communication. Shepherd and Watters (1998) argue that while non-digital genres can be characterized by the tuple <content, form>, digital genres are characterized by the triple <content, form, functionality> as the medium has functional capabilities. Functionality refers to capabilities available through the new media (Shepherd and Watters, 1998). The different combinations of genre characteristics use in literature are summarized in Table 1.



Genre characteristics	Authors
Content and form	Berkenkotter and Huckin (1995)
Content, form and functionality	Shepherd and Watters (1998, 1999); Ryan <i>et al.</i> 2002; Crowston and Kwasnik (2004)
Form and purpose	Swales (1990); Orlikowski and Yates (1994); Crowston and Williams (1997); Yates <i>et al.</i> (1997)
Purpose, form and functionality	Toms and Campbell (1999); Schmid-Isler (2000);

Table 1. Combination of genre characteristics

In this paper we have chosen to use the genre characteristics *content, form, functionality* and *purpose*:

- Content refers to the substance (cf. Yates and Orlikowski, 1992), e.g. articles, news streams, video items etc.
- Form refers to observable features (cf. Yates and Orlikowski, 1992), i.e. the presentation format of the content, e.g. as a textbox, a button or an icon.
- Functionality refers to capabilities available through the new media (Shepherd and Watters, 1998), e.g. searching, interactivity etc.
- Purpose refers to a shared communicative purpose (or purposes) that the genre is intended to fulfil (Swales, 1990; Askerhave & Ellerup Nielsen, 2006).

It can be concluded that genre is an important aspect for understanding how forms, rules and functions structure communication and interaction in digital media. However, it is important not to overly emphasize the stability of genres. Genres emerge, change and shift. Changes occur and, when being communicated and shared among people, give rise to new sub-genres or completely new genres. It is also important to understand how technical forces (Erickson, 1999) structure such changes. This has become apparent as new Internet based digital genres have evolved and gained importance, both for understanding how

communication is socially organized and as a prerequisite for designers that actively want to develop new genres by designing technology use.

### **3. Actor Network Theory**

Actor Network Theory (ANT) is rooted in the interdisciplinary field of science and technology studies (STS). ANT was developed by Michael Callon, Bruno Latour, Madeleine Akrich, and John Law in the eighties, in order to understand how entrepreneurs build networks combining technical, social and economic elements, and that these elements are both constituted and formed in these networks. An actor network is built of both technical and non-technical elements to form a heterogeneous network, i.e. ANT is granting both humans and non-humans the same explanatory status. It is important to point out that this “is an analytical stance, and not an ethical position” (Law, 1992, p. 383).

Actor Network Theory may rather be viewed as a “perspective” comprised by a set of loosely coupled ideas and concepts, rather than a theory. Much literature uses only a small portion of the ANT terminology, ideas and concepts, i.e. being inspired by some aspect of ANT but not adhering to any specific ANT framework in its analysis. Typically ANT writers apply the terminology in an empirical context.

ANT was introduced to the IS field by Hanseth and Monteiro (Hanseth & Monteiro, 1996; 1998; Hanseth et al., 1996), who argued that Actor Network Theory (ANT) would offer IS research with a language for describing how technical and non-technical mechanisms can form a network of actors that will negotiate interests and trying to gain influence. Even if Hanseth and Monteiro mainly use ANT for analyzing infrastructure standards, genre can in some sense be regarded as a standard for communication and interpretation. Technical standards are a part of and forming, as well as being formed by, the evolving genre.

Actor Network Theory (ANT) recognizes that establishing and changing a social order

relies on a tight interplay between social and technical means. The basic concept in ANT is the one of the *actor*. An actor may pursue *interests*, which may be *translated* into technical or social arrangements, e.g. an information system or organizational routines. Actors are typically humans, groups of humans, texts, visual representations and technical artifacts.

The social process of *aligning* an initially diverse collection of interests to "one", i.e. reaching a certain degree of alignment of interests, leads to acceptance, "truth" or stability. The solution reached is constituted by an aligned actor-network. To achieve this, one must be able to translate (i.e. represent) the interests of others (not-aligned) to one's own. The translation process is forming the actor-network by generating ordering effects such as devices, agents, institutions or organizations (Law, 1992).

An *inscription* is the result of translating one's interests into material form, i.e. an erp-system may be an inscription of management's interest to control, a vendors interest to form a de facto standard or attempts by branch organizations to create and control standards. There are four aspects of inscriptions that are relevant:

- What is inscribed
- Who inscribes them
- How they are inscribed
- How powerful are the inscriptions, i.e. how much effort does it take to oppose an inscription (e.g. in the form of workarounds of an information system).

A translation presupposes a medium or material into which it is inscribed, i.e. an *intermediary*. An intermediary is anything passing between actors, which define the relationship between them (Callon, 1986). Examples are scientific articles, computer software, technical artifacts, disciplined human bodies, contracts and money.

There are four main types of intermediaries:

- Texts (literary inscriptions), including reports, books, articles, patents and notes. These are materials inscribed and circulated on paper, floppy disks, magnetic tapes etc.
- Technical artifacts, including scientific instruments, machines, robots, and consumer goods. These are relatively stable groups of non-human entities which together perform certain tasks.
- Human beings, including the skills, the knowledge and the know-how that they incorporate.
- Money in all its different forms.

The translation process constitutes different phases, which in reality may overlap. During these phases “the identity of actors, the possibility of interaction and the margins of manoeuvre are negotiated and delimited.” (Callon, 1986). The translation process consists of four stages (ibid.). *Problematization* is the first stage. Here the main actor in focus identifies interests among other actors that seem to be consistent with its own interests. The actor tries to establish itself as an obligatory passage point (Callon, 1986) making itself absolutely necessary for the other actors. The “problimatization describes a system of alliances, or associations, between entities, thereby defining the identity and what they want.” (ibid.). *Interessement* is the second stage in translation where the main actor tries to persuade the allies to accept its interests, i.e. to lock them into place. This is the group of actions by which an entity tries to stabilize the identity of the other actors it has defined through the problematization. Through the third stage, *enrollement* the actor tries to draw the other actors into its scheme of actions and accepting them as the main course for action and identity. By creating technical (or other) artifacts and inscribe interests in them, the actor tries to ensure that its interests are protected (Latour, 1992). This is to define and coordinate a set of

interrelated roles in the network that is attributed to the actors that accept them. The fourth stage is *mobilization*. Here the crucial question is to ensure that the representatives of other actors are accepted as representatives of those actors, and that the focal actor is accepted as the main voice of the network, that may speak on behalf of all actors in the network.

*Irreversibility* is achieved when it becomes impossible to return to a point where alternative routes exist (Monteiro & Hanseth, 1996; Walsham, 1997).

#### **4. Combining Genre Theory and Actor Network Theory**

In the following section we will investigate how genre theory and ANT may complement each other. We will relate genre concepts to ANT concepts, and discuss how ANT may enrich genre theory. We will also discuss the problem of agency versus structure in relation to genre as a dynamic rhetorical form.

##### **4.1 Form, Content and Functionality**

The core elements of genre - form, content, and functionality - are what is shaped or reshaped in the emergence of a new genre or the restructuring of an existing one. This formation could be described as a translation process in the terminology of ANT. During the translation process, the main characteristics of an evolving genre are formed. This means that negotiations are held among relevant stakeholders on the form, content and functionality of the new genre. Each actor tries to make the other actors translate their interests to ones own in order to create an alignment of efforts. Different actors may pursue their interests in one or several of the core areas. Form, content and functionality of digital genres are also formed and embedded in the enabling technology.

## 4.2 Purpose

A collection of communicative events is becoming a genre due to a shared set of communicative purposes that are recognized by the discourse community “owning” the genre. This could be related to the ANT concept alignment. When (and if) the network becomes aligned, it has reached a common purpose. The social process of *aligning* involves the transformation of initially diverse collections of interests to "one", i.e. reaching a certain degree of alignment of interests lead to a commonly understood purpose.

## 4.3 Discourse Community

In genre theory, discourse community is the concept that comes closest to explain how people relate to the dynamic process of genre. A discourse community is a group of people linked together by occupation, working premises, special interests etc. It has a broadly agreed set of common public goals; mechanisms of intercommunication among its members; utilizes and possesses one or more genres in the communicative furtherance of its aims; has acquired some specific lexis, i.e. a specific nomenclature for certain genres; and has a threshold level of members with a suitable degree of relevant content and discursal expertise.

The aligned actor network could in a sense resemble the genre concept of discourse community, even if they are two quite different phenomena. A discourse community is not necessarily an aligned network, but a community with a shared repertoire of communicative instruments. This shared repertoire could be seen as a standard. Standards are in ANT informed IS research often seen as characterized by irreversibility. Once they have been established it is difficult or impossible to undo previous translations and go back to an earlier stage (Hanseth & Monteiro 1998; Tilson & Lyytinen 2005).

The concept of discourse community cannot gather for the status of different actors or their power relations or conflicts. The idea of a discourse community is more based on what unites the different actors than their different agendas and goals and how these will affect discourses. It is not only assumed that they share a set of goals, but also that they agree upon what should be the goals, how they should be communicated and what practices should evolve from this. In practice conflicts and different stakeholder interests are as important driving factors as agreed goals and shared beliefs for the emergence of genres.

Here Actor Network Theory is a more promising framework to add value to the weak sides of genre theory. ANT can elaborate on the actors involved in the making of a genre and stages of its development.

#### **4.4 Genre as Dynamic Rhetorical Form**

Genre theory states that genres evolve over time through reciprocal interaction between institutionalized practices and individual action (Yates & Orlikowski, 1992). They are dynamic rhetorical forms, developed from actors' responses to recurrent situations. They stabilize experience and give it meaning and coherence. Both Berkenkotter and Huckin (1995) and Yates and Orlikowski, (1992) use Giddens (1984) [REDACTED] of duality of structure to relate genre to structuration processes. When we engage in organizational or disciplinary genres, we constitute social structures and simultaneously reproduce these structures in professional, institutional and organizational contexts. Genres emerge out of practice and at the same time shape that practice. Structure is both medium and outcome for the reproduction of practices.

However, structuration theory can only catch these constitutional processes of genre in a very broad manner. How a genre is evolving and stabilizing and how different actors are

linked to this process is not possible to explain by means of structuration theory. Furthermore the role of different actors is not possible to handle.

Recently a discussion has evolved in IS literature on the relationship between structuration theory and ANT (Rose et al., 2005). This discussion is to some extent relevant in this context because of the concept of genre and its history back to structuration theory, as it has been developed by e.g. Yates and Orlikowski (1992). The discussion focus on the role of agency when structuration theory and ANT is related. In structuration theory the agent is always a human, while the role of technology is restricted to being a part of the structural foundations for human agency. ANT has instead introduced “actant” as a notion that includes both human and non-human agency, which can be seen as a view of agency that is incompatible with that of structuration theory where agency is understood as human agency alone (Rose et al., 2005). We do not claim to make a contribution to this debate. Genre theory in IS has mainly been focused on understanding the relationship between genre as a classification scheme for communication and interaction, and different social as well as technological structures that shape such a genre. These theories have been broadened with the introduction of digital genres where both interaction and technology has taken new forms, which has lead to the identification of new cybergenres (Shepherd and Watters, 1998). In IS genre theory, the focus has been on what Giddens (1984) aimed at with the idea of the duality of structure, namely to analyse social structure as both the medium and the outcome of social action, which makes it an interesting perspective for genre analysis. Genres can be understood as both a medium and a structure for communication and interaction. The reason for extending genre analysis with ANT is to get a more comprehensive set of tools to understand the *process* of emerging genres and what forces are involved to set the stage for new genres to develop. As has been argued for above, ANT provides a number of analytic tools that can extend IS genre analysis.



#### 4.5 Towards a Genre/ANT Framework

There will not be a one-to-one mapping of ANT concepts to genre concepts, rather ANT can explain how the key elements of genre are formed, developed, and stabilized in a negotiation and struggle between involved actors inscribing their interests in such a way that they could finally result in specific genre characteristics. *Translation* is the key concept from ANT to be used for this. The stages of translation could be used on all genre elements: form, content and functionality, but these will also be interrelated.

### 5. The Digital News Project

In order to show how the Genre/ANT framework can be applied to changes taking place in the newspaper industry, i.e. e-paper technology and the evolving new news genre, we will in this section tell the story about the DigiNews project. The DigiNews project was a European project with over 20 european partners, a project focusing on the development of electronic newspapers from production to consumption. Within this project a multiple method approach (Mingers & Gill, 1997; Mingers, 2001) was taken in order get to a richer understanding of the research topic. Several data collection methods were used, such as interviews, workshops, questionnaires and tests with different stakeholders such as publishers, advertisers, readers and device producers. Table 1 gives an overview of the most important data generating stakeholders and activities for this study.

<b>Actors</b>	<b>Data source</b>
Publishers	30 interviews, 16 workshops, 8 focus group sessions
Readers	5 focus group sessions, 3 workshops, 3 user tests and interviews (19 respondents, 36 respondents and 12 respondents respectively)
Advertisers	3 workshops, 2 interviews
Device producer	1 interview, project documentation
Technical solution provider	Project meetings, project documentation

Table 1. Actors vs. data sources

Excerpts in the transcribed material were marked with assigned colors, facilitating data categorization according to corresponding themes. In the first round the material was categorized according to distribution, newspaper content, device, content management, business models and demonstrator issues to find general patterns (Miles & Huberman, 1994). When this analytical work was finished, genre properties as well as actors and activities were identified in the data, based on the two theoretical frameworks described in section 2 and 3. In this coding all the available interview transcriptions, project documentation, notes, test results etc., was analyzed from the point of how genre specific properties emerged over time and how these were related to interests of each actor and oppositions between actors. In the next section the main actors and their activities will be presented as a story of the emergence of the e-newspaper in which a sequence of actors and activities - both human and non-humans - will be entering and leaving the stage.

### 5.1 The Initiators

The initiative to the DigiNews project was taken by the device producer Philips and the Swedish Newspaper Publishers' Association. The basic interest from Philips side was to find suitable content for the e-paper device and the newspaper industry was looking for new digital publishing channels. Thus, they had a common interest in investigating e-paper as a

new technology for publishing newspaper content. An initial group of partners were invited to join in an application for an ITEA project (which is a part of a pan-European network for market-oriented, industrial R&D). Newspaper publisher organizations were invited as well as technology solution providers and researchers. The technology solution providers were invited to the project depending on the needs identified in the project, and the researcher depending on competence areas.

In the process of forming a project application, the main areas for an end to end solution for producing, distributing, and consuming digital newspapers were identified. The project outline included three main areas; technology, user interface and business models. The participants representing the publisher's interest stressed the importance of addressing the challenges of finding suitable business models for readers as well as advertisers.

The project leadership and coordination role was assigned to the device producer. An important part in the process of forming the project application was organizing work packages. Each of the work packages were divided into two categories of solutions; basic services and extended services with more advanced solutions such as context awareness. The interests from the different participants were negotiated in the planning process by formulating goals and tasks for each work packages. In this process, small technology solution providers built in ideas such as text to speech, payment and security solutions *etc.*, that were consistent with their line of business. The more dominant participants such as the device producer and the publishing organizations integrated their interests in all parts of the project. The Swedish Newspaper Publishers' Association represented all participating Swedish newspapers at project meetings.

The project application was successfully approved by ITEA and all participants then applied for funding in their country. There were some partners that failed to get funding and thereby left the project consortium. The advent of a technology solution provider leaving the

project resulted in that functions that were important parts of the solution were excluded or down prioritized. One such example is the text to speech solution, when the company evoking that solution left the consortium the text to speech solution was excluded in the project. Another example is a planned payment system that initially was part of the project. The company that had negotiated the solution to be included left, and then the remaining participants agreed that payment systems need not be part of the project since there are several satisfying solutions on the market that could be used.

## 5.2 Distribution

One of the most critical issues in the e-newspaper solution was distribution. There were no representatives from infrastructure providers participating in the project. However, infrastructures for distribution were mapped out by an academic partner. These outlines included technical state of the art descriptions. One result of these outlines was that different solutions might be interesting for different geographical areas, different types of content, different types of target groups, different types of devices *etc.* In other words, distribution would be overlapping several infrastructures such as IP, DAB, 3G, WiFi *etc.*, depending on where, what, when, and to whom. DAB is for example 100% coverage infrastructure in Belgium while in for example Sweden broadband networks are widely accessible. In addition to distribution capacity, the distribution issues also have impact on publishing systems and formats, thus also on the newspaper content design. These issues were therefore very important to the publishers and received special attention from researchers. The distribution issues were widely discussed and the relation to business models was stressed in these discussions. The publishers experience from for example charging for content on the internet and the revenue shares in telecom made the publishers stress the importance of a solution where they would be in control of distribution. However, the device producer was worried

that an integrated solution for distribution would require new standards which they from experience in other areas regarded as a major challenge.

### **5.3 Newspaper Content**

Naturally, the publishers were the most engaged in the design of the e-newspaper content. The interest from the newspaper publishing companies in the project has its background in an ongoing restructuring from having their back-bone in print media to exploring digital media since reader and advertiser revenues from print media are declining. Their interest in e-paper technology and the properties close to print on paper raises hopes of finding a digital replacement for paper in the long run. The purpose of the e-newspaper from their perspective would be to offer a reading experience as close to the printed newspaper as possible, making use of the possibilities offered by digital media. Newspaper designers from several newspapers in Sweden and Belgium were engaged in designing prototypes with this vision in mind. These designers views were that the e-newspaper would benefit from taking the best from two worlds i.e. the printed newspaper and the online newspaper, thus making use of the benefits of the e-paper having properties close to print on paper and the benefits from e-paper being a digital technology. In order to ensure reader's views on the values from print and online newspaper and to bring the best from both worlds in the design of the e-newspaper, numerous workshops were held with readers and newspaper staff. The outcome of these activities was input to a design focus group of newspaper designers who designed prototypes with different design solutions.

There were several challenges to address in the design. The most pressing was the limited screen size. Due to the limited screen size of an A5 there was a challenge in shrinking the print newspaper layout. One of the newspaper organizations performed a test to transfer all content from one day's edition of the printed newspaper to a template in the publishing

system constructed according to the specifications of the e-reader devices screen size and layout possibilities. Some content was excluded due to the format not fitting, e.g. the TV schedule and obituaries. The test showed that the content and form of an e-newspaper has to be distinctive for this type of media. Taking almost all content into a page layout in an A5 format resulted in about 400 pages. As a result, navigational issues were paid special attention when giving form to the e-newspaper. The different design suggestions were tested with readers by researchers at different stages of the project.

Another important challenge discussed mainly from the publisher point of view was designing new advertising formats to attract advertisers to the e-newspaper still appreciated by readers.

The device producer had another idea of the purpose of an e-newspaper. The publishers would according to their model publish single articles in a huge content management system from which customers could buy single articles they found interesting. One technology solution provider provided an interface where users could access the e-newspaper content. This solution was more or less ignored by the publishers since it was not in line with their ideas of the e-newspaper concept.

#### **5.4 The Device**

The reading device with e-paper technology that was intended to be used in demonstrating the solution was developed in parallel with the project by the device producer. The capabilities of the device obviously had influence on the design of the e-newspaper. The requirements on the device were to a large extent based on the publishers' interest but there were also technology solution providers that argued for implementing their solutions in the device. The main requirement from publishers was color display. The Swedish publishers tried to convince the device producer that color is extremely important for a successful e-

newspaper. This view was tested and confirmed with readers and advertisers in Sweden by an academic partner (HH). Color was especially stressed as important by advertisers. However, color was not regarded as important by the publishers from other countries.

Another example of requirements from publishers on the device was the need for handling columns in forming the content, with the argument that readers expect this form for news content. Yet another example which has been paid a lot of attention in the project was content navigation structure. Supporting hyperlinked navigation as well as sequential, supporting the readers reading behavior such as relaxed as well as task oriented are examples of these requirements.

During the project, the consortium was regularly informed about the development of the e-paper technology and later also about the e-reader device. Some disappointment was expressed as this progress did not meet the hopes expressed in the goals of the project, and definitely did not support the ideas for extended services. The display size was about A5, some publisher tried to argue that A4 was the limit for how much a newspaper can shrink. This also put constraints on navigation support balancing content and menus *etc.* This small size was according to the device producer related to technical limitations. There was no support for columns even though publishers wished for that, this was an interest that the device producer did not find to be relevant enough to prioritize in the development. A third example is that there was no support for color which had not been solved in the laboratories which led to some of the publisher losing interest in taking part in the testing and demonstration phase of the project.

During the end of the project the development and manufacturing of the device left Philips and continued in iRex, a start-up company that originated from Philips.

## 5.5 Content Management

Another critical part of the e-newspaper solution was the content management system including digital rights management and security issues. The technology solution providers took a background position in the negotiation about these solutions since their interests were related to more detailed parts. This issue played out to be tensed between the device producer and the publishing organizations. The device producer took the lead presenting a solution with a central database fully controlled by the device producer itself, all from including security, payment and DRM solutions, to aggregating and distributing content. In this solution, the device producer would be the hub of the entire system even controlling advertisers and reader relations. In their sketch, the publisher role would be to provide content such as articles that could be sold to readers via this hub. This means that all stakeholders, weather content providers, advertisers or readers, would obligatory have to pass through this hub. The publishing organizations reacted strongly to this suggestion and there were intense negotiations concerning this issue. For some time, this discussion paralyzed the project. The publishers could not accept such a solution as it would violate their core business model of selling news to readers and exposure to advertisers. Further they stated that the fundament for the newspaper, their brand and trustworthiness would be invisible in such a solution. These interests were not fully aligned in the project but a compromise was agreed upon in order to be able to finalize the project and demonstrate and test the e-newspaper solution. In the testing, the device producer's database was used to distribute the content and the publisher took the content provider and aggregator roles.

## **5.6 Business Models**

As described earlier the publishers and the device producer had a common interest in initiating the project. The publishers tried to bring their traditional business model into the project and stressed the importance of forming the e-newspaper to leverage reader as well as



advertiser values. The researchers took a role in investigating the business aspect mainly from the publishers view. This resulted in several studies on user's and advertiser's value perceptions and preferences. The device producer had an agenda of launching a new device for a mass market. The interest from the device providers takes its start in the properties of the display technology. As e-paper technology is heavily directed towards text and reading there was a need to establish that there is relevant content for an e-paper device before launching a product. A device without content is not interesting to the market. Therefore, they regarded newspaper content as very interesting since it is widely ingrained in people's habits. In other words, they were interested in the wide audience of newspaper readers as a market for their reading device.

During the project it became clear that the competition between the different roles would change with an e-newspaper solution. Integrated infrastructures would have impact on the value networks that are very isolated within each infrastructure today. The competition within the newspaper publishing industry would change, the limitations of print distribution would no longer be as essential for competition. These insights resulted in more reluctant attitude to discuss business models openly in the project.

## **5.7 The Demonstrator**

At the end of the project a demonstrator based on the device, an IP distribution and newspaper content from several newspapers was produced. Due to the limitations of the e-reading device all intended functionality could not be demonstrated. Therefore some prototypes were developed to test the e-newspaper concept on tablet PCs with touch screen, color and video capabilities in order to demonstrate the concept beyond the limitations of the device. The demonstrator of the production, distribution, and consumption of the e-newspaper was set up at one of the Swedish newspapers, Sundsvalls Tidning. A publishing

system was designed by consultants to be able to feed the device with newspaper content. Ten families were selected as test consumers and the e-newspaper was distributed through the Internet. The families had the e-newspaper delivered twice a day during a two week period.

In the evaluations, readers were very positive to the e-paper display technology but very frustrated over the e-reading device. The limited navigational support, bugs and slow screen update rates are examples things that were considered as frustrating. However, seeing beyond the limitations of the device readers were very positive to this new digital news service. The resulting suggestions from the reader evaluation were to a large extent ignored in the project, mainly because the device producer not being a part of the network at that stage since the production was moved to the iRex company.

## **6. Applying the Genre/ANT Framework on the Evolution of Digital News**

We will now use the Genre/ANT framework to analyze the evolution of digital news genres, as they were manifested in the DigiNews project. The analysis will depart from the theoretical standpoints of ANT to understand the process of forming the new e-newspaper genre. According to ANT actors pursue interests which they try to translate into technical and social arrangements and thereby trying to make their interests legitimate and also align different interests into an actor-network. The very formation of the DigiNews project could in ANT terms be seen a phase of problematization, where the main actor identify common interests among the other actors that are consistent with its own. In the following we will identify the different actors that can be found in the DigiNews case and their different interests. The role as main actor is varying in the course of the project. We will then analyze the translation process in each of the genre elements form, functionality and content.

## 6.1 Actors and their interests

In table 2, we identify the actors and their main interests in the DigiNews project.

Actor	Interest
<i>Primary actors</i>	
Device producer	To have content to the device in order to gain market acceptance
Publisher organization	To guard the e-paper potential for the news industry
Publishers	Get a new profitable digital channel for news and mobile services
<i>Other actors</i>	
Small technology solution providers	To make sure that their technical solution was incorporated in the solution
Researchers	To study the process and contribute with special knowledge areas
<i>Represented by other actor</i>	
Readers	To get high quality services in a device that is easy to interact with
Advertisers	To find new advertising models based on targeting
Infrastructure providers	To provide the infrastructure and be a part of the value chain

Table 2. Actors v. interests

The initial primary actor was the *device producer*. Second to the device producer the *publishers* tried to take on the leading role together with the Swedish Newspaper Publishers' Association (*Publisher organization*). The publisher organization represented the Swedish publishers in the project meetings. Thus, they represented the publishers' interests, but had also an interest in developing the news publishing industry.

Several *small technology solution providers* tried to get attention and become a part of the actor network. Often they took on a more passive role at the project meetings but took a more active role in the works packages where their technology was represented.

The *researchers* from Sweden were enrolled by the publisher organization in order to research issues of design- and business models as well as technical issues concerning

publishing systems. The Belgian researchers were enrolled by Philips.

The *readers* were only represented in the project by the studies performed by the Swedish researchers. The readers have an interest in the device and services as consumers, and are thus important for all other actors to relate to.

*Advertisers* had an interest to target readers. They were not actors in the project, but the Swedish researchers represented their interests.

On the infrastructural level the *infrastructure providers* were important but were not invited to take an active role in the project. The Swedish researchers provided an overview of possible solutions depending on different infrastructures.

As ANT theory reminds us, making other actors take on ones interests is an important asset in an actor-network.

## 6.2 The Battle over Functionality

The device producer had for natural reasons strong interests in defining the functionality of the e-paper device. But their interest was not limited to the device itself. They also had an interest to make their own technical platform a de facto standard for publishing content, thus establish themselves as an *obligatory passage point*. This included a strategy to develop a proprietary system for content management. The device producer did not want to put a device on the market without existing content and content providers. Philips *inscribed* this interest into a suggestion for an all-encompassing database.

However, this *interest* could not be *aligned* with the publisher *interest*. The publishers did not accept a solution where they would lose control over distribution, reader and advertiser relations. Further they stated that the fundament for the newspaper, their brand and trustworthiness would be invisible in such a solution. The publishers' main interest was to make their business model default for selling news and attract advertising. Therefore, they

had an interest in *aligning* the device producer in the *interest* to sustain their traditional business model. However, as stated above this was not an option for the device producer. This created a tension in the project.

The conflicting interests of the device producer and the publishers lead to a struggle of becoming *obligatory passage points* in different ways. The device producer's *inscription* of *interests* in the device and publishing platform was in conflict with the *intermediary* prototypes and publishing system *inscribing* the publisher *interests*. The publishers *enrolled* the readers and advertisers through the researchers and used their interests as arguments to align the other actors. The readers also wanted to have features from both the printed and online newspaper genre, e.g. navigation (both sequential and hyper links) and interaction. The advertisers were interested in increased targeting possibilities. These interests were used as arguments from the publishers and researchers to influence the functionality of the device, although not very successful.

The small technology solution actively tried to inscribe their *interests* by struggling to implement their own technical ideas in the solution, thereby making themselves necessary for the other actors. Their main interest was to make other actors acclaim the need for their sub-solutions. One example was the text-speech functionality. As soon as that provider withdraw the other actors lost interest in that function.

When the development of the device was moved to iRex, Philips no longer had an *interest* in being an active part of that network, even though they still were the official project leaders of the DigiNews project. The *interest* from other actors in the network towards Philips also diminished. That did not mean that the importance of the device producer as an actor in the network decreased.

The researchers argued for the device to support several different standards for distribution, infrastructure and security technologies.

### 6.3 The Struggle for Form

Swedish publishers and researchers argued that the device producer must develop more support for expressing aesthetic features, such as color and traditional newspaper layout with columns with integrated photos *etc.*, in line with the printed and online newspaper genres. *Negotiations* about color revealed *conflicting* views of its importance, which can be analyzed as a struggle to define genre specific form properties.

The device producer argued for a totally different solution based on their business model idea that builds on single articles and advertisements handled by their own system. In this case the traditional newspaper layout was seen as of no *interest*.

Philips *enrolled* one of the small technology solution providers and let this firm develop an interface corresponding to their *interests*. This interface was in conflict with the *intermediary* prototypes developed by the design focus group of Swedish publishers.

In collaboration with readers specific form items for the e-newspaper genre was developed by the design group. Examples of such form items were miniature pages, content overviews, thumb navigation *etc.* However, this interaction was not supported by the e-reader device.

### 6.4 The Quest for Content

Both the publishers and the device producer had an *interest* in content. The device producer wanted to launch a new device for the mass market. The *interest* from the device producer takes its start in the properties of the display technology.

They needed to establish that there is relevant content for an e-paper device before launching a product. A device without content is not interesting to the market. Therefore, they regarded newspaper content as very interesting since it is widely ingrained in people's habits. In other words, they were interested in the wide audience of newspaper readers as a

market for their reading device.

The device producer's actions to *inscribe* their interests in the solution had the consequence of challenging the content providers role in the network. Since their business model build on the publishers selling single articles and that they would "take care" of the advertiser business themselves, it is in total conflict with the publishers' core business.

The publishers' most important asset is their content and their trustworthy brand which they are not willing to trade in the way the device producer was proposing.

The readers showed an interest in new content specific for the e-newspaper genre. Examples of such content were position and personalized based services.

## 6.5 The Pursuit of Purpose

As demonstrated in the case description there was several conflicting views of the purpose of the e-newspaper. The device producer view of the e-newspaper purpose was to secure that there would be interesting content for consumers to take an interest in the device. However, they did not regard the device to be exclusive for the e-newspaper. They regarded the newspaper articles to be one type of content along with other such as books, magazines *etc.*, to be available for consumers through their system.

The Swedish newspaper publishers' interest for the e-newspaper was that it could be accepted by print newspaper readers. In their interest, the initial purpose was to be able to distribute a substitute for the printed newspapers in areas where subscribers are very distant, thus cutting distribution costs in sparsely populated areas. In the long run they regard the e-newspaper as a possible replacement of the printed newspaper. The publisher organization and the other European publishers emphasized the purpose to attract young and new audiences.

Readers regarded the e-newspaper purpose to be a complementing mobile service and

maybe a possible replacement for the printed newspaper in the long run. For the advertisers the purpose of the e-newspaper was increasing their targeting of readers.

## 6.6 Towards Alignment

The characteristics of the e-newspaper genre in terms of form, functionality, content and purpose are of course deeply interrelated. Publishers, naturally have a strong interest in the functionality of the new technology for distribution and consumption of newspapers (and of course in form and content). But we could also see that main actors, such as the device producer, have strong interests in traditional publisher issues, e.g. content and business models.

When this study was ended, the process was still running. New actors (e.g. Amazon) and new devices (Sony Reader, Bookeen Cybook, STAReBOOK) are still entering the network, and the translation processes keeps going. This means that the network is not aligned, the market structure is still under formation and the genre is still in the making.

In this paper we have described the negotiations between different actors in the formation of the e-newspaper genre. We have established that there has not yet been an alignment of the actor network. We believe that a possible cause for this might be that the primary actors, i.e. the device producer and the publishers were too focused on guarding their own interests and not willing to align around someone else interests. Looking at the present it is interesting to notice that Amazon has taken the primary role on the American market, i.e. not a device producer or a publisher.

Another reason might be that the different actors' interests were not valued according to a business point of view. In that case it would expected to view the consumers (readers) as a primary actor. The device producer chooses not to listen to the readers. By ignoring the



important interests of the ones that are going to buy and use the device and services, lead to the publishers not believing in publishing in the device.

There are currently newspapers publishing in the iRex device, both are financial newspaper not depending on newspaper layout as much as daily newspapers. Le Monde is currently publishing in the Amazon Kindle, also without a proper newspaper layout. None of the Swedish newspapers are currently publishing in any e-paper device. They are still awaiting the support for form, functionality and content, which are in line with their interests in the e-newspaper.

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