Hypernews and Coherence

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This article focuses on a mass medial text genre scarcely found today, but which might assume considerable importance within a few years. It looks at *hypernews,* ie news written, structured and distributed as hypertexts. Over the past few years, the Internet-based hypertext system World Wide Web has become a news channel of great significance, in Norway as in other parts of the world[1]. Despite these recent developments, hypernews are still largely non-existent. One important reason for the absence of hypernews is related to the question of *coherence*, the inner system of logical relations expected in a text-based representation of an issue. Textual coherence is normally associated with a *linear* sequentialisation of text elements. If a news item is to be redefined for a medium inviting a *non-linear* text structure, how can the reader's need for a logical thread through the material be met?

My answer is based on the view that coherence is not primarily a text-immanent entity, but the result of an interplay between textual and cognitive factors. Whether the reader finds the text coherent or not is dependent on his/her understanding of the tasks involved in the reading process; what are the tasks assigned to the reader, and what to the text? In hypertextual contexts, the tasks are changed, and the change is related to the transition from an *interpretative* to an *explorative* reading process (see Aarseth 1997:64).

Before we deal with this theme in greater depth, it might be useful to take a closer look at certain aspects of the technological and linguistic framework of our discussion.

Technology and Linguistic Representation

Traditionally, news have been communicated through channels that mediate information linearly, ie with information elements arranged in a fixed sequence. This applies in particular to radio and TV, but newspapers are also mainly linear on the article level. Even though paratextual elements such as leads, subheadings, bold-faced quotations, etc. often make news items look like collages, articles are mainly *written* in accordance with certain textlinguistic requirements such as continuity and wholeness. Therefore, the reader will normally profit from a linear reading. In other words: even though the genre allows the reader to choose different paths through the material, one path will normally be dominant, namely the one appearing when the text is read line by line (see Bolter 1992).

Thus, the printed press functions within the framework of a script culture developed on the basis of the principle common to all graphical technology: imprinting symbols on a two-dimensional surface. When this technology is applied to produce a lasting repre-

sentation of human verbal language, a linear sequence of words and sentences is a natural consequence. "Frozen speech" is produced (see Ricoeur 1993).

The technology employed to produce and distribute electronic newspapers[2] is different from that applied to printed papers. The contents of web newspapers are produced by means of digital editing and design tools, coded in accordance with the HTML protocol (Hypertext Markup Language), which facilitates distribution over the global computer network, the Internet. Consequently, the technological bounds of news mediation through electronic newspapers are not defined by what is possible to imprint graphically on a paper surface, but by what is possible to code in HTML (and the successors of this protocol, for instance XML). This change will affect the ways in which linguistic elements can be represented. The most important effect is the possibility of *hypertextuality*; establishing a linguistic level *above* the text level.

Hypertext

Hypertext as a text and information concept was developed by pioneers such as Ted Nelson and Douglas Engelbart as early as the 1960s. However, a technological basis for general realisation and use was not provided until 1991 when Tim Berners-Lee and his colleagues at CERN, Switzerland, launched the Internet-based hypertext system known as the World Wide Web.

Over the past few years, hypertext has been the object of comprehensive studies and discussion. Literary scholars, authors, critics, communication theorists, linguists and psychologists alike have, parallel with programmers and system designers, tried to arrive at the deepest understanding possible of hypertext as a concept and tool.

We shall not dwell on this debate here. In our context, it is sufficient to establish that hypertext is texts or text elements interconnected by means of electronic links.

From a linguistic point of view, it may be argued that hypertext represents a potential *extension* of the language system as we know it from the media of *speech* and *writing*. In these two media, language is realised through a process of *selection* and *chaining*: sounds/letters are chained to form words, words are chained to form sentences, and sentences are chained to form texts. Hypertext introduces a linguistic level *above* the text level: texts may be combined into hypertexts. And this combination need not – as on the other levels – have the characteristics of *chaining*. Other, new combinatory principles may be employed to interconnect text elements. Thus, other linguistic structural principles than the principle of linearity may be developed, also on the *surface level* of the text. (On the semantic-hermeneutic level, linearity has never been dominant in the same way.)

Hypertexts have, then, firstly a *text level* – where the rules for combining and chaining are largely identical with the rules for paper-based writing – and secondly a *hypertext level* where completely different rules apply (although exactly *which* is still unclear).

The relationship between these two linguistic levels represents a potential for new types of linguistic dynamics; the text units provide each other with meaning-creating contexts by the way they are structured and interconnected.

In order to point out two fundamental aspects of hypertextual functionality, the following definition may be used as an open, pragmatic, technology-oriented version:

> Hypertext is a concept for organising and accessing information, based on a technology which offers the possibility of interconnecting text elements by means of electronic links. The elements can be independent documents (nodes) or different

> sequences of one and the same document. The concept may also be used non-generically ("a hypertext"), about a specific group of text elements interconnected as described above.

The central element in the above definition (based on Nelson1993 and McKnight et al. 1991, among others) is that hypertext can provide *both* organisational and presentational structure to a given text material (for instance a news material) *and* access to information (for instance related news articles) – in both cases by means of electronic linking.

It should be noted, however, that what is usually regarded as the main feature of hypertext, namely the electronic link, is not necessarily represented as a visible mark in the text surface. Certain hypertext systems let the reader navigate by means of a graphical representation of the entire node system, a type of "map". This kind of *spatial* hypertext system utilizes the spatial dimensions of the screen to signal textual relations, semantic or pragmatic. In order to access the nodes, readers click directly on a selected area of the map instead of clicking on a link in the text itself. (Illustration 3 below is an example of a hypertext *without* explicit links between the nodes. The nodes are interconnected through the interface of the map.)

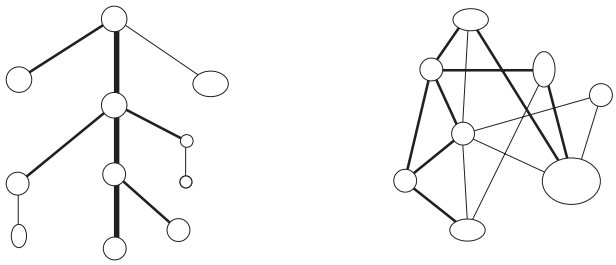
In current electronic newspapers, the second function mentioned in the definition – hypertext providing access to information – is tentatively utilized. Links are established between today's article and other relevant articles or web sites. Primarily, this means that the article content is connected to the paper's own news archive. However, this type of hyperlinkage does not affect the form of the individual news articles. Articles in electronic newspapers are by and large identical to news articles in the printed press; they are usually collected directly from an article database shared with a paperbased newspaper.

The second function, hypertext as *structure*, has so far been very little used. However, this function has the largest potential of change in terms of forms and functions of news on the WWW.

Hypertext as Structure

Hypertext does not imply organisational chaos, but offers an opportunity of establishing a new type of linguistic order. The hypertext designer will have to select the text elements to be interconnected by electronic links. Normally, this selection will also involve choosing a global structure for the system of nodes and links. It is this system that will determine how the text material can be read.

Figure 1.



Structure: Figure 1 shows two fundamental types of hyperstructure, axial (or hierarchical) structure and network structure.

Mainly two categories contribute to polarising the wide range of structural possibilities, namely the axial – or hierarchical – structure and the network structure.

The axial structure has a "trunk" consisting of a simple "main node" or a sequence of central nodes indicating a recommended reading strategy. This trunk may have varying numbers of "branches" with additional information which readers may choose to click on.

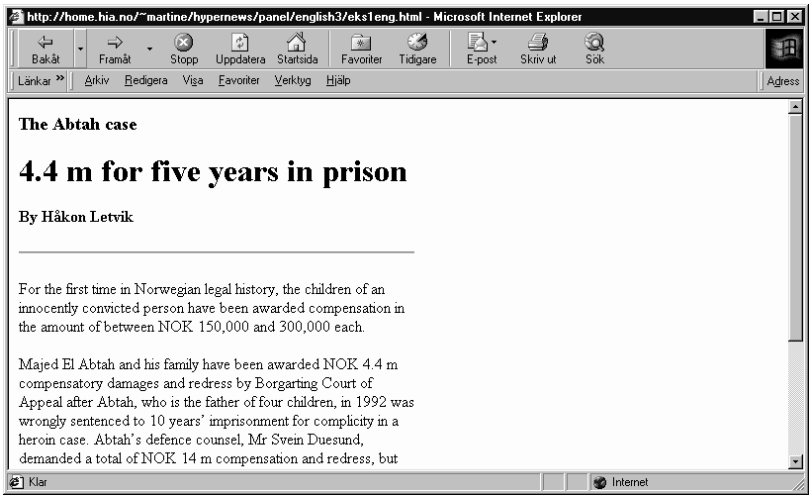
The network structure is basically characterised by the absence of such a centring "trunk". The nodes are linked together criss-cross on the basis of semantic criteria – or other criteria which the hypertext designer might want to apply.

It hardly serves any purpose to maintain that hypertext structures must be *either* axial *or* networked, as suggested by some hypertext theorists (see ia Landow 1994). A hypertext with an apparent hierarchical structure may well have a link system that at the same time gives the text a network structure. We might say that different hypertexts can have varying degrees of openness in their structure, but one of the two principles will usually dominate the individual hypertext presentation.

When discussing theoretical issues relating to hypertext, it is usually an advantage to base the discussion on a particular type of application (adapted genre), and preferably on concrete models. Let us therefore concretise the somewhat vague concept of "hypernews" by outlining two prototypes. Illustrations 1-3 show screen dumps of three demonstration texts, where the first represents traditional narrative structure, and the two latter axial and network hyperstructure respectively. (Illustrations 1, 2 and 3 are translations of Norwegian prototypes developed in collaboration with the editorial staff of *Stavanger Aftenblad's* electronic newspaper. The original presentations may be viewed on http://home.hia.no/~martine/proto.htm)

Illustration 1 shows a news item presented by means of traditional narrative structure, as it appeared on the web site of the major Norwegian newspaper *Aftenposten* on 17 November 1997. The article is about a false imprisonment: A person has been awarded a considerable amount in compensatory damages after having served a five-year sentence

Illustration 1.



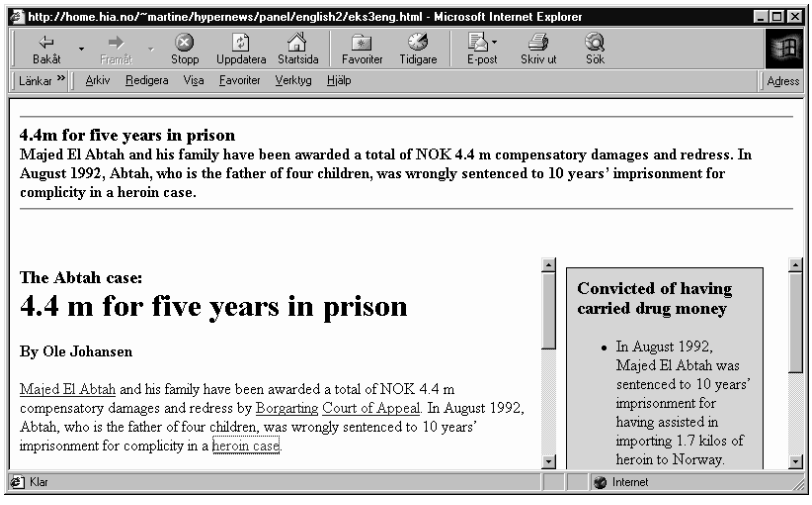
Story: The illustration shows the first screen page of a news item presented by means of traditional narrative structure.

despite his innocence in a drug case. The text is long and rather complex. A large number of extracts from various source discourses (primarily interviews) are combined with the journalist's own description of current events to make a continuous and logical news story.

In illustration 2, the content is reorganised to form an *axial* hypertext. The screen is divided into three frames. At the top is a static frame with brief information on the core facts of the case. Below is a wide frame on the left and a narrower frame on the right. The wide frame contains the *main text*, which is a relatively thorough *summary* of the matter based on the original news story and supplemented by elements from other reports on the case. The summary is relatively brief, with a continuous presentation of the main elements of the material. All instances of concretisation, exemplification, elaboration, discussion, etc. have been removed and organised in separate text nodes. These nodes are connected to the main text by means of hyperlinks, and the links are anchored at those points in the main text where the node theme is of interest. If the reader chooses to click on such a link, the supplementary node in question will appear in the narrow frame on the right, while the main text in the left frame remains unaffected. (In this clipping, the reader has clicked on the word "heroin case" in the main text to the left, and the text "Convicted of carrying drug money" has appeared in the area on the right).

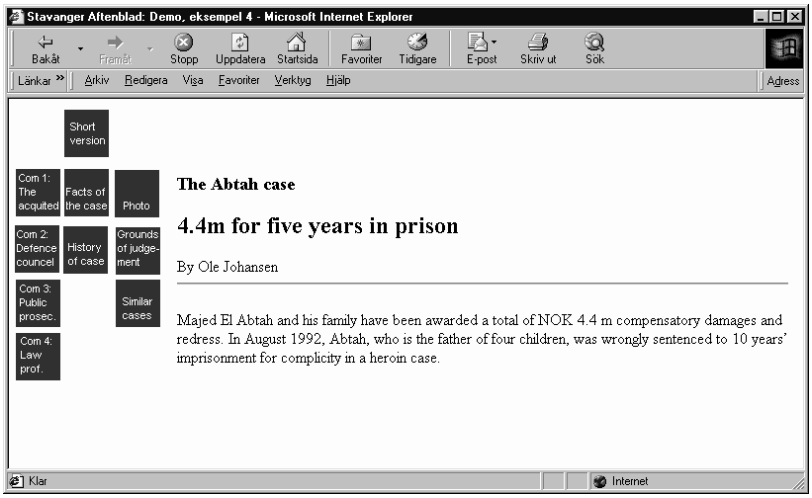
In illustration 3, the content is organised in a more networked structure. This presentation gives the reader a greater degree of control. On the left side of the screen is a graphical representation of all the information elements in the news item. We might call it a *news map*. The reader *must* click on each "box" to view the various text files (and possibly also picture files, graphic files, etc). This news map remains stable on the left side of the screen independent of how the texts changes in other screen areas. The various elements in the news map are organised according to an imagined subjective/objective axis. Text elements of a personal, subjective character are placed furthest to the left (statements made by witnesses, comments, etc), facts of the case are placed in the middle

Illustration 2.



Axial: The illustration shows a prototype of a news item presented by means of an axial hyperstructure. A short and stable introduction is placed at the top, the main text in the frame on the left and various types of additional information in the frame on the right.

Illustration 3.



Network: Here the news item is presented by means of a network structure. The user gets access to the information by clicking on the boxes in the "news map" on the upper left side of the screen.

(main events, background information, etc), and documentation-like elements are placed on the right hand side of the news map (grounds for judgement, previous cases of a similar nature, etc). Any multimedia elements (photos, graphics, video bits, sound files, etc) can be placed where they belong in the structure. At the top of the map is a box containing a brief presentation of the news event. This file appears automatically as opening screen (see the illustration).

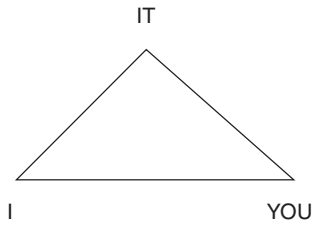
All the demonstration texts can of course be supplemented with links to various types of "secondary" information: articles from one's own archive or the archives of others, relevant web sites in addition to e-mail programs, etc. It will probably also be possible to present the structures by means of other design principles, for instance without the use of "frames". The purpose of these prototypes is merely to show that there are other possible ways to present a collection of news elements than writing a closed and continuous news story. The various hyperstructures distribute both responsibility and power in various ways between the editor and the reader.

Obviously, the usefulness of the most open presentation structures will vary according to the type of news – and the type of reader. In consequence, hypernews should not be regarded as a final replacement of the news story, but rather as an alternative. Finn Bostad (1998:290) states: *"Writing with a hypertext writing tool is a way of structuring and categorizing the 'surrounding world'"*. Generally, one might say that hypernews are best suited for mediation of complex news events consisting of a large number of elements and relations: election campaigns, catastrophes, big court cases, etc.

Hypertextual presentation forms as shown in illustrations 2 and 3 comprise several communicative aspects which invite linguistic and text-pragmatic research. Many of these aspects may be arranged by means of the simple triangle on which Karl Buhler's function-oriented language model is based.

Here, the text functions as a connection between a sender (I), a receiver (YOU) and a mediated world (IT). From the sender's point of view, we might say that the main func-

tions of the text are connected to an *epistemological* and a *communicative* axis respectively: how does the text function as a representation of a real or possible world, and how does it function communicatively for a receiver?



If we concentrate on the communicative axis, two fundamental questions arise: how is the reader motivated to read, and how is the reader's understanding and memory of the contents supported? My dealing with the issue of coherence focuses on the latter of these points.

Coherence in Hypertext

What is coherence? Or rather: what kind of coherence concept is the most appropriate to apply in a hypertextual context?

In one branch of text linguistics, coherence is understood as the total of the mechanisms which make a text a *logical unit*. Coherence corresponds, then, to the system of explicit and implicit *connective elements* of the text, and is regarded as a text-immanent entity. In this perspective, it will hardly be possible for a text which invites different, individual reading strategies to have as strong coherence as a text with a fixed, linear structure.

According to a more cognitively oriented branch of text linguistics, coherence is a result of mental work and is consequently tied to the reading process rather than to the text itself. The reader *assigns* coherence to the text, or, as van Dijk (1988:62) says:

> … empirically speaking, discourse does not *have* coherence, but is *assigned* coherence by language users.

Whether the reader assigns coherence to the text or not is determined by whether he/she feels that the units of meaning activated by the text are mutually relevant within the text's universe of meaning. Beaugrande & Dressler (1996:84) state:

> A text "makes sense" because there is a CONTINUITY OF SENSES among the knowledge activated by the expressions of the text… We would define this continuity of senses as the foundation of COHERENCE, being the mutual access and relevance within a configuration of CONCEPTS and RELATIONS. (Capitalized by the author.)

In Sperber & Wilson's *relevance theory* (Sperber & Wilson, 1986), the issue of coherence is even closer connected to the inner activity of the participants in the communication process. When reading a text, or in other ways participating in communicative acts, one is, according to this theory, constantly searching for *relevance*, which ia consists of a logical relation between the unit of meaning activated at the moment and those activated earlier in the discourse. (For a more thorough treatment of relevant coherence theory, see Leraand 1998.)

Coherence as Reading

Even though, as van Dijk and the relevance theorists point out, it is the reader that assigns coherence to the text, it is, as Beaugrande & Dressler emphasize, the text material that triggers the meaning-creating activity in the reader. Coherence should therefore be understood as a result of an interplay between textual and cognitive factors, where the text is assigned certain tasks and the reader other tasks. Thus, the text-oriented and the cognitive approaches to the concept of coherence only represent different perspectives of this procedural collaboration. In our context, we might unite the two perspectives by saying that coherence is an entity related to *reading*.

This view corresponds with Sperber & Wilson's view of communication as an *ostensive-inferential* process. The *ostention* rests with the sender, and implies that the sender draws the attention of the receiver through an act with a communicative purpose. This act may be to hold out an empty coffee cup to get it filled up, or it might be to make a paragraph in a text to indicate that the following sentence belongs to a new semantic unit. The *inference* lies with the receiver, and implies carrying out sufficiently comprehensive mental work so that the material presented (for instance the text) is perceived as coherent and contextually relevant. Beaugrande & Dressler (1966:6) relate the inference process explicitly to the encounter between the knowledge of the receiver and the universe of meaning of the text itself: "The adding of ones own knowledge to bring a textual world together, is called inferencing."

Coherence at Various Text Levels

The explicatory force of the textual and cognitive perspectives respectively will depend on the text level studied. The coherence connected to the actual sequence of sentences is usually called *cohesion* (cf the classic work by Halliday and Hazan (1978): *Cohesion in English).* Cohesion is achieved by connective mechanisms more or less explicitly manifested in the text surface, the aim of which is to establish continuity between old and new information in the text. In this area, a comprehensive analytic concept apparatus, a "text grammar", has been developed where a distinction is made between referent couplings (individual words with identical or related references in two subsequent sentences), sentence couplings (conjunctions or adverbs showing causal, temporal or other relations between two sentences), and mixed couplings (individual words which summarize the contents of a previous sentence in order to relate it to new information, for instance "this" or "that". For further details, see for instance Vagle, Sandvik and Svennevig, 1992). Cohesion belongs to that part of the language competence which is more or less automated in mature language users. In other words, decoding at this level constitutes only a minor part of the mental work carried out during the interpretation of the text. In the discussion of hypertextual coherence, sentence cohesion is of little interest as it remains largely unaffected by the degree of linearity in the global text structure.

The cognitive perspective becomes all the more important when studying coherence at a higher text level, where larger or smaller text sequences constitute units of meaning of varying complexity. These semantic units must have a form of logical relatedness for the reader to find the text coherent, and this relatedness may be either explicitly manifested on the text surface or completely entrusted to the reader's inferencing activity. The relationship between two neighbouring units may be called *local* coherence, while the logic that defines the place of individual units in the hierarchical structure of main themes and subthemes is called *global* coherence. (This use of concepts is not quite conventional, but it is logical and serves our purpose.)

In our context, both these forms of coherence are interesting. As we shall see, both local and global coherence will be challenged by a non-linear text structure. At the same time, hypertext technology offers opportunities for strengthening and developing both categories.

Three Levels of Coherence in Hypertext

In order to describe the text-immanent apparatus which might contribute to strengthening coherence in hypertext reading, it might be useful to outline a three-level model. These levels are not primarily motivated by the textlinguistic division into cohesion, local coherence and global coherence, but by the linguistic levels of hypertexts. In our model, we distinguish between three types of coherence: a) intratextual coherence[3]; b) intertextual coherence; and c) hypertextual coherence.

Intratextual coherence is limited to the node level of the hypertext and comprises all types of coherence at this level. It follows that intratextual coherence corresponds to the traditional textlinguistic notion of coherence, and the reader's expectations with respect to relatedness at this level presumably correspond to the expectations of a traditional, linear text.

Intertextual coherence denotes the relationship between two text nodes read in a sequence. Even though hypertexts usually have a non-linear structure, each separate reading will always be linear. This means that the reader will expect a type of "local coherence" between two nodes which are linked together or which the system otherwise allows to be read in a sequence. In this way, the link functions as an ostensive signal of mutual relevance.

Hypertextual coherence denotes the logic reflected through the structure that governs the whole system of links and nodes. This logic also defines the place of each node in the system as a whole. Consequently, hypertextual coherence is related to the textlinguistic notion of "global coherence", but since hypertexts have both a text level and a hypertext level, we will limit the application of the textlinguistic coherence categories to the level for which they are designed, which in our context corresponds to the node level.

Macro- and Superstructures

In order to explain the function of intertextual and hypertextual coherence, van Dijk's theory of macro- and superstructures may form a useful basis (see van Dijk 1980 and 1988). His theory was developed to describe certain patterns and structures of conventional texts, but it appears to be highly relevant also when applied to hypertexts.

The term *macrostructure* denotes both a textual and a cognitive entity. The macrostructure has a semantic representation in the text, and in the encounter with the reader's interpretive framework (cf the "mental schemas" of the cognitivists), a corresponding macrostructure is established in the mind of the reader. Cognitive macrostructures are partly subjective, partly intersubjective, depending on whether the reader's interpretive framework is of a conventional or unconventional nature.

Textual macrostructures constitute a content category comprising the hierarchical system of propositions (assertions) on various text levels. Thus, a macroproposition is an assertion comprising several assertions on a lower level. The main content of a paragraph may be expressed in an assertion on a higher level than the main content of one individual sentence within the same paragraph, several paragraphs may be summarised

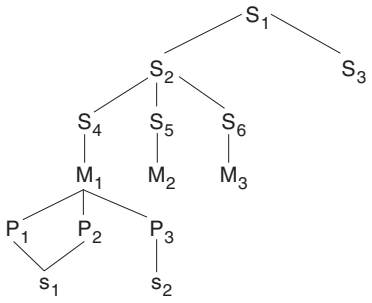
in a macroproposition on an even higher level, while the text as a whole may be summarised in a macroproposition that constitutes the top level of the macrostructure.

The macropropositions at the various levels will, in a well organised text, partly be explicitly expressed in the text. For instance, the first or the last sentence in a paragraph often summarizes the entire paragraph. Nevertheless, the reader must infer the macrostructure of the text when reading. Macrostructures appear as a result of a reducing, summarizing cognitive activity. When retelling a text or constructing a text based on an event, the language user will follow what van Dijk calls the three *macrorules* to extract the most important information. These three rules are *deletion*, *generalization* and *construction* (see van Dijk 1988:32).

While (textual) macrostructures constitute a semantic category, *superstructures* constitute a syntactic one. The superstructure indicates *how* various types of macropropositions may be arranged and distributed in the text surface, just as the sentence syntax provides corresponding guidelines on the sentence level. Generalized and standardized superstructures (or *text schemas,* as they also are called) are form categories which contribute to defining various text genres or types of discourse. Traditional (e.g. mythological) stories are often constructed according to a schema which includes *harmony* (The Garden of Eden) – *conflict* (Fall and Expulsion) – *battle* (life outside Eden) – *new harmony* (Covenant, Salvation) (see ia Todorov 1971:39). Conversations have their schemas, scientific discourses have theirs.

Generally, one might say that superstructures are a "system of drawers" which indicates the theme and subtheme of the text, while macrostructures indicate the *contents* of the drawers, ie the propositions of the text on the various levels in the semantic hierarchy. The relationship between superstructures, macrostructures, propositions and sentences is by van Dijk illustrated by the following hierarchical figure:

Figur 2.



Structural Relations: S represents superstructure elements, M represents macrostructure elements (ie macropropositions), p represents propositions, and s represents sentences.

Intratextual Coherence

Intratextual coherence can generally be strengthened on both local and global levels as each individual node can be made thematically homogenous, so that all subelements will have strong relevance both to their neighbouring elements and to the macropropositions at the top of the node.

This strengthening of coherence will, however, have different effects on axial and networked hypertexts. In axial hypertexts, high thematic homogeneity and consequently high intratextual coherence may be achieved in all "branch nodes", while the themes and sentences of the summarizing main node (or the main path) easily will be more "fragmented". By dividing the main path into several nodes, coherence may be strengthened in each main node, but the advantage of having a complete summary in one separate node will be lost.

Networked hypertexts have, in principle, no summarizing main node or main path, and consequently all nodes can be made optimally coherent through thematic homogeneity.

(It should be noted that we here deal with a *possibility*, a *potential*. The intratextual coherence will of course not be *automatically* strengthened when a matter is presented by means of several text nodes linked together.)

Intertextual Coherence

A link between two nodes is a strong signal of coherence between two units of meaning. Links may be manifested in three ways: a) through text-internal markings (marked phrases in the text); b) through text-external markings (often a separate list of titles or key words leading to other nodes); or c) they may be hidden for each individual node, but made accessible by means of a visual, clickable presentation of the entire node system. Thus, we can make a distinction between text-internal, text-external and implicit linking.

These types of links signal relations at various levels in the internal macrostructure of the nodes. Text-internal linking signals a relation connected with that level of the macrostructure which is manifested through marked text phrases, so-called *departure* and *destination phrases*. (What is defined as departure and what as destination depends on the directions in which the producer has allowed the reader to move in the system.) Whether the link signals a relation relevant to a central or a more peripheral/subordinate thematic point of the node will thus depend on the significance of the departure phrase in the macrostructure of the node. Correspondingly, the choice of destination phrase will be determined by whether the *whole* destination node is relevant in relation to the departure phrase, or only a certain sequence. The destination phrase is rarely explicitly marked in the destination node. However, it is possible (in certain hypertext systems) to choose whether the click shall lead to the top of the destination node or to a selected sequence of it.

The indexical quality of the link – the fact that the link in itself signals coherence – makes it a demanding, but potent tool: demanding because it may easily cause frustration if it fails to fulfil what the reader perceives as promised; potent because it may contribute to giving prominence to and shaping the semantic dynamics of the text material. In some hypertext systems, it is possible to "label" the links, or the designer may choose to have "mute" coherence markers. Link information may be of both a relative and a qualitative nature. It may indicate whether the destination node is an elaboration, a counter-argument, additional information, etc. in relation to the departure node/phrase. In addition, it may provide information on the size of the destination node, type of medium (picture, text, sound), file format, etc. This kind of information will normally appear in a specific place on the screen when the marker touches the departure phrase, but *before* any clicking takes place.

This choice implies that the intertextual coherence can be a very flexible entity. It is possible to mark coherence without specifying the exact kind of coherence. This practice might be useful in a news context when it is desirable to leave this part of the interpretation to the reader. Or relations might be specified in various directions (not only to two selected neighbouring sequences!) by assigning separate information to the links. In this way, the reader might be spared the frustration of spending time clicking without retrieving desired information.

In axial hypertexts, the intertextual coherence will be influenced by the fact that the departure phrase constitutes a macroproposistion in relation to the propositions of the destination node; it is a result of macrorules applied to the text in the destination node. (This is a consequence of the fact that axial hypertexts are structured in a semantic hierarchy, as we shall see in the following section, which will focus on the issue of hypertextual coherence.)

Connective vs Associative Link Relations

The relationship between "main node" and "branch node" also implies that a node relation in an axial hypertext normally may be categorised as *connective,* according to Thierry Bardini's distinction between connective and associative link relations (see Bardini 1997). Connective relations presuppose an objectively recognizable semantic relationship. Even though Bardini fails to specify this category any further, we can assume that it is more or less equivalent to the list of possible sentence couplings that we find (with small variations) in text linguistic theory: alternative, adversative, specifying, and causal (see Fossestøl 1983). The *additive* relation, however, has a debatable place on a list of *connective* relations. When lifted from sentence level to a higher level, it probably belongs among the *associative* relations in Bardini's dichotomy. Associative relations represent couplings of less definable types; they may be of an occasional, idiosyncratic nature, or they may be based on a semantic relationship which makes the units mutually relevant within certain discourse contexts. Bardini establishes a *continuum* of relation types by defining connections and associations as opposites, and places both text types and hypertext theorists in different positions in this continuum.

While connective relations always will be perceived as relevant to those who want more information on a theme, the relevance of the associative relations may be of a more variable quality. Here we must again refer to the two types of structure in order to demonstrate the differences. As mentioned, axial hypertexts will normally be dominated by connective link relations. Network structures might, in principle, have link relations covering the entire spectrum, but in practice the choice of this type of structure will often reflect certain structural properties of the material to be presented. Certain types of material *invite,* so to speak, links of the associative type.

The two prototypes presented earlier in this article, will illustrate this point. While each individual link in the axial presentation (illustration 2) reflects a more or less clear semantic relation (most often the *specifying* type), the news map in illustration 3 has a link structure based on various types of associative relations. This is of course also attributable to the fact that text-external and implicit links more often reflect *co-ordinating* (additive) than *subordinating* relations.

From this we may infer that networked hypertexts are more exposed to weakened intertextual coherence than axial hypertexts. The reason why many experience frustration when reading hypertexts might be that commercial hypertexts often are based on a loose, associative linking. This is the case, for instance, when names of enterprises or

organisations in a news article are linked to the official web site of the enterprise and not to additional information on the enterprise adapted by the editorial staff. The anchor node and the target node have a common theme, but the approach in the target node has no obvious relevance to the macrostructure of the anchor node.

At the same time, it is important to stress that *cognitive* coherence is more important than textual coherence. When reading networked hypertexts, the reader is usually more willing to perform cognitive work of a different and more comprehensive nature than when reading linear texts. From the point of view of the reader, the requirements for intertextual coherence will thus be different from the corresponding requirements for local coherence in a linear text. These requirements may be related to Espen Aarseth's (Aarseth 1997:64) categorisation of linear texts as *interpretative* (texts to be interpreted, that is ia disclosing a logical line; cf the expression "to *follow* the text") and hypertexts as both interpretative and *explorative* (texts to be explored).

Autonomous vs Fragmentary Nodes

Since the intertextual coherence is associated with the relationship between known and new information, different requirements should be made to the design of the node texts in the two types of hypertext mentioned. In axial hypertexts, each node on a secondary or lower level will be connected with (a specific position in) a text on a higher level. Consequently, one can presume that certain units of information are known when the node text is read. With networked hypertexts, however, it will be more difficult to predict which node sequence the reader will choose, and each node will have to be formulated as an independent text. This means that a distinction can be made between *autonomous* and *fragmentary* nodes. Fragmentary nodes give the impression of being fragments of a greater whole. The importance of node autonomy will increase proportionally with the degree of *openness* in the hypertext structure. (Spatial hypertexts with implicit linking are more open than axial hypertexts with intratextual linking.)

On the basis of illustrations 2 and 3, we might say that readers more readily will accept a subordinate text node beginning with a nominal in the definite form (for instance "The compensation...") in the axial presentation (illustration 2) than in the networked presentation (illustration 3). In the axial hypertext, objects introduced in the main text are naturally treated as *known* in the node text. In the networked prototype, only the information in the brief introductory text (representing the highest level of macropropositions) can be presumed known in each text node.

Hypertextual Coherence

We have defined global coherence as the relationship of individual elements to an overall theme. This means that such a theme must be recognized before it will be possible to see whether or how each element is related to the text as a whole. Correspondingly, with reference to the upper linguistic level of the hypertext, we might say that hypertextual coherence is closely related to the question of hyperstructure.

Reading hypertext, people normally read the structure parallel to reading the text. Information is made accessible in a non-linear structure which compels the reader to make conscious choices during the reading process. Consequently, the problem of structure is a permanently focused theme for the reader. We might argue that hypertexts thematise global structures more distinctly than linear texts do.

This might affect hypertextual coherence in various ways, depending on the distinctive character of the hyperstructure and the expectations of the reader.

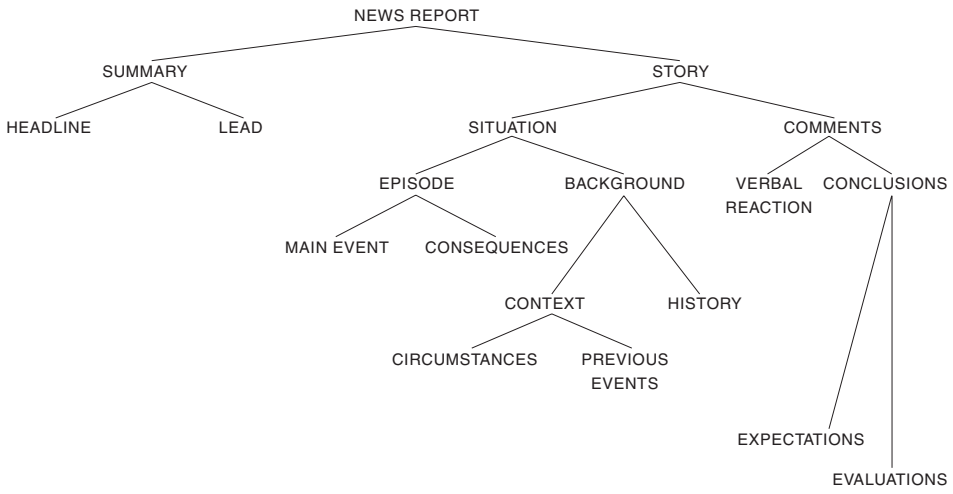
Making Superstructures and Macrostructures Distinct

Let us first look at axial, hierarchically organised hyperstructures. Such structures are particularly well suited for making macrostructures distinct since the contents of the main node(s) function as summaries of the contents of the branch nodes. However, superstructures too may be given prominence in axial hypertexts. Superstructures in van Dijk's terminology are understood as determined by genre, as hierarchical "drawer systems". Conventional text competence is, for the writer, the ability to convert this abstract hierarchy to a linear sequence of sentences, and, for the reader, the ability to disclose the hierarchy on the basis of the sentence sequence.

In axial hypertexts, the system of nodes and links itself implies that the hierarchical structure is realised as an *explicit* text category, which makes possible both a horizontal (the "branches") and vertical (the "trunk") reading of the structure. The various subthemes may be pursued in depth (by clicking on links to "additional information"), or an overview of all important subthemes may be obtained without the reader having to go into detail on any of them. The superstructure could become even clearer if the structure is *visualised* by means of a graphic figure in which the themes for each branch are marked (cf the "news map" in illustration 3).

Van Dijk's proposed superstructure of news (van Dijk 1988:55) may serve as an example (note that the hierarchy here is represented with the detail levels vertically and the superior themes horizontally.)

Figure 3.



Superstructure: van Dijk's representation of the superstructure of news.

In this representation, only the lowest level in the structure is meant to be explicitly represented in the text surface, in a sequence from left to right. In axial hypertexts, on the other hand, *each* level in the hierarchy may be given a verbal representation so that the upper levels function as summaries of the lower levels. This means that the reader can get a brief version containing *episode, background* and *verbal reactions,* without having to go into the "details" on the lower levels of the superstructure.

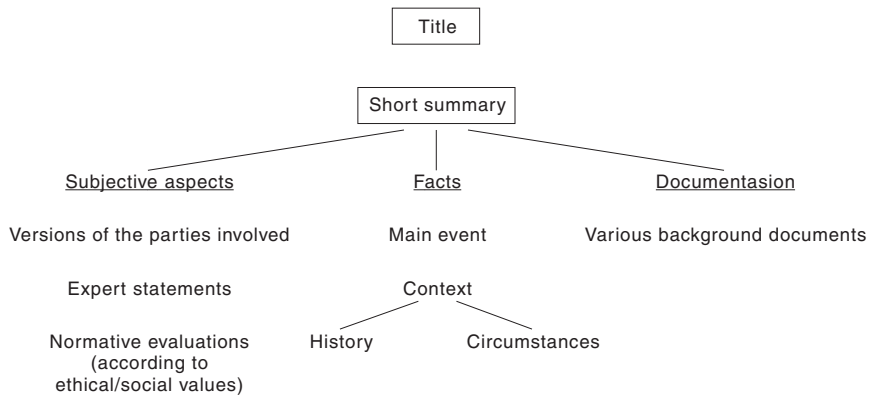
The prototype in illustration 2 is an example of such a solution. The horizontal plane in van Dijk's superstructure could here have appeared more clearly if the main node had been divided into several elements so that episode, background and verbal reactions were separated. However, it is – as mentioned earlier – uncertain whether such a division would have made the text more communicative, since it would involve somewhat harder physical and cognitive work for the reader.

Superstructures and Linearity

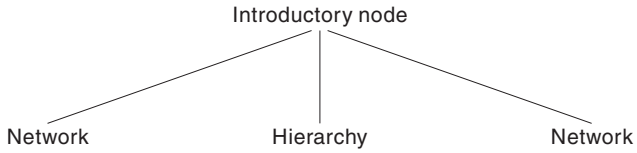
Van Dijk's superstructures are based on current established genres of writing and consequently they relate to linear textuality. A text should have a course of events – a progression – and various types of content should find their proper places in this progression according to the type of text. Therefore, this news schema is naturally defined on the basis of a conventional news structure with strong narrative features. A news item contains a "story", and this story consists of one or several episodes, of background information and of evaluations – all ordered in a sequence determined by the genre.

Axial hypertexts might, as mentioned, make such superstructures clear. This is hardly possible for networked hypertexts as they are neither linearly nor hierarchically organised. In order to discover the superstructural potential of the network structure, current established news genres must be disregarded and new criteria established for defining the elements of the news schema. Here the prototype in illustration 3 may serve as an example. This prototype is not a "pure" network structure since it organises the material according to certain pragmatic criteria (subjective/objective perspectives). Nevertheless, it bears the characteristics of a network structure insofar as no particular reading sequence is given prominence.

This prototype, too, reflects a form of "superstructure" and represents an alternative "news schema". However, this superstructure does not invite reading from left to right, nor does any of the three columns constitute hierarchical macrostructures where the upper levels appear by summarising the lower levels. Here additive, associative relations dominate, while the superstructure of the axial prototype (ill. 2) was constructed by means of connective relations. The entries under "facts" represent an exception. In this column, the various contextual factors are subordinate to the main event. The superstructure of networked news may thus be outlined as follows:



Global macrostructures (which are always hierarchical) can hardly be supported in "pure" network structures[4]. If it is desirable to strengthen the hypertextual coherence by making macrostructural relations clear, the node network should be supplemented by an introductory node. Here a selection of high-level macropropositions is gathered to support the reader in relating each node to the overall theme. A mixed structure then appears, where the introductory node is assigned the role of a centring axis. Such combined solutions might be useful when the material can be organised in certain main categories, while the internal relations and structures in each category have a more open character. A simplified version of the above structure may look like this:



Possibilities and Risks

The possibility of choosing different hypertextual structures and different graphical representations of these structures implies that superstructures as well as macrostructures can be established and made visible in new ways compared with traditional linear texts. However, the wide range of possibilities also entails considerable *risks* as regards the issue of coherence because the schematic predictability of the genres will decline with increasing variations in structure and design. In order to achieve the greatest predictability possible, it is important to stabilise as many factors of the presentation form as possible; for instance size and location of windows, principles for the construction of hyperstructures, principles for navigation in the information material, etc. If the mental work required to establish necessary relevance between local and global units of meaning is too demanding compared to the cognitive benefit of the reading, only the most motivated reader will choose to devote time to the text. In a prose context, the reading process will normally be controlled by the requirement of "the greatest benefit with the least amount of work", and in a news market characterized by so-called "information overload", this rule has particular relevance. In the production of hypernews, it is therefore essential that the cognitive costs associated with the lack of linearity are minimised, and that the cognitive advantages offered by structuring and visualisation technologies are optimised. (See ia Thüring et al.1996 on *cognitive overhead*.)

Summary

This article seeks to illuminate certain fundamental aspects of textual and cognitive coherence in the production and reading of hypertexts in general and hypernews in particular. A division into intratextual, intertextual and hypertextual coherence might help to clarify concepts and also seems to reflect certain distinctive features of hypertext as a concept representing a linguistic level above the text level. Thus, these categories may be an important contribution to the development of *hypertext linguistics.*

We have seen that van Dijk's conceptual distinction between macro- and superstructures might be useful for demonstrating how axial and networked hyperstructures may maintain, strengthen or weaken various forms of textual coherence. At the same time, we have pointed out that cognitive coherence is of greater importance than textual co-

herence, and since hypertexts represent a presentation form that explicitly invites active *exploration*, the requirement of textual coherence is probably not the same in hypertextual mediation as in traditional text mediation.

This change of premises is highly significant to all genres developed for hypermedial communication, Internet-based news included.

Translation: *Sissel Rike*

Notes

1. The first Norwegian electronic newspaper appeared on 7 March 1995. In April 1999, the web edition of the Norwegian newspaper *Verdens Gang* was read by more than 400,000 people every week. *Verdens Gang's* paper version has the highest daily circulation in Norway with approximately 350,000 copies.
2. I here regard electronic newspapers as an independent medium like radio, TV and printed newspapers, and include all text-based news services which are regularly updated on a separate web site (URL).
3. The term *textual* unfortunately denotes several different entities in the account. In the differentiation between *textual* (or text-immanent) and *cognitive* coherence, *text* denotes a type of linguistic realisation of cognitive structures. In the threefold division of *intra- inter- and hypertextual* coherence, *text* denotes a certain linguistic level between sentence level and hypertext level. Here *text* is equivalent to the units of meaning framed by the node. (Alternatively, the three coherence levels may be termed *intranodal*, *internodal* and *structural* coherence.)
4. Consequently, text sequences with a typical linear semantic structure, as we find in the argumentation and the traditional narrative, will function best on the *node level* in such hypertexts.

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