

How do trade media influence green building practice?

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The influence of the media is explored in terms of what images of 'green' building are mediated to practitioners by Swedish construction trade magazines. These textual images may influence practitioners' knowledge and values about green building as well as their motivation for complying with pro-environmental behaviour. A quantitative content analysis and a qualitative textual analysis of 1324 articles were undertaken. Findings show that 'green' building is often presented in general terms using abstract nomenclature characterized by indistinct and ambiguous terminology. The majority of trade magazine articles transmit information that lacks objectivity and critical reflection, thus reinforcing the idea that environmental challenges could be solved by technical solutions and/or controlling measures. Moreover, the protection of the natural environment is rarely referred to as a motive for pro-environmental behaviour. Consequently, since practitioners are not encouraged to problematize environmental aspects, they may end up accepting the simplified version presented to them by the trade press. A link is established between trade magazines' conveyed image of 'green' building and possible implications on practitioners' actual environmental behaviour.

Keywords: communication, diffusion, environmental behaviour, 'green' building, knowledge exchange, professional magazines, trade magazines, Sweden

Cet article traite de l'influence des médias en termes du choix par les magazines professionnels de la construction en Suède des images de bâtiments écologiques médiatisées à l'intention des spécialistes. Ces images textuelles peuvent avoir une influence sur la connaissance des spécialistes et sur les valeurs concernant les bâtiments écologiques ainsi que leurs motivations à se conformer aux comportements pro-environnementaux. Une analyse quantitative du contenu et une analyse qualitative du texte de 1324 articles ont été effectuées. Les résultats montrent que les bâtiments écologiques sont souvent présentés en termes généraux utilisant une nomenclature abstraite caractérisée par une terminologie indistincte et ambiguë. La majeure partie des articles publiés dans la presse professionnelle contiennent des informations qui manquent d'objectivité et de réflexion critique, ce qui renforce l'idée que les défis environnementaux pourraient être réglés par des solutions techniques et (ou) des mesures de contrôle. De plus, les auteurs invoquent rarement la protection de l'environnement naturel comme motivation de comportement pro-environnemental. En conséquence, les spécialistes n'étant pas encouragés à considérer comme problème les aspects environnementaux, ils peuvent finir par accepter la version simplifiée qui leur est présentée par la presse professionnelle. Un lien est établi entre l'image des bâtiments écologiques transmise par les magazines professionnels et les incidences possibles sur le comportement environnemental réel des spécialistes.

Mots clés: communication, diffusion, comportement environnemental, bâtiment écologique, échange de connaissances, magazines professionnels, Suède

Introduction

If you want ecology and environmental thinking to be accepted within the building sector be careful with your terminology. To a lot of people [these terms] work as a stop signal.

(from the trade magazine *Bygginindustrin* (The Building Industry); Bengtson, 1998, p. 10)

This quote illustrates the importance placed on the choice of language in influencing people's acceptance of the 'greening' of industry. Spoken and written words are transported through different media and by different mechanisms in society. As they travel, the ideas behind textual inscriptions are translated, changed and localized through many intermediaries in different 'time-space' (e.g. Joerges and Czarniawska, 1998). Together these words constitute a discourse (i.e. an institutionalized way of thinking), which helps form networks in which social, technological, and textual systems are linked in order to construct knowledge and social structure (Räsänen, 1999). Thus, textual inscriptions are powerful instruments in any struggle for discursive dominance.

One example of textual inscriptions is trade magazines, which convey representations of 'green building' to practitioners in the Swedish building sector. Studies have shown that these practitioners frequently use easily accessible environmental information channels such as trade magazines (Ericsson, 2002; Femenías, 2004). In a survey carried out of members of The Swedish Association of Environmental Management (2004), the mass media together with politicians were considered the most influential actors to move environmental work forward.

As illustrated by the statement of a chief executive officer of a large Swedish construction company (Öqvist, 1999), the trade magazines are in a position of selecting what agendas get media focus:

Although project X was never an environmental scandal, it was blown up to be one by the media.

Even if trade magazines do not necessarily prescribe *what* to think, they set the agenda of what issues to think *about*. Furthermore, research suggests that the mass media influence the establishment of subjective norms (Chan, 1998), i.e. environmental issues that receive mass media attention are likely to become normative for green building practice. Moreover, the influences of the mass media on people's attitudes increases when people are repeatedly exposed to messages advocating a particular view (Eagly and Kulesa, 1997).

Previous research within the area of mass media and the environment has focused on the subsequent

effects of media coverage of specific industrial environmental incidents or crises (Lee, 1986; Dyer *et al.*, 1991; Castenfors and Svedin, 2001; Anderson, 2002), e.g. the Exxon Valdez incident. Some studies have also focused on strategies for mass communicating specific environmental problems such as recycling (Chan, 1998) and greenhouse effects (Staats *et al.*, 1996). Others have had a longitudinal approach studying the fluctuation of media's focus and interest on environmental issues (Gooch, 1995; Djerf-Pierre, 1996; Thøgersen, 2003). However, mass media representation of the building sector and building practices, green building in particular, is a field of research that is not well accounted for.

The influential role of the mass media as a transmitter of environmental information suggests this is a worthy field of enquiry. A study with the main aim of exploring how newspapers and trade magazines present Sustainable Building (SB) was carried out a few years ago (Gluch and Femenías, 2002a). That study suggested that the media conveyed a biased image of SB favouring normative technical solutions to the environmental problems facing the building sector. The limitation of the study was that it focused on SB as applied to 'green' demonstration projects. Therefore, it failed to be representative of the building industry as a whole where SB is still not adopted (Baumann *et al.*, 2002). Gluch and Femenías, nevertheless, touch upon two interesting issues that warrant further examination: the role and characteristics of the transmitter of information, e.g. the trade magazines; and the influence that trade magazines have on readers' behaviour concerning green building. The present paper focuses on the second issue and has a twofold aim:

- to explore the images Swedish trade magazines mediate to practitioners concerning green building¹
- to examine the possible implications these images have on the practitioners' environmental behaviour and on future green building practices

Drawing on Ajzen and Fishbein's (1980) Theory of Reasoned Action (TRA) and a process theory of communication (as originated by Shannon and Weaver, 1949), the present paper examines the information mediated by the building trade magazines to practitioners within the building sector. The study has a complementary methodological approach, combining a quantitative content analysis and a qualitative textual analysis of 1324 articles presented in trade magazines between 1990 and 2003.

Theoretical framework

Multifaceted perspective on green building

The building sector is responsible for a large part of society's total environmental impact. The industry

uses approximately 40% of the energy and material resources and generates 40% of the total amount of waste (CIB, 1999). Building projects are also machine- and land-use-intensive operations. Moreover, the building sector causes diverse and extensive environmental impacts on land, water, air and human health. Environmental impact derives from all five stages in the building process: briefing, design, construction, operation and demolition (Figure 1). Consequently, decisions made in this sector extensively affect the environment and any move towards sustainable development would need to focus on the building sector.

To handle the environmental impact that derives from the building sector, numerous environmental management measures, with varying success, have been developed. From policy and control measures, such as governmental, financial, organizational, process-oriented and more or less advanced tools, to social issues and technical solutions (Figure 1).

Process of mediating information

Practitioners in the building sector mostly obtain written information concerning green building from easily accessible channels. Experiences from building projects are seldom documented in reports. Even if experiences are reported, they are seldom read by practitioners (Femenías, 2004). Therefore, trade magazines have an important role to play in mediating information about green building practices to practitioners.

In Shannon and Weaver’s (1949) process theory of communication (Figure 2), a message originates from an information source. This information source may, in the context of green building, be a practitioner with personal experiences from a building project or may be a project-specific document. The message is encoded by a transmitter, e.g. a journalist, and mediated through a channel, e.g. a building trade magazine, to a receiver, e.g. the reader of the magazine. The receiver in turn decodes the message based on

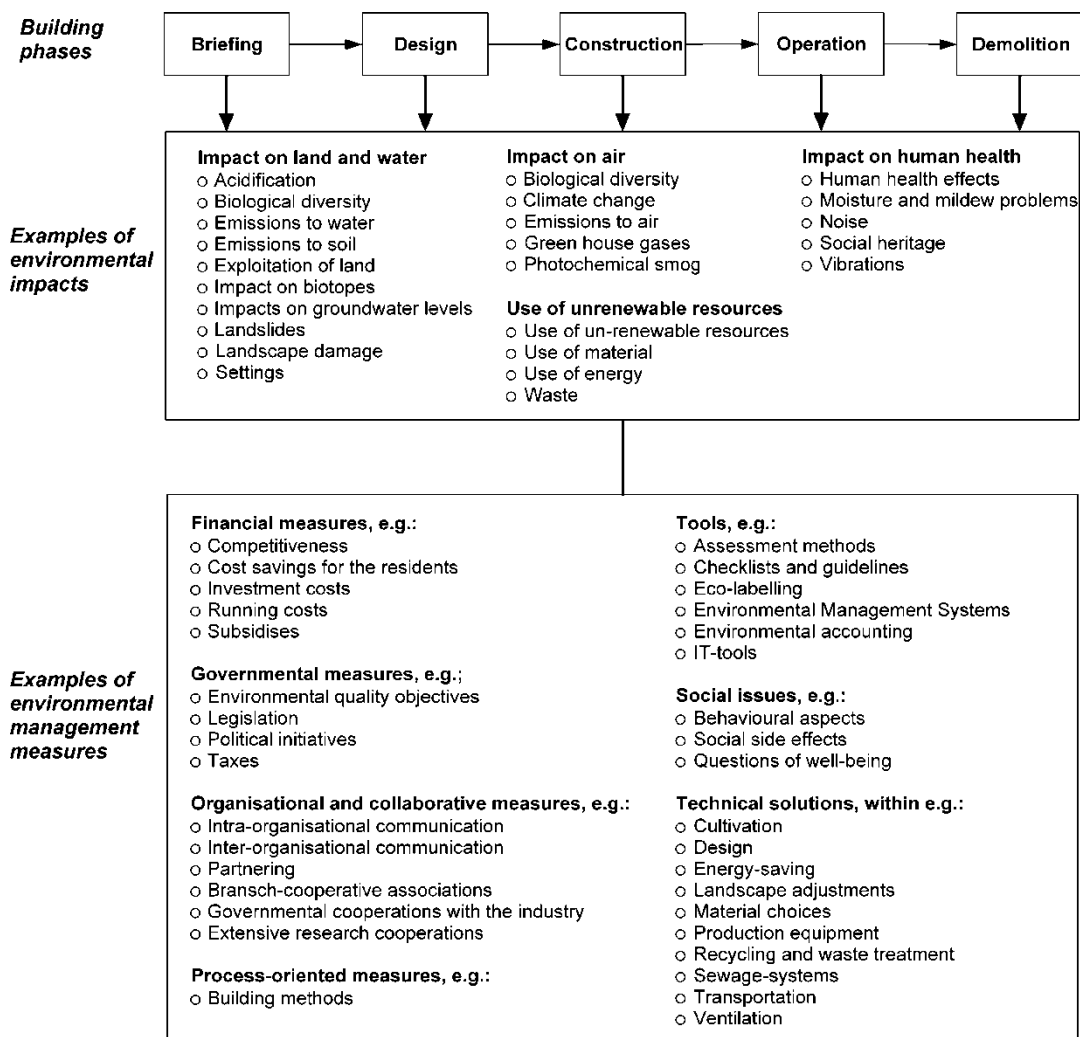


Figure 1 Identification of environmental impacts from the building sector and examples of environmental management measures

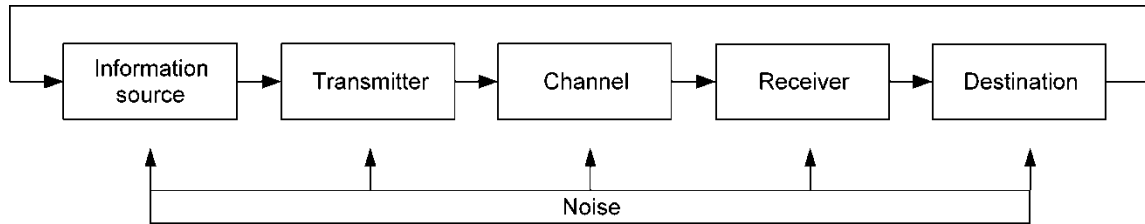


Figure 2 Process model of communication

knowledge and experience and interprets it in relation to his/her purposes. Throughout this communication process, the original message is continuously subjected to various noise that distorts the message before it reaches the receiver. The result is that the message that reaches the receiver may differ from the one sent by the information source.

Factors determining the practitioner's environmental behaviour

Ajzen and Fishbein's (1980) TRA is based on the assumption that people make systematic use of the information available to them. In the theory, the intention to behave in a certain way is the immediate antecedent of actually behaving in that way (Figure 3). Two main factors determine people's behavioural intention: their attitude toward the behaviour and subjective norms.

TRA has been tested and applied in a number of studies of *environmental behaviour* (for a review, see Kaiser *et al.*, 1999). It has also been applied to waste management behaviour in the construction industry (Teo and Loosemore, 2001) to investigate the attitudinal forces that shape behaviour at the operative level. The reviewed studies have shown that the relationships between intention and actual behaviour are also valid for environmental behaviour.

However, several studies show a weak or absent relationship between attitude and environmental

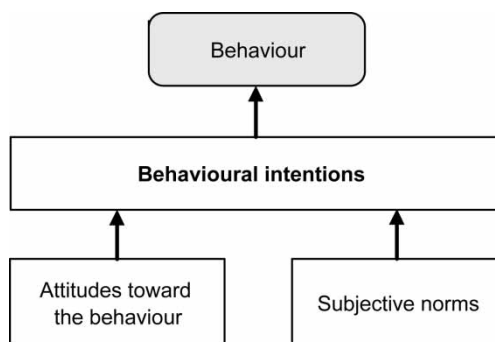


Figure 3 Theory of reasoned action (TRA): factors determining people's behaviour (Ajzen and Fishbein, 1980, p. 8)

behaviour. Kaiser *et al.* (1999), for example, tested TRA and found that the missing link was factual *knowledge*, i.e. knowledge of issues and behaviour strategies is a significant precondition for whether or not attitudes predict environmental behavioural intention (e.g. Stern, 1992; Fransson and Gärling, 1999; Kaiser *et al.*, 1999). In fact, Stern found that when people who are actively engaged in environmental issues were compared with less actively engaged people, the single factor that most clearly differentiated the groups was their respective knowledge about the specific problems and possible actions to take in order to deal with them.

Besides attitude, intention is according to TRA determined by a person's subjective norms (Figure 3). These have also been recognized for environmental behaviour (Kaiser *et al.*, 1999). A factor that is recognized as important for pro-environmental behaviour is the *motivation* to comply with subjective norms. In a study of recycling behaviour, Ebrero and Vining (2000) showed that the *motive* underlying environmental behavioural intention made a difference to the actual behaviour. Especially beneficial motives, such as the conservation of resources, community involvement and social concerns, are strong predictors for certain behaviours (Oskamp *et al.*, 1998).

Moreover, subjective norms for pro-environmental behaviour originate from social and moral *values* (Nilsson *et al.*, 2004). Values are related to the willingness to take pro-environmental action as well as to beliefs about environmental consequences (for a review, see Fransson and Gärling, 1999). Real-life decision-making is characterized by uncertainty at all stages of the decision-making process, from problem formulation to assessing the probabilities of possible outcomes (Gough and Ward, 1996). This applies especially to environmental decisions, since changes in ecological systems as well as in social systems need to be forecasted (Wade-Benzoni *et al.*, 1996; Wolff, 1998). This uncertainty nourishes ambiguity about which actions are most important when handling environmental problems (Wade-Benzoni *et al.*, 1996). To comply with this situation, practitioners most often rely on norms that are established within their community, e.g. environmental and technical communities (Sellerberg, 1994). The greater the extent to which technologies are uncertain or goals are ambiguous within a field,

the greater is the rate of isomorphic change, e.g. imitation (DiMaggio and Powell, 1983). Imitation nourishes the establishment of community norms. In the decision-making process, trade magazines serve as agents of socialization mediating how one relates to the environmental challenge, i.e. which societal norms and values that are current.

Furthermore, other factors that are not recognized in the line of TRA but that in the discipline of environmental psychology appear as factors underlying behaviour are, for example, mood (Gärling *et al.*, 1997), self-identity (Manetti *et al.*, 2004), effort (Schultz and Oskamp, 1996), behavioural experience (Ebrero and Vining, 2000), and perceived behavioural control (Ajzen, 1985). Although these factors are important for behavioural patterns, they are beyond the scope of the present analysis.

Aggregated framework

The image presented by trade magazines influences the way practitioners involved in the building process perceive the notion of green building. Figure 4 shows an aggregated framework where the process of communicating information is linked with the practitioner’s decision-making process, i.e. how information about green building is spread to practitioners in the building sector and how this information may influence their behaviour. Although the focus in the present study is on building trade magazines, the aggregated framework shows that practitioners use other information channels as well. Placed in the context of green building, the present analytical model combines TRA with the theory of communication (Shannon and Weaver, 1949; Mohan *et al.*, 1997).

The information mediated by trade magazines may be transformed into knowledge as well as provide motives for certain behaviour. Moreover, as a part of the building community, the building trade magazines not only provide an arena for the exchange of information and ideas, but also are influential in setting social norms and values among practitioners within this community. Therefore, these three factors underlying behaviour will serve as a point of departure for the present analysis and discussion. *Knowledge* refers to the perceived nature of the challenge how the environmental challenge is handled. *Motives* refer to the reasons for handling the challenge. *Values* refer to how the challenge is related to.

Methodology

Using a hermeneutic approach (Bertrand and Hughes, 2005), the present study explores the images Swedish building trade magazines mediate to their readers about green building. The study’s empirical material consists of trade magazine articles found in the database Byggtorget.² Byggtorget is a collective database including housing, construction, environmental and sanitary engineering, with over 250 000 records from more than 500 print periodicals. Abstracts (shorter news items are displayed as full-text), keywords and the title of each article as well as information about the year, author and publication are also given. Links to full-text documents are also often obtained. Byggtorget was searched for articles in building trade magazines from 1990 to 2003. The words build*, house*, construct(ion)*, infrastructure*, road*, tunnel* and bridge* were matched with environment*, ecolog(y)*,³ sustainab(le)* and green*. Only articles from trade magazines that explicitly describe their

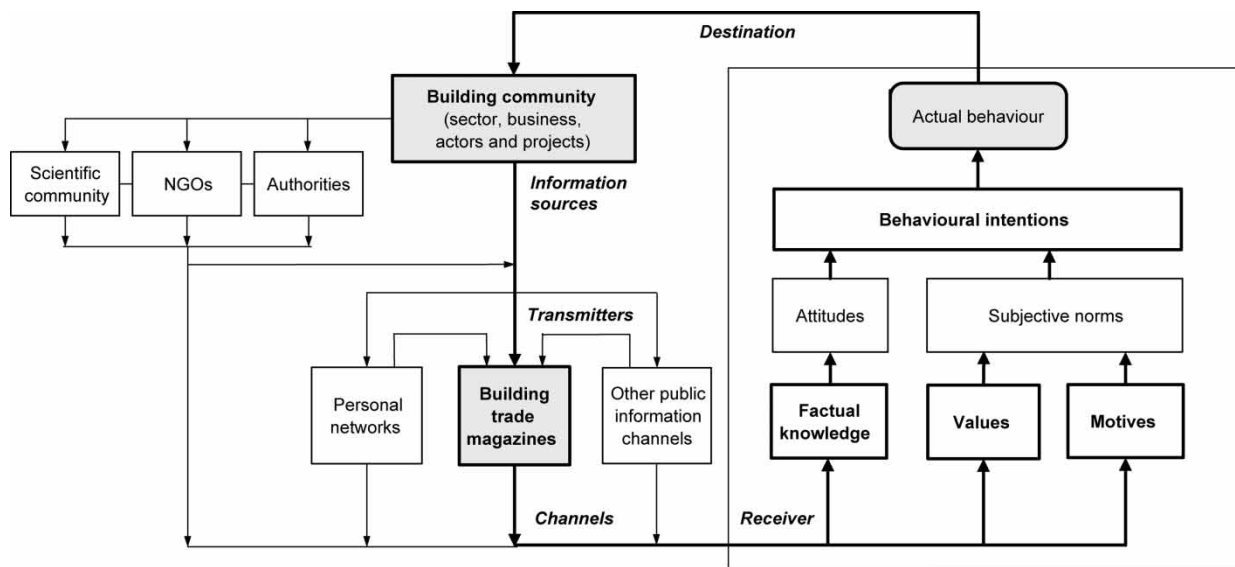


Figure 4 Trade magazines’ influence on the practitioners’ environmental behaviour and on future green building practices

target readers as *decision-makers* within the building sectors, e.g. developers, architects, consultants, clients, contractors and suppliers, were chosen. With the ambition of being as inclusive as possible, the search resulted in a corpus of 1324 articles. Collected data were stored in a new database and the articles were coded with respect to the framework of environmental impact and environmental management measures shown in Figure 1.

The ten most frequently mediated building projects during the study period represented more than 60% of the total number of articles (Gluch and Femenias, 2002b). Based on the criteria that they be completed, be client-driven and be multicriteria projects addressing several environmental aspects, 35 articles that predominantly concerned three building projects that attracted much attention in Swedish trade magazines composed a *core corpus*.⁴ To deepen the analysis, it was important to investigate the articles in their original format and understand why these 35 articles were collected and copied from the original publication. Table 1 shows background information about the three building projects: the Urban Eco-village, the Ecocycle House, and the Sunhouses were chosen as study objects.

A complementary methodological approach (Jensen, 2002) was used. A rather crude quantitative content analysis was combined with a qualitative textual analysis. Quantitative analysis was used to explore the frequency and recurrence of environmental themes (for a complete list of themes and sub-themes, see Table 2) in the comprehensive data. In the qualitative analysis, by iterative reading of the core

corpus's texts, different phenomena were discerned that are accounted for in the subsequent sections.

Coding the content in the corpus requires interpretation that involves a qualitative approach detecting recurring phenomena in the corpus. Once coded, a quantitative content analysis was carried out. It provides quantitative measures that show a general picture of which themes were debated in the trade magazines during the study period. It should also be emphasized that conducting content analysis involves interpretation at many stages: the selection of the cases to study, the selection of the analytic themes, the assignment of information between themes, and the interpretation of the meaning and significance of results. In this sense, the authors as researchers mediate environmental information between the information sources (i.e. the trade magazines) and the receivers (i.e. the readers of this article). In order to generate more profound information about the elements in the model of communication (Figure 2), i.e. message, information source, transmitter, channel, receiver and destination, a critical textual analysis was applied to the core corpus.

Drawing on the aggregated theoretical framework shown in Figure 4, the results from the analyses were interpreted with regard to *knowledge*, *motives* and *values*. Focus for the interpretation was the textual message and the receiver, which is considered here as an average practitioner that is called upon to make decisions that may affect future green building. Handling validity and the reliability of the study triangulation were used to code the data and in interpreting the results from the analyses.

Table 1 Features of the three cases (data collected from brochures and reports)

| | Urban eco-village Beautiful ecological building, well-being and solidarity | Ecocycle House Experimenting ecocycle principles for ordinary people | Sunhouses Participative environmental and social rearmament |
|---|---|--|---|
| Number of articles | Nine appearing 1995–2002 | 15 appearing 1995–2000 | 13 appearing 1998–2003 |
| Type of project | New development with 44 privately owned single- family row houses | Reconstruction of 18 rental apartments in a multifamily dwelling from the 1960s | Reconstruction of 255 rental apartments in a multifamily block from the 1970s |
| Formulated environmental ambitions | To use natural and decomposable materials and to work with an ecological expression where the interplay between nature, human and culture permeate the entire building process ^a | To combine necessary refurbishment measures with advanced measures to accomplish a resource effective and ecocycle adaptive living and real estate management ^b | To implement a comprehensive sustainable renovation concept, compromising energy conservation, utilization of solar energy and improved social conditions ^c |
| Built | 1993–95 | 1995–96 | 1999–2000 |
| Building proprietor | Cooperative building society | Municipal housing company | Municipal housing company |
| Initiator | Group of enthusiasts | Municipal housing company | Architect and the energy consultant/researcher |

Sources: ^aUndated brochure from the cooperative building society (HSB); ^bBotta *et al.* (1999); ^cundated brochure distributed by Solar Housing through Innovation for the Natural Environment (SHINE).

Table 2 Occurrence of themes/sub-themes in the corpus (number of articles)

| Policy and control measures | 678 | Technical solutions | 735 | Environmental impact | 298 | Environmental issues in general | 291 |
|--|------------|-------------------------------|------------|--|------------|--|------------|
| Tools | 253 | Material choices | 270 | Air emissions and hazardous substances | 148 | Environmental issues in general | 291 |
| Governmental measures | 237 | Recycling and waste treatment | 211 | Use of unrenovable recourses | 57 | | |
| Process-oriented measures | 138 | Energy-saving measures | 166 | Groundwater levels and water emissions | 55 | | |
| Financial issues | 111 | Indoor climate measures | 124 | Emissions to soil | 47 | | |
| Interorganizational and collaborative measures | 83 | Design measures | 98 | Moisture and mildew | 28 | | |
| Other managerial measures | 36 | Sewage systems cultivation | 83 | Noise | 11 | | |
| | | | 40 | Greenhouse gases and climate change | 9 | | |
| | | Landscape adjustments | 21 | Biological diversity | 6 | | |
| | | Transportation measures | 19 | | | | |
| | | Production equipment | 17 | | | | |

Information contributing to environmental knowledge

Information content

When readers of the trade magazines are repeatedly exposed to information advocating particular views, the media influences increase (Eagly and Kulesa, 1997). The overall picture given by the corpus is that green building to a large extent is a matter of Policy and control measures and Technical solutions (Table 2). This corresponds to the result from a study of how the building sector has responded to its environmental challenge (Baumann *et al.*, 2002).

As shown in Table 2, governmental measures as well as various tools constitute a large part of the theme *Policy and Control Measures*. Legislation initiatives, political issues and subsidies are examples of governmental measures that appear frequently in the theme. Mediated information about different kinds of tools is often related to material choices. Examples of frequently occurring tools are material databases, labelling, guidelines and environmental impact assessment tools. The building sector's extensive reliance on managerial tools as a solution to the industry's environmental challenge has been recognized in several other studies (e.g. Gluch, 2000; Baumann *et al.*, 2002; Stenberg and Räisänen, 2006). As shown in Table 2, a relatively high frequency of the articles in the corpus provide information about tools. This adds to the view that the use of tools is a favoured solution to the environmental problems facing the industry. Also, research reports mediated by the trade magazines focused to a high degree on the presentation of tools.

Although the theme Policy and Control Measures occurs frequently in the corpus, the information

content that mediates more tangible knowledge mostly considers technical solutions. *Technical Solutions* presented in the articles involve foremost material choices, recycling and waste treatment, and energy-saving measures. These sub-themes correspond with some of the issues that have been given top priority by the building sector (e.g. Swedish Environmental Advisory Council, 2000; The Ecocycle Council of the Building Sector, 2003; The Swedish Construction Federation, 2003). The core corpus shows that energy-saving measures received the most detailed coverage, while information about other technical solutions was not as well represented. Examples A and B in Example box 1 show how energy-saving measures were presented in two articles. Regarding material choices, the articles did indeed provide information about which materials that were considered as *environmentally friendly*. However, the articles lacked reflection about why a certain material is better than another from an environmental point of view (see Example C).

Environmental measures, such as Policy and control measures and Technical solutions, aim at managing specific environmental impacts that derive from the building sector. In accordance with several of the branch-overreaching priorities (e.g. Swedish Environmental Advisory Council, 2000; The Ecocycle Council of the Building Sector, 2003; The Swedish Construction Federation, 2003), emissions to air and hazardous substances are the most prominent sub-themes within the theme '*environmental impact*'. This focus on hazardous substances has also been noticed in other studies (e.g. Stenberg and Räisänen, 2004) and can be traced back to an environmental incident in 1997: the Hallands Ridge case. As a substance in a chemical grout injected in the tunnel walls,

acrylamide leaked out to nearby watercourses, killing fish and making cattle ill. This incident was heavily exposed in the media and had a large impact on measures to limit and/or prohibit the use of hazardous substances in the Swedish building sector.

The core corpus shows that the majority of the articles (two-thirds) provide information in such general terms that it does not contribute to an increase of the practitioners' knowledge about green building. This implies that only one-third of the articles provide information that can be used as exemplification and inspiration for future environmental decisions. Most of the time these articles present information on measures and solutions used or to be used in the building project, as illustrated in Example D.

Example box 1 Knowledge

Example A: A new facade will be set up 5 cm outside the old one, resulting in an air space between them. Solar panels will heat the air in a closed system. When the sun provides heat in the spring and summer periods, the use of district heating may be decreased. ... Water is heated in the solar panels, and subsequently stored in accumulator tanks in the basement. ... Presence detectors and low-energy lamps will be placed in the stairwells.

Example B: In one of the yards there is a three-storied house with its long side towards the south. In this house, an air heating system with double walls was installed. The solar heating, which is collected in air-solar-panels installed on the south facing, circles through the air space between the old wall and the additional insulation in the remaining facings. The joints in the concrete structure that previously were 'cold bridges' are now used to transport the solar heat inside the building. Heating, hot and cold water, and electricity are measured and debited individually for each apartment, and the tenants only pay for their own consumption.

Example C: On a bare hillock, Stockholm's first ecological housing area is being prepared with ecocycling, renewable energy, sound and natural materials.

Example D: The Ecocycle House has been designed for natural ventilation in combination with a temperature-controlled roof fan. The outdoor air is transported into the apartments through the air space inside the additional insulation via air intakes behind the radiators. Damp air is transported through the stairwells via ventilators above the doors. The indoor air is evacuated through separate channels in each apartment via ventilators.

Furthermore, a common feature of mediated information is the absence of criticism and reflection by the transmitter. There are a few articles with a critical message in the core corpus. For example, the Urban Eco-village is criticized for being too energy-intensive. However, the trade magazines did not comment on the fact that the principal aim of this building project was to use *renewable* energy sources *not* to minimize the use of energy. Thus, by neglecting the context in which the project was realized, the authors of the article based their criticism on incommensurable factors.

Media silences

Articles that relate to environmental impacts were very few. Besides the impact of hazardous substances, the core corpus lacks a problem definition concerning environmental impacts from the building sector. Moreover, justifications for the choice of environmental solutions were hardly ever provided to the reader. Scrutinizing the frequency of themes and sub-themes (Table 2) involved in the green building discourse reveals that there are additional issues that are scarce in the corpus. For example, albeit the media focus on tools, information about Environmental Management Systems (EMS) is lacking. From the mid-1990s onwards, EMS rapidly gained stable ground within the industry. In 2002, 77% of the companies in the Swedish building sector had or were in the process of implementing an EMS (Baumann *et al.*, 2003). Therefore, it was assumed that EMS, both for marketing purposes in the early and mid-1990s and concerning implementation and usability during the late 1990s and early 2000s, would have been mentioned frequently in the trade magazines. Instead, this issue appears in only 2% of the articles and then foremost as a news item informing that, for example, a company has been certified in accordance to ISO14001.

Another example of silence in the trade magazines' representation of green building concerns transportation issues. Although a prioritized issue by the Ecocycle Council of the Building Sector (2003) and the Swedish Construction Federation (2003), transportation receives little media interest (Table 2). Furthermore, landscape damage is an issue that ought to be of interest for the building sector due to its land-use-intensive operations. A questionnaire survey carried out by Baumann *et al.* (2003) showed that among 207 respondents, 56% regarded landscape issues as an irrelevant environmental issue. Thus, neither the industry nor the trade magazines seem to consider landscape damage as a prioritized issue. An explanation for this result may be that using and making irreversible marks in the landscape is a prerequisite for the actual existence of the building sector and thereby it is not considered as an environmental problem that needs to be solved. Or is it something

that the sector would like to draw attention away from by silencing it?

Information sources and transmitters

A majority of the articles in the core corpus did not mention documented sources at all or mentioned them in such an unspecified way that the reader cannot easily trace the original source. However, through the overall picture given in the core corpus it is possible to recognize, through examining the phrasing and use of vocabulary, that much of the information conveyed in the articles originate from a limited number of sources. This suggests that the journalists rely on a limited number of sources. There is thus a strong intertextual chain between the different articles in these magazines.

The most common transmitter of information in the core corpus is a journalist. The type of information source that appears most frequently is short interviews. These are most often with actors that are part of the *building community*. A large number of different actors figure in the articles in the core corpus; however, only a limited number are cited. Frequently, the same actors are relied on as sources of information about the building projects. These spokespersons usually are practitioners representing the client. In articles about the Sunhouses, for example, three promoters of the project, the chief executive officer of the housing company and the two initiators, together or solely figure as main spokespersons in ten of 13 articles. This entails that the mediated information in these articles is based on a few persons' views and is therefore also biased towards these persons' interests and opinions as to what environmental measures are important to consider in future building practice. A minority of articles are written by practitioners, most often architects. These often rest upon personal experience.

In the whole corpus 8% of the articles show that there has been some kind of research contribution behind the information provided. However, due to the vested interest of a small number of researchers the *scientific community* was over representative (37%) in the core corpus. *Authorities* as information source are absent in the core corpus and did not stand out in the corpus either.

Mediated motives

Economic motives

Economic motives related to green building mostly reflect costs from a business perspective, such as investment costs or competitiveness. In addition, lowered running costs and cost savings for the

residents of a certain building are brought up as an economic benefit. However, articles that highlight economic issues from a macro-level perspective, e.g. regarding national and global sustainable development, are few. Articles that emphasize different environmental costs are not found in the corpus. In the core corpus, most articles describe environmental management actions as a success, contributing to raising the status of both the housing companies as well as the housing areas. Another economic motive emphasized in the core corpus is the positive effects from a marketing point of view (see Examples E and F).

Social motives

In the core corpus, social aspects are recurrently described as persuasive arguments and motives for carrying out green building projects (see Examples G and H). Thus, in the articles green arguments are used not only to promote environmentally related initiatives, but also to promote other goals, e.g. physical and social refurbishment.

Example box 2 Motives

Example E: Everyone is impressed and the superlatives are piled upon each other in the descriptions of the project. Last year, the Ecocycle House received the public housing sector's environmental award. ... The project has helped raise the status of the whole area.

Example F: Taking part in this European Union project is good from a marketing point of view. It gives publicity and people want to live in the Sunhouses.

Example G: A dull concrete jungle ... will be transformed into an attractive living area where the inhabitants take responsibility for their living environment. The housing area will be a place where different people cooperate to create a long-term sound and safe living area.

Example H: From social misery to a unique ecological endeavour. For a long time ecological living has been a privilege for the upper-middle class in specific eco-villages. But in Norrköping, the housing company brings ecology into a low-status suburb.

Example I: The urine-separating toilets have been well accepted by the inhabitants. In particular, they like the wall-hung model that facilitates cleaning and the comfortable wooden seat.

Universal motives

Different measures responding to governmental pressure frequently occur as motive to comply with pro-environmental behaviour. Such a measure is the corporate environmental initiative to establish the Eco-cycle Council of the Building Sector (ECBC) in 1994, which was the Swedish building sector's response to the governmental 'threat' of legislating a producer responsibility for the sector. This initiative was later followed by several other cooperative initiatives at different levels of society and industry, e.g. the joint cooperation between industry and government, The Building/Living/Property dialogue. The way these two initiatives are described by the trade magazines may have functioned as a catalyst for corporate environmental work since it shed light on the importance of handling green issues.

The present study reveals that nature seems to be of secondary importance in the trade magazines' mediated information on green building. Protecting nature is not displayed as a motive to act in a pro-environmental way. Either the effects upon nature and environmental aspects are considered as well known and taken for granted, or environmental aspects of building are not yet fully identified and therefore ignored in the articles. For example, articles about material issues often focus on choosing *environmentally correct* materials, also labelled *eco-cycle adapted*, *environmentally friendly*, *reliably tested*, *natural* or *healthy* materials, implicitly understood as either material without hazardous substances or materials developed with environmentally adapted technique. However, the criteria for choosing materials are not well accounted for and the specific quality attributed to the materials remain vague. Nevertheless, other motives that do not easily explain the presented solutions, such as bad maintenance, poor thermal aspects, social problems, user-friendliness and aesthetics, are provided to the readers, as illustrated by Example I.

Mediated values

Values are determinants of pro-environmental behaviour; they are related to the willingness to take pro-environmental action as well as to beliefs about environmental consequences (for a review, see Fransson and Gärling, 1999). Thus, trade magazines serve not only as providers of knowledge and motives as to how and why one should act in a certain way, but also as agents of socialization, mediating how one should relate to the environmental challenge. That is, trade magazines may affect and possibly change societal norms and values. Besides this effect on its readers, the information mediated by the trade magazines also reveals and reinforces established norms and values within society.

Example box 3 Values

Example J: Beauty and recycling in the first urban eco-village.

Example K: The Ecocycle House serves as a model.

Example L: In the name of the environment one [building] was built a couple of years ago. It was equipped with enormous German roofs, a coarse facade, pompous balconies and all the technical machinery that ever can be desired. The reconstruction is eco-technically ambitious but in contempt of the house's original architecture.

Example M: It is not only a question of choosing the right building material; great emphasis is also put on [the buildings] giving a beautiful expression.

Example N: [Green building] projects are not as extreme as many people think. It is rather the opposite; the ordinariness dominates here as well. . . . The Ecocycle House does not demand a special 'ecological' tenant to live and feel at home. Neither does the Urban Eco-village, even if many people were or became engaged during the realization of the project.

Example O: Anyone who thought that ecology is necessarily bound to antique technology is wrong. At the Ecocycle House it is quite the reverse. Everything is hi-tech and super-computerized.

Tone

That the majority of the articles has a positive tone (illustrated by the headlines in Examples J and K) and convey an idyllic picture that foremost was criticized from an aesthetic point of view (see Example L) mediate values to the readers that green building is positive. However, in spite of this positive image of green building there seems to be an implicit wish to distance today's green building practice from that of the past. Several articles in the core corpus 'excuse' the green ideas in the building projects by, for example, emphasizing its ordinariness and that green building is neither particular nor peculiar. This presupposes an attitude among practitioners that green building is perceived as negative. This need to emphasize the common place of green building in turn implicitly strengthens the feeling that green building is in fact ugly, cumbersome, uneconomic and only for 'green' people. Examples M and N illustrate how the authors, by stressing the ordinariness and the beauty of the buildings, disassociate themselves from previous

green building discourses, e.g. the eco-village movement. To counteract this predefined conception, terms such as 'hi-tech', 'super-computerized' and 'ultra-modern technology' are deliberately used. As Example O shows, this move reveals that there seems to exist a reference point of green building as a low-tech area.

Linguistic nuances

Green building is presented in general terms using an abstract nomenclature characterized by indistinct and fuzzy words. Terms such as, 'environmental', 'green', 'ecological', 'eco', 'natural', 'environmentally friendly' and 'sustainable' are compounded with terms such as 'building', 'construction', 'living', 'adjustment', 'habits' and 'perspective' to form new words and concepts. This use of indeterminate qualifiers combined with determinate nouns suggests that the authors rely on already established pictures and apprehensions of green building. In common for the use of these compounds is that what they represent is very unclear and undefined in the articles. The compounds, e.g. SB, Ecological Building and Eco Village, appear to be stand-alone buzz terms in the articles assuming that the readers have a clear perception of their meaning.

To bring new concepts into use may be a symptom of a correspondence problem between parties (Czarniawska, 1999). The shift of vocabulary may not be rational in the sense that they serve a better purpose but that they may communicate the issue in a 'better' way, e.g. less value-laden. This phenomenon also appears in the present study, which indicates that some concepts become charged with unfashionable values, resulting in shift in the use of concepts over time. For example, Ecological Building was in the late 1990s replaced by SB as a media catchword. Although SB, in addition to ecological aspects, according to 'the textbook' also embraces social and economical aspects, these two concepts describe the same ideas in the trade magazines. The shift of vocabulary suggests that green building is trend sensitive.

Discussion

The intention in this paper has been to explore how green building practices are presented (encoded) in building trade magazines, and to analyse and discuss how the mediated information may influence practitioners' environmental behaviour (decisions). Although carried out within the Swedish context, the aim is to provide additional insights in how the media, as an agenda setter, affect practitioner views on green building. Thus, the understanding of the linkage between trade magazines' conveyed image of green building and possible implications on practitioners' actual environmental behaviour may be generalized beyond the focus of this particular study.

Results concerning knowledge, motives and values set in the context of trade magazines influence on the practitioners' environmental behaviour is summarized in Figure 5.

A starting point in this study was that the media play an important role in shaping the agenda of what issues to think about. However, when the trade magazines select what issues that get media focus, they simultaneously exclude others. This partial media silence may be due to a political interplay between the trade magazines and the members of the building community. Although Stenberg and Räisänen (2006) address how different agendas of the media and the building community interplay, little attention has been paid to this area of research. Generalizing from the corpus indicates however that stories arise in two ways. Many articles originate in an unexpected incident with a negative outcome, for example an environmental accident or mistake, which then receives mass-media interest and thus reaches the general public's attention. Another origin is through spokespersons who represent or promote, for example, a specific building project, a technical solution or a company. These practitioners, whose input to the trade magazines is illustrated by the feedback loop (Figure 5), have occasionally received almost campaign-like attention by trade magazines, where their views have become the common perception for green building practice.

By the choice of themes (Table 2), with a focus on environmental measures, trade magazines mainly mediate information that contributes to knowledge about environmental behaviour, i.e. how to act, while information contributing to an enhanced knowledge about the environment is missing. This entails that environmental motives supporting why it is important to consider environmental issues in building projects are undermined. Consequently, practitioners involved in building projects may not comprehend why environmental aspects are important to consider and thus are unable to identify relevant environmental problems and foresee the consequences of their decisions. The content in the majority of the articles also transmit rather unreflective, biased and less tangible information. Only because a hand-full of researchers has proactively mediated their research results in the trade magazines, the readers are provided with more substantial and constructive information of a few targeted issues, foremost technical solutions. That Swedish building trade magazines fail to provide their readers with a more balanced image of green building result in them nourishing and heightening an already common notion within the building sector that the industry's environmental challenge shall be solved with either technical solutions and/or controlling measures (normative tools and/or legislation). Since people approach new ideas in terms of what they

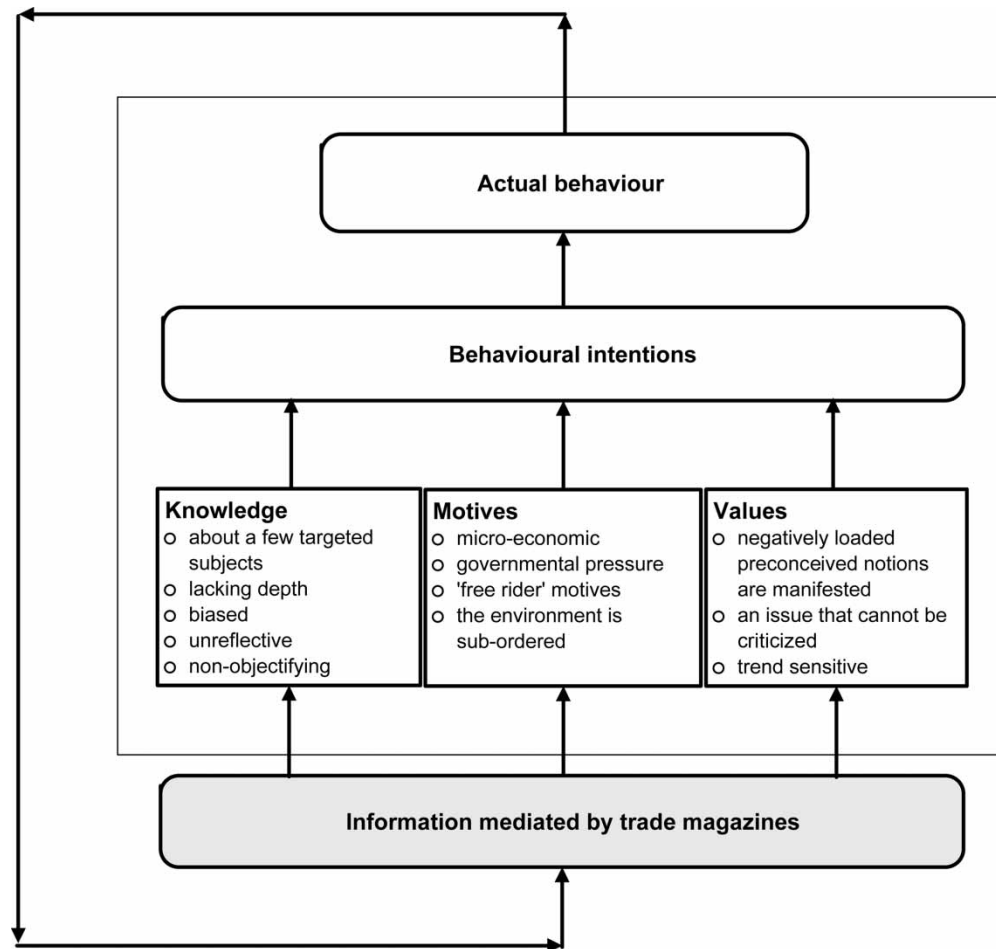


Figure 5 Results concerning the knowledge, motives and values set in the context of Swedish building trade magazines and practitioners' environmental behaviour

already know (Czarniawska and Joerges, 1996) this bias towards measures and the scarcity of problem definitions regarding environmental impacts may result in an increased emphasis on already known environmental measures. Consequently, benefits from other issues may be ignored, resulting in an unbalanced allocation of resources and means as well as a stagnation of the development of green building practices. Besides lack of environmental motives, other issues that are important for the development of green building practices are also neglected in the corpus, such as behavioural perspectives of green building practices, intra-organizational issues, and not least the meta-analytical question of how to communicate environmental information. The inclusion of these issues in trade magazines would contribute to a broader picture of green building practices.

The positive tone in the articles uncovers that the trade magazines have a rather opportunistic attitude towards green building. One would suppose that the positive tone in the articles would also mediate positively

loaded values. However, the rhetoric in the core corpus suggests rather the opposite. By presupposing that the readers have preconceived notions that green building is afflicted with negatively loaded values, this may be manifested and accepted as the truth. If often repeated, these perceptions may lay the ground for biased norms and values within the industry, which may impede pro-environmental behaviour. Moreover, recurring shifts of terminology reveal that green building is trend sensitive (perhaps even perceived by practitioners as a passing trend), characterized by conspicuous and 'selling' attributes, and thus not of importance other than to serve as 'reputation management'.

Conclusions

The focus has been on the trade magazines as *information channels*, on the *encoded message*, and on the *receiver* of information. Thus, the characteristics of the transmitter, i.e. the filter and also encoder of the message, are only marginally covered in the present

study. The core corpus provided a few examples where the transmitter of the message is also the information source. Nonetheless, the most common transmitters were journalists. Often, these journalists lack special training in environmental issues (Anderson, 2002). Therefore, as also noticed by Anderson, there is a risk that they either do not grasp the scientific information or they simplify the complexity of the information in a way that distorts the original message. This problem would easily be reduced if the journalists, in opposite to what this study indicates, were more reflective towards their original sources and more actively strove for multifaceted reporting.

When regarding the rather pessimistic results of the present study, it can, however, be questioned whether or not the trade magazines should serve as main media information carrier for practitioners. Either the industry must rely on additional less biased information channels or the trade magazines must improve their reports. Making practitioners aware of the relationship between the media's conveyed image of green building and their actual environmental behaviour, i.e. how they are influenced by the information they are exposed to, may contribute to them recognizing the importance of selecting variable channels for information. Since the receiver is generalized to an average decision-maker within the building sector as a whole, the present study fails to address individual variances between practitioners. In that sense it must of course be taken into account that practitioners, depending on their profession, use other information channels as well, e.g. public information channels and personal networks, and that trade magazines probably have varying degrees of influence. How decision-makers perceive the trade magazines' image of green building depends on factors such as accessibility, factuality and relevance of the information, but also their cognitive ability, psychological predisposition and experience (Bazerman, 1998; Jarlbro, 2001). More research is needed to understand *how* the receivers and decoders of the message perceive, filter and make use of the information.

For the senders of information, e.g. researchers, the present paper also emphasizes the importance of the way green building is mediated. In order to avoid misinterpretations, it is important that researchers are over-explicit when communicating research results. Researchers would also do well to reflect over their channels of communication, for example if more researchers published articles in trade magazines, it would raise the standard of the medium and more researchers would follow suit. Researchers (as well as other stakeholders) that have a desire to influence actors in the building sector, i.e. change their behaviour, need to acknowledge a number of things when they communicate their research. First, they need to communicate their messages in a way that provide the practitioners with tangible

information that can be transmitted into factual knowledge. Second, they have to provide the practitioners with motives for complying with pro-environmental behaviour. In doing so researchers need to translate their research of causes and effects into a language that is accessible to practitioners by using terminology and a vocabulary that nurture pro-environmental values instead of degrading them.

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Endnotes

¹The phrase 'green building' is used throughout to denote any building project that strives to reduce its environmental impact.

²See <http://www.byggtorget.se>

³The Swedish word for ecology is *ekologi*, which also covers, for example, ecological (*ekologisk*).

⁴A complete list of articles in the corpus can be provided from the authors.