

## Ways of Representing Specialized Knowledge in Finnish and Swedish Science Journalism

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### 1. Introduction

For many citizens science journalism is the main source of scientific information. Science journalism in print media as well as in electronic media is in principle directed for all media users. Therefore, there is a need for specific ways of representing scientific knowledge that make specialized knowledge accessible to as wide a public as possible. In the present paper, I will discuss such ways used in science sections of daily newspapers. An other forum where many established means of representing specialized knowledge are willfully used is popular science magazines. Examples of such means are e.g. using colorful language, telling a story, personalizing the issue, and making the issue concrete. (Cf. Koskela & Pilke 2001; Thurén 2000.) However, popular science magazines have different possibilities and requirements compared with science sections in daily papers. Obviously, the aims of the texts are different: at an extreme, popular science magazines represent commercial entertainment, whereas science journalism in daily papers belongs to newspaper discourse, and is thus a form of news reporting.

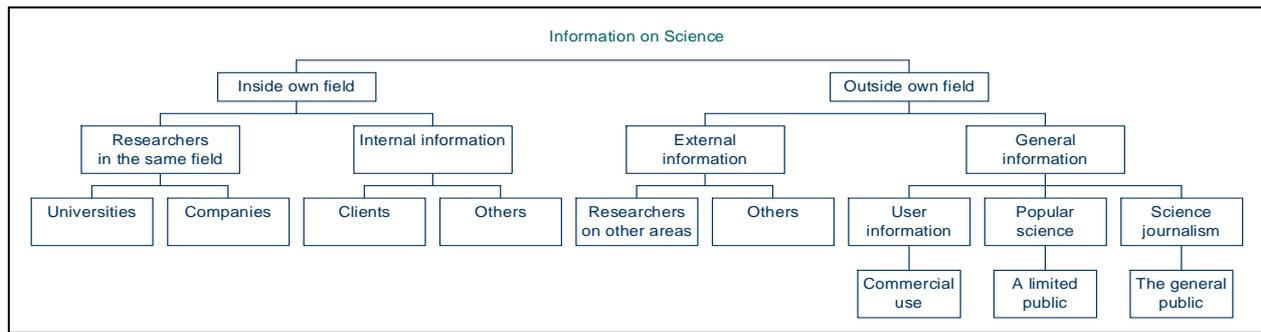
A phenomenon related to the means of representing specialized knowledge mentioned above has in media studies been called *semantic tricks* (Hvitfelt 1988: 116), a term implying that these means are used for making the issues seem larger, more dramatic or simply something else than they actually are, i.e. for distorting reality. As examples of semantic tricks Hvitfelt (1988: 117-122) mentions emotional or connotative language use, metaphors, relative expressions, and unclear or imprecise language. All these means can also be used for representing specialized knowledge to a large public, for making complex ideas interesting and easier to understand. According to Hvitfelt (1988: 123), semantic tricks can be used for commercial reasons, propaganda reasons, or aesthetic reasons. Evidently, same kind of motivations can be detected in representing specialized knowledge as well, but nevertheless, the need of making complex issues understandable requires more

than mere semantic tricks. In science journalism, the needs of journalism meet the requirements of popularization, and therefore, it is interesting to see what kind of ways of representing specialized knowledge are typical of science journalism.

I will begin my paper with an exploration of the nature of science journalism and its requirements in general, and related to this, I will take up some points of conflict between scientific discourse and journalistic discourse. After that I will report on the results of a study of 24 Finnish and Swedish articles on science pages of two major newspapers. I have chosen major newspapers because they publish special science pages unlike many smaller papers, and in order to avoid using only one paper, I have included papers from two countries even though I will not compare the papers with each other at this stage of my investigation. The discussion is divided into two parts. In the first part, I will discuss **expression level means** of representing specialized knowledge, in other words, means that concern the choice of words. Of such means I will concentrate on connotative language use and the use of metaphors because they seem to be the most frequent in the material. In the second part, I will discuss **paragraph/text level means** from the point of view that they affect the choice of facts in the articles. These are telling a story, personalization, and the use of examples. Obviously, the means of representing specialized knowledge on the two levels coincide and are intertwined in many ways. However, my aim is not to create an exhaustive categorization that covers all means of representing specialized knowledge in the material but rather to discuss how different means of representing specialized knowledge are used and function in the rhetorical setting of science journalism.

### **1.1 Science journalism and its requirements**

Science journalism is a varied concept including many different kinds of texts. For some researchers science journalism only concerns medicine or natural sciences. (Cf. Välvirronen 1994: 22-23.) On the other hand, sometimes all texts in the newspaper that have some connection to research work, from news to feature articles, are considered to be science journalism (cf. Näslund 1987: 125). Typical of this view is that it is difficult to draw a line between what is science journalism and what is not. For example, if a researcher gives his expert opinion on some current issue, it could be seen as science journalism, or in fact, weather broadcasts and opinion polls could be classified as science journalism because they are based on a field of science, meteorology and statistics respectively. In my paper I will concentrate on science pages in newspapers. In the context of *information on science* (including the humanities and social sciences), science journalism, as I see it, can be placed on a continuum of information on science as presented in Figure 1.



*Figure 1. A continuum of information on science (Puuronen, Koskela, Laurén & Nordman 1993: 231).*

As can be seen in the figure, science journalism represents the most general form of information on science, both when it comes to language and content, as well as its audience. It differs from popular science proper in that popular science, especially in popular science magazines, is intended for a restricted public: those who are interested in the topic and choose to read about it for pleasure or because they find it useful or educating, whereas science journalism is available for everyone who reads the newspaper. (Cf. Puuronen, Koskela, Laurén & Nordman 1993.) Special science pages in newspapers can be placed on the continuum nearest to popular science because these genres have a lot in common. For example, not all readers of newspapers actually read science pages, and this makes the idea of restricted public partly valid also for science journalism.

However, newspapers are printed to be read, and this guides the journalists' work even when writing on science. The stories on science pages may be less newsworthy than the hard-core news in the newspaper, but they still have to confirm to news values in some respects, which is not necessarily the case in popular science magazines. According to Galtung and Ruge (1973) high news value is given to issues that among other things come close to the reader, that are controversial, negative, sudden, intense, unusual, and involve elite nations or persons (see also e.g. Shoemaker & Reese 1996: 111). On science pages this can mean new findings, breakthroughs, unexpected or current worries or threats (especially of the medical or environmental kind), or the like (e.g. current science happenings like the Nobel price or national science competitions).

Interestingly, the requirements for popular science in guidelines for authors of popular science magazines (e.g. Fjæstad 1993) and in research on popular science (e.g. Eriksson & Svensson 1986) partly coincide with news values, or have similar consequences. Such requirements conclude that popular science should be **interesting**, **entertaining**, **understandable**, and additionally, it should give **correct** information. Compared with news values, it seems obvious that current issues that concern the reader closely tend to be interesting, and that intense, unusual and personalized issues are found to be entertaining. Additionally, in accordance with good journalistic practices all journalistic material in a newspaper should be correct and understandable. It is thus natural that journalists must write a language that the newspaper readers can understand. Nevertheless, the

heterogeneous public always poses a challenge (cf. Shoemaker & Reese 1996: 110). Here, compromises, sometimes even semantic tricks, can be called for in all journalistic writing, but especially in reporting on science where complex ideas are to be reported so that most of the readers can understand them. An equally common demand for journalism is that the facts reported are correct, as well as critically and impartially viewed (cf. Fowler 1991: 1). For the science journalist this can be a difficult task: a layman, and most journalists are laymen when it comes to research, can seldom question scientific facts. An interesting indication of the difficulty of the task is that there is so much research on how the media distort science (e.g. Nelkin 1987). At least a part of that distortion can be caused by the extensive use of semantic tricks, which possibly also explains some of the bad name the term *popularization* is connected with.

## 1.2 Scientific discourse vs. journalistic discourse

As the news values and the requirements on popularization indicate, the demands on journalism in general and science journalism in particular are high. In science journalism the scientific discourse with its ideals of objectivity, neutrality, exhaustivity, and transparency meets the journalistic discourse with the need to sell, entertain and serve the public. The discourse of popularization is located in the field of tension between these two discourses, often with a preference for the features of journalistic discourse. In Figure 1 above, the discourse of popularization can stretch from science journalism to different kinds of external information of science without strict limits. Some aspects creating the field of tension between scientific discourse and journalistic discourse are listed in Table 1.

**Table 1.** Discourse of popularization seen in the field of tension created by the different requirements for scientific discourse and journalistic discourse.

<b>SCIENTIFIC DISCOURSE</b>	<b>DISCOURSE OF POPULARIZATION</b>	<b>JOURNALISTIC DISCOURSE</b>
for scientific community	for interested public	for general public
abstract	explaining abstract by concrete →	concrete
what is? theoretical, methods	theory, methods, only when → necessary	what happens? practical, results
neutral, transparent, explicit, logical, rational, detached	intellectually stimulating →	inspiring, personal
everything into account, detailed, precise	general, sometimes interesting details focused	general, even at the cost of distortion of the whole
ready when the research question can be answered	ready on deadline	ready on deadline
careful conclusions	interesting conclusions only, future prospects	speculating, aggravating

As can be seen in Table 1, the discourse of popularization has to combine many of the requirements of scientific discourse with the often opposing needs of journalistic discourse. From this conflict should evolve a consensus in the form of lucid and engaging prose that the readers want to read and that transmits the facts as correctly as possible. Of course, the aspects taken up in the table are simplifications, but it is likely that articles in popular science magazines have better chances of taking into account the requirements of scientific discourse whereas science journalism in daily papers needs to conform more to the needs of journalistic discourse.

## **2. Means of representing specialized knowledge in *Helsingin Sanomat* and *Dagens Nyheter***

The material of my study has been collected from the science pages in *Helsingin Sanomat* (HS) from Finland and *Dagens Nyheter* (DN) from Sweden in the spring/summer 2001 by randomly choosing two articles per month during the research period. Both papers are large dailies with national coverage. In the present study I have included the main stories on the science pages in these papers. The material consists of 12 articles from HS and 12 articles from DN (two articles/month in february-july 2001) (see Appendix 1). The length of the articles varies but generally covers half of a newspaper page (including visuals).

The simultaneous confirmation to journalistic and popular scientific requirements can be detected already in the selection of topics in the science sections of the newspapers studied. Many of the topics fulfill at least the news value criteria of timeliness and proximity (e.g. *Suuri neutriinikoe Genius Suomeen* [The big neutrino test Genius to Finland]) on the one hand, and/or the criteria of controversy (e.g. *Sex i sängen – barn i provrör* [Sex in bed – children in the tube]) and unusuality (e.g. *Revontulentekijät kuumentavat hiukkasia* [Creators of Northern Lights heat up particles]) on the other hand. Based on the topics discussed on the science pages during the research period, it seems possible that topic selection would shed some light on differences between popular science magazines and science journalism in other respects as well, as could the choice of fields of science represented.

The fields of science represented in the material are varied. In the Finnish material, best represented are the often-popularized astronomy (3 articles) and biology (2 articles). Of the traditionally often-popularized fields, medicine lacks almost totally (represented only by one article on sports physiology), whereas somewhat more unusual fields like geophysics, music research and ecological history are each represented by one article, as are computer science and national economics. In the Swedish material fewer and more “traditional” fields for popularization are represented: medicine (4 articles), archeology (3 articles), and astronomy (2 articles) are completed by biology and linguistics. The material is small and the results cannot be generalized, but the choice of fields naturally reflects not only contemporary events and current discussions in society but also the editorial policy of the newspaper in question.

## 2.1 Expression level means

In the material studied both the so-called semantic tricks and other means of representing specialized knowledge are present in different combinations. However, it seems there are fewer explicit means used in science journalism than in popular science magazines (cf. Koskela & Pilke 2001). With respect to the (claimed) commercialization of the popular science magazines, this is hardly surprising (cf. e.g. Kauhanen 1998: 303). What makes the use of linguistic means of representing specialized knowledge in science journalism especially interesting, is that earlier research gives two contradicting views on journalistic language: on the one hand, it is claimed that the language of journalism is at its best when it is “invisible”, even objective (cf. e.g. Okkonen 1986: 210), and on the other hand it has been stated that journalistic language is always dramatic and exaggerating, “*ett allmänt dramatiskt och överdrivet språk*” (Hvitfelt 1988: 114). In my material, the invisible, neutral language prevails, but dramatizing and sometimes even exaggerating instances complement it. The number and frequency of these instances varies from one topic to another, one field to the other, as well as from one writer to the other.

According to Hvitfelt (1988: 117 f.) the use of connotative language is common in journalism, and it is used to create a dramatic impression in order to make the text more interesting and in order to add the text the news value that is otherwise lacking. In science journalism, the main reason for the use of connotative, “colorful” language seems to be the need to make the text more interesting and concrete (cf. Table 1 above):

**Example 1.** Suomalaistutkijoilla ja Eiscat-järjestöllä on laaja, viikon pituinen **mittausisku**...(F1)

[The Finnish researchers and the organization Eiscat will have a large, one week long **measurement attack**...]

**Example 2.** Universums **härskare** heter gravitationen. Det är **en oresonlig kraft** som föser ihop galaxer som är på drift genom rymden. (S6)

[The **ruler** of the universe is called gravitation. It is **a relentless power** that pushes together galaxies that are drifting across the space.]

In example 1, the science journalist has chosen to call a series of measurements an *attack*, a military metaphor with many connotations. This is a way of making a possibly monotonous standard procedure in research work sound special and interesting. In example 2 the idea of gravitation is explained in a very dramatic way. In these examples, the use of emotional and connotative expressions indeed seems to be a semantic trick motivated by a combination of commercial and aesthetic reasons. In accordance with Hvitfelt (1988), I have categorized all means of making the text interesting and accessible as commercial reasons, and all means of making the text sound and look attractive as aesthetic reasons. Evidently, these reasons often coincide.

The same combination of motivations can be detected in the “play on words” used by some journalists, especially in the Finnish material. The “verbal acrobatics” seems to be combined with certain topics (e.g. birds and insects in my material) and certain writers (Kivipelto, Engström). An interesting regularity can also be found in the fact that the nearer the topic of the text is to everyday life (for the concepts of everyday knowledge vs. scientific knowledge see e.g. Laaksovirta 1986: 57), the less explicit semantic tricks/means of representing specialized knowledge seem to be called for. When phenomena known to everyone, like food allergies or snow, are discussed few colorful expressions are used, but when astronomy or physics is discussed more explicit means of representing specialized knowledge are needed. Examples 3 and 4 illustrate the play on words in the material.

**Example 3.** Tähtitieteilijät kuitenkin tietävät, että painovoima ohjaa kaikkea liikettä *niin maan päällä kuin taivaissa*. (F10)

[However, astronomers know that gravitation guides all movement **on earth as it does on heaven**.]

**Example 4.** För många fåglar blir **en väloljad röst det främsta vapnet**. **Sångduellerna** avlöser varandra. På sina håll **exploderar** nästan varje buske i ett intensivt kvitter. (S7)

[For many birds **a well-oiled voice** becomes **the most important weapon**. One **song duel** gives way to another. In some places almost every bush **explodes** into an intensive cooing.]

In example 3 the writer makes an allusion to Lord’s prayer. The wording is old fashioned and poetic, and stands in an interesting contrast with the otherwise fact-based presentation, and perhaps the religious allusion emphasizes the importance of the topic. This again can be seen as an attempt to add news value to the text. In example 4, the singing of birds has inspired the writer into using a highly figurative language. In these examples, the aesthetic motives can be considered to weigh heavier than the commercial ones, even though both are present.

The use of metaphors is also characterized as a semantic trick, often used for propaganda purposes (Hvitfelt 1988: 117). However, in popular science, metaphoric language seems to be more motivated by the need to explain something new with something that is commonly known (Thurén 2000: 42). In the latter case the term *metaphor* even includes comparisons and analogies which both are often categorized as examples (cf. Koskela & Pilke 2001). The power of metaphors in organizing and explaining specialized knowledge has long been recognized, and metaphors are also a way of mediating specialized knowledge into everyday knowledge (cf. e.g. Stålhammar 1997: 10).

More interesting than the so-called dead metaphors that are often used automatically without deliberate reflection (examples 5 and 6), are the fresh metaphors created for the purposes of the text in question (examples 7 and 8) for rhetorical reasons.

**Example 5.** ...Hoylen pilkka **osui omaan nilkkaan** (F10)  
[Hoyle was **hoisted with his own petard**.]

**Example 6.** Då **grävde** Celeras och Hugos representanter **ned stridsyxan**. (S2)  
[That is when the representatives of Celera and Hugo **buried the hatchet**.]

In examples 5 and 6, the figures of speech are surely deliberate choices by the writer, and the motivation for using them is probably the need to write a lively text. More creativity is needed, however, when fresh metaphors are created, or quoted.

**Example 7.** Jos niitä käyttävien astronomien ajatukset **hoipertelevat** tuolla tavoin, voiko tuloksiin ollenkaan luottaa? (S3)  
[If the thoughts of the astronomers using them **stagger** that much can the results be reliable?]

**Example 8.** Nya rön om glutenintolerans kan förklara varför **inbördeskriget** startar. (S12)  
[New research results on the intolerance of gluteine can explain why the **civil war** starts.]

In example 7 the journalist describes how extreme heights affect human functions. Because telescopes are often located in high places, she infers that astronomers probably suffer from the lack of oxygen. This again can affect their thinking negatively; *make their thoughts stagger*, which makes the journalist doubt the reliability of the results of high ground observations. This line of thought has been illustrated by a relatively fresh metaphor of *staggering thoughts*. In example 8 the journalist describes how the human immune defense mechanism can attack the body by mistake and uses the expression *civil war* in a creative way. These metaphors illustrate the descriptive use of language by which the scientific knowledge is brought closer to everyday knowledge (cf. Laaksovirta 1986: 57). At the same time, they are commercially motivated in making the text more interesting for the reader.

## 2.2 Paragraph/ text level means

The expression level means of representing specialized knowledge described above usually concern the question **how** something is said, i.e. choice of words. This, of course, is an important question in science journalism where the conventions of journalism meet those of science. The other means of representing specialized knowledge found in my material concern, on the contrary, **what** is said, namely the selection of facts, which also poses an important question in the field of tensions between the two discourses involved. In this chapter I will briefly discuss three phenomena that can be characterized as means of representing specialized knowledge from the point of view of the selection of facts (i.e. phenomena on paragraph level or on textual level): telling a story, personalization, and very briefly examples (for a more comprehensive account on the use of examples see Koskela & Pilke 2001).

One of the most powerful means of representing specialized knowledge to a large public is to give it the form of a story. A story is cognitively easy to read, understand and remember. (Cf. e.g. Niederhauser 1999: 198.) A story also entails that only those facts that fit into the line of thought presented in the story can be taken into account, whereas other things that may be otherwise important for the research must be left out. The relevance of these facts in the research does not make them relevant for the story. This is certainly one point where the often discussed distortion of science by the media in scientists' view takes place.

In my material of 24 articles, only one article is as a whole based on a story. All the other articles in my material are structured as journalistic presentations where description and interview comments are intertwined. Therefore, it seems that building a whole article on a story is a strong tool within the journalistic context and that it fits better in the context of popular science magazines. The only story in my material is about an owl called *Amanda* who lives in a place called *Orimattila* and tries to reproduce with little success, and this gives a starting point for a more general discussion of natural selection.

Another powerful way of representing specialized knowledge is personalization. Whereas science is mainly interested in facts, in what has been done and found out, popular science takes an interest in the people behind the facts (cf. Fjæstad 1993). In my material there is only one article where researchers are not mentioned by name or interviewed. That article is a news story about an international experiment that is going to be carried out in Finland, and it is structured as any other news item in the newspaper. The following example again illustrates how scientific ideas can be personalized:

**Example 9.** Myten om humlan kan spåras tillbaka till en bok från 1934 av insektsforskaren **Antoine Magnan. Hans assistent, en ingenjör vid namn André Sainte-Lague**, hade beräknat den maximala kraften från ett par flygplansvingar lika små som humlans. Ekvationerna visade att humlans vingar är på tok för små. Men som alla vet flyger humlor alldeles utmärkt. Ganska snart insåg man att André Sainte-Lagues tabbe var att han jämförde humlans vingar med vingarna hos ett flygplan men då var det för sent. (S10)

[The myth of the bee can be traced back to a book from 1934 by **the insect researcher Antoine Magnan. His assistant, an engineer by the name André Sainte-Lague**, had calculated that the maximum force on a couple of airplane wings was as small as on a bee. The equations showed that bee's wings are far too small. However, as we all know, bees are perfectly capable of flying. Very soon it was realized that the mistake André Sainte-Lague had made was that he compared bee's wings with the wings of an airplane, but at that point it was too late. ]

The example discusses the myth that it is technically impossible for bees to fly. The myth is personalized into a research assistant making a mistake, which is a good example of personification. Additionally, it brings the human aspect, the possibility of a mistake, into the often so inhuman world of science concentrating on facts.

The idea that persons representing the elite have a high news value does not seem to apply fully to science journalism: the assistant in example 9 is an unknown person as are most of the persons mentioned in the material. They are not celebrities, but in most cases doctoral students or professional researchers who are given the possibility to express themselves.

A final means of representing specialized knowledge discussed here will be the use of examples. Most of the articles in my material (20 of 24) include some examples that can be longer lists of phenomena, short explanations or comparisons making the abstract concrete. The latter type of example is at the same time a form of concretization, as examples often are. In my material the favorite way of describing how big an area is seems to be comparing it with a football field (examples 10 and 11). The solution of what to compare with of course reflects the values of the culture we live in.

**Example 10.** Ionosfäärin kuumennin koostuu **kolmesta jalkapallokentän kokoisesta** antennipellosta. (F1)

[The heater of the ionosphere consists of **three fields of antennas of the size of three football fields.**]

**Example 11.** Caral, som täckte en markyta motsvarande **minst tre fotbollsplaner**...

[Caral that covered an area corresponding to **at least three football fields**...] (S8)

The examples above help the reader to put the phenomena discussed into the right perspective, even though it does not reveal the relative size compared with other similar phenomena, for example, if *Caral*, an ancient city in Peru, is bigger than other ancient cities. The following example also shows how a comparison can be used to bring the everyday world closer to the world of research.

**Example 12.** Sellaisten (=platinaromppu) ilmestyminen kauppoihin on tosin yhtä epätodennäköistä kuin **arkielämää kestävien sukka housujen**. (F7)

[That such (=platinum cd:s) should come into the stores is as unlikely as the appearance of a **panty hose that can endure everyday life.**]

In example 12 the, of course female, writer compares the possibility to buy platinum cd-roms in a department store with a panty hose that can endure the hazards of everyday life. In this almost banal way she succeeds in bringing the technical world of computers closer to the reader. At the same time, the unexpected curiosity taken up adds to the news value of the story.

The three means of representing specialized knowledge discussed in this chapter, telling a story, personalization, and the use of examples, illustrate the important fact that popularization is not only a linguistic question, but rather, a question of the choice of facts in order to meet the needs and interests of the audience. As ways of representing specialized knowledge these means are rather powerful and therefore, they are deliberate choices by the writers and not automatic results of journalistic conduct.

### 3. Conclusion

When scientific discourse meets journalistic discourse a new kind of discourse is created. However, this popular scientific discourse is not uniform. There is variation depending on the purpose of the presentation and on what aspects are emphasized. Differences can be detected on the linguistic level as well as on the content level.

In science journalism, the linguistic means of representing specialized knowledge often take the form of “local” strategies. This means that the specialized knowledge is mainly presented in a neutral journalistic language, good when invisible (as far as there is such a phenomenon as neutral language). Examples of such local, often semantic, means are the use of emotive and connotative language and the use of metaphors. These are used for aesthetic and commercial reasons in order to make science interesting, entertaining, and understandable.

On content level, more “global” means, i.e. selecting interesting facts and presenting them in an attractive way, are used. Telling a story and putting the person in the center of the story are examples of this. However, it seems that these means can sometimes be too strong for journalistic discourse where the journalistic conduct more or less dictates the relation between content and form. This puts the position of popular scientific discourse between scientific discourse and journalistic discourse into a new light and gives it a somewhat more independent role.

Popular science is often said to distort scientific information. This is probably the case even in science journalism, especially on the content level where the selection of facts is at issue (cf. Koskela & Puuronen 1995). Even though the facts delivered are correct, however colorfully expressed, they may not be the facts that scientists themselves consider to be the most important. An interesting subject for further study is therefore the selection of topics and fields of science in science journalism compared with popular science magazines. In this way a more comprehensive picture of how science is represented for the general public can be formed.

### Literature

- Eriksson G. & L. Svensson (1986). *Vetenskapen i underlandet*. Stockholm: Norstedts.
- Fjæstad, B. (1993). *Välkommen som medarbetare vid Forskning och Framsteg*. Broschüre.
- Fowler, R. (1991). *Language in the news. Discourse and Ideology in the Press*. London: Routledge.
- Galtung, J. & M. Ruge (1973). Structuring and selecting news. In: *The Manufacture of News: Social Problems, Deviance and the Mass Media*, 62-72. Eds. Cohen S. & J. Young. London: Constable.
- Hvitfelt, H. (1988). Om den journalistiska formens betydelse. In: *Forskning om journalistik*, 107–131. En antologi från NORDICOM-Sverige. Red. Ulla Carlsson
- Kauhanen, E. (1998). Ajatuksia tiedejournalismin tekemisestä. In: *Journalismia! Journalismia?*, 291–316. Eds. Kantola, A. & T. Mörä. Porvoo, Helsinki, Juva: Werner Söderström Osakeyhtiö.

- Koskela, M. & N. Pilke (2001). Exempel på exempel – en studie i populärvetenskapliga texter. I: *LSP and Theory of Translation*. 21<sup>st</sup> VAKKI Symposium. Publication N:o 28, 152–166. Vaasa.
- Koskela, M. & N. Puuronen (1995). Hur blev atomistiskt rena prov absolut rena ytor? – En jämförelse mellan vetenskapens och populärvetenskapens uttryckssätt. *LSP and Theory of Translation*. VAKKI Symposium XV. Publication N:o 20, 117-130. Vaasa.
- Laaksovirta, T. H. (1986). *Tieteellisen tiedon välittyminen yhteiskuntaan*. Tampere: Tampereen yliopisto. Acta Universitatis Tamperensis. Ser A vol 210.
- Nelkin, D. (1987). *Selling Science*. New York: Freeman.
- Niederhauser, J. (1999). *Wissenschaftssprache und populärwissenschaftliche Vermittlung*. Tübingen: Gunter Narr Verlag.
- Näslund, H. (1987). Fackjournalistik – en hybrid? In: *Facktext*, 125–144. Ed. Britt-Louise Gunnarsson. Malmö: Ord och stil. Liber.
- Okkonen, A. (1986). *Toimittajan työ I*. Neljäs tarkistettu painos. Hämeenlinna: Karisto Oy.
- Puuronen, N., M. Koskela, N. Nordman & Ch. Laurén (1993). Forskningsinformation – ett mångdimensionellt spektrum. I *LSP and Theory of Translation*. VAKKI Symposium XIII, 228–240. Vaasa.
- Shoemaker, P. J. & S.D. Reese (1996). *Mediating the Message. Theories of Influences on Mass Media Content*. White Plains, N. Y.: Longman.
- Stålhammar, M. (1997). *Metaforernas monster i fackspråk och allmänspråk*. Stockholm: Carlssons.
- Thurén, T. (2000). *Inte bara att förenkla*. Stockholm: Liber.
- Väliverronen, E. (1994). *Tiede ja ympäristöongelmat julkisuudessa*. Tampereen yliopiston tiedotusopin laitos A 83.

## APPENDIX 1.

The material of the study (F stands of Finnish, S for Swedish):

- F1. Mainio, Tapio: Revontulien tekijät kuumentavat hiukkasia. HS 17.2.2001.
- F2. Repo, Päivi: Suomen hangissa on kuutta lajia lunta. HS 24.2.2001.
- F3. Kivipelto, Arja: Vuorilla keuhkot haukkovat happea. HS 3.3.2001.
- F4. Kauhanen, Erkki A.: Suuri neutriinikoe Genius Suomeen. HS 17.3.2001.
- F5. Kauhanen, Erkki A.: Tässä tulevat marsilaiset. HS 7.4.2001.
- F6. Kauhanen, Erkki A.: Viirupöllö on hyvä sijoittaja. HS 28.2.2001.
- F7. Kivipelto, Arja: Digitieto ei säily lukukelpoisena kuten kirjat. HS 12.5.2001.
- F8. Järventaus, Kaarina: Talouden kitaan virtaa yhä enemmän ainetta. HS 26.5.2001.
- F9. Järventaus, Kaarina: Pilaantumisen ja pelastumisen tarinat tarpeen. HS 2.6.2001.
- F10. Paukku, Timo: Ihana kajo – MAP kartoittaa kaiken alkua. HS 30.6.2001.
- F11. Mannila, Johanna: Euroopan kylien ääni: kirkonkelloja ja autoja. HS 7.7.2001.
- F12. Lievonen, Tommi: Salametsästäjistä ja kotiäideistä tuli biodiversiteetin tutkijoita. HS 14.7.2001.
- S1. Bergström, Hans: Sex i sängen – barn i provrör. DN 10.2.2001
- S2. Bojs, Karin: Gener färre men mer mångsidiga. DN 12.2.2001
- S3. Fredholm, Lotta: Den utmätta tiden. DN 3.3.2001
- S4. Engström, Ulrika: Materia på gränsen till nervsammanbrott. DN 17.3.2001
- S5. Ganuza, Natalia: Håll ett öra på språket. DN 28.4.2001

- S6. Ulrika: Heta möten när galaxer krockar. DN 14.4.2001
- S7. Nilsson, Johan: Fågelungar drillas i sång. DN 12.5.2001
- S8. Lindgren, Eva: Högkultur i Peru för 4600 år sedan. DN 1.5.2001
- S9. Bojs, Karin: En dos kokain ändrar hjärnan. DN 2.6.2001
- S10. Nilsson, Johan: Humlans hemliga flykt. DN 16.6.2001
- S11. Bojs, Karin: "Lucys" förfader funnen. DN 11.7.2001
- S12. Fredholm, Lotta: Glutenrön förklarar diabetes 25.7.2001

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# **ABSTRACT**

## **Ways of Representing Specialized Knowledge in Finnish and Swedish Science Journalism**

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### **Keywords:**

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In science journalism the features of scientific discourse and journalistic discourse meet. From this meeting evolves yet another type of discourse, a popular scientific one. Popular scientific discourse on its part comprises different kinds of information on science that is directed to a non-professional readership. In the present paper ways of representing specialized knowledge in science journalism are discussed, and articles from two newspapers are analyzed with respect to expression level means of popularization (e.g. choice of words, the use of metaphors) and text level means of popularization (e.g. telling stories, the use of examples). The results of the analysis show that specialized knowledge is mainly presented in a neutral journalistic language, but emotive and connotative language as well as metaphors are used in order to make science interesting, entertaining, and understandable. Additionally, telling a story, personalization, and examples are used as ways of representing specialized knowledge, which shows that popularization is not only a linguistic question, but also, a question of the choice of facts in order to meet the needs and interests of the audience.

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