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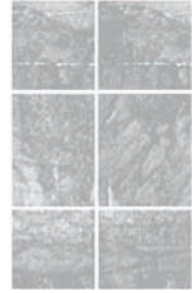
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# New methods for studying visual communication and multimodal integration



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## 1. INTRODUCTION

After the so-called ‘visual turn’ coined by W.J.T. Mitchell, visual aspects of communication have been acknowledged as being important and worthy of intense scrutiny. Researchers began to devote more scholarly attention to various kinds of ‘visuals’ (Barnhurst, 1994; Griffin, 1991), including multimodal messages combining various modes of representation (Griffin, 1992; Kress and Van Leeuwen, 1996). Attention has also been drawn to the role of visual design and text design (Bucher, 2007). However, given the dominant role that visuality and multimodality play in modern society, there is still a lack of empirical studies on how recipients interact with visuals and media messages.

The present special issue presents and discusses prominent methods and tools for multimodal analysis and reception. It comprises a set of six papers and a book review and brings together international researchers from Germany, Sweden, Denmark, United States and Singapore representing various disciplines: communication and media studies, social semiotics, cognitive science, educational psychology, health studies and visual communication. The methods include content analysis, social semiotic analysis, eye tracking measurements – in combination with think aloud protocols and retrospective interviews – as well as iconology and psychophysiological real time measurements. The respective approaches are exemplified through detailed analyses of a variety of materials, including press photography, art, multimodal health education materials, PowerPoint presentations, internet advertisements and TV media discussions.

According to Jewitt (2009: 14):

Multimodality describes approaches that understand communication and representation to be more than about language, and which attend to the full range of communicational forms people use – image, gesture, gaze, posture, and so on – and the relationships between them.

Indeed, contemporary media messages are characterized by a high degree of semiotic complexity and combine various modes that are orchestrated in various ways.

There are a number of issues and challenges that must be considered in visual communication and multimodal research. First, multimodality can be analyzed from both *production* and *reception* perspectives (Bucher, 2012, this issue; Holsanova, 1999). Production aspect concerns the interplay between various modes, their contribution to the content of the message and their orchestration in order to achieve a certain effect, often referred to as ‘intersemiosis’ (O’Halloran et al., 2012, this issue). Media producers form their messages according to how an imaginary or hypothetical recipient would perceive the material. The composition of multimodal documents and its potential for meaning-making have been discussed in the social semiotic tradition (Kress and Van Leeuwen, 1996; cf. also Holsanova et al., 2006), as well as in the rhetorical tradition (Bateman, 2008). But we still need to develop tools that would handle an advanced analysis of complex semiotic acts and contribute to further development of multimodal theory. The reception aspect is closely connected to recipients’ ability to select, attend to, and process information. It is the recipients who ultimately choose among the available information: what they want to explore, mentally process and interpret, in what order and how deeply. Reception studies, however, are very rare.

Second, *recipients play an active role* in the interaction with multimodal messages. Perception and interpretation of visuals can be seen as an interactive meeting between the recipient, the multimodal message and the situation context. That means that different people can perceive the same visual differently, and attribute very different meanings to it. It is therefore crucial to study how individual audience members interact with multimodal documents and create meaning. Perception of visuals is determined by both *bottom-up factors* (such as form, color, luminance, contrast, edge density and motion) and *top-down factors* (recipients’ personal characteristics, such as interests, attitudes, goals and motives, prior knowledge, experiences, individual preferences, emotions and cultural differences) (Boeriis and Holsanova, 2012, this issue). Thus, the way recipients perceive, understand and remember the content of the multimodal messages is guided partly by visually salient and partly by semantically relevant aspects. Yet the question of *inter-individual differences* has so far not been addressed by researchers in visual communication or in semiotics.

Third, recipients’ interaction with the visuals is *dynamic*. Studies of image perception (Holsanova, 2008) show that they are viewed and attended to stepwise. However, the dynamics of the perception and interpretation

of multimodal messages have not yet been widely investigated. In audience research, the focus usually lies more on media effects than on the process of reception. By using traditional methods such as recall tests, questionnaires or interviews, researchers try to reconstruct reception indirectly, based on quantitative data (Bucher, 2007). Direct methods and dynamic approaches are still very rare.

Fourth, previous research has shown that visual attention allocation is often influenced by pre-existing *knowledge* and *expertise* (Van Gog et al., 2005). Experts use different visual exploration strategies from novices. This has consequences for meaning-making and for the design of multimodal messages (Bateman, 2008; Chandler and Sweller, 1991; Holsanova and Nord, 2010; Mayer, 2005).

Fifth, seminal studies by Yarbus (1967) demonstrate that the *task* and viewers' *goals* have an influence on visual exploration behaviour. Since media messages are used in different ways and for different purposes, it would be interesting to study in more detail how the *task/goal* and *context* influence perception and interpretation of complex visuals.

Finally, there is a need for study of *affective (emotional) responses* to visuals. It is often stated that images have power but these statements have not been proved empirically. In order to investigate these issues and challenges in visual communication and multimodal research, it is necessary to apply novel methods and combine expertise from several disciplines.

One of the suitable methods for learning more about these issues is *eye-tracking* (Holmqvist et al., 2011). This methodology has primarily been used in reading but has become a very important tool in the study of visual communication. Eye tracking gives us insights into the *allocation of visual attention* in terms of which elements are attended to, for how long, in what order and how carefully. It provides data concerning perceptual and cognitive processes during recipients' interaction with complex materials (Holmqvist et al., 2003; Holsanova et al., 2006, 2009; Scheiter and Van Gog, 2009).

## **2. OVERVIEW OF THE CONTRIBUTIONS TO THE SPECIAL ISSUE**

All articles in this special issue focus on novel methods and tools contributing to studies of visual communication and multimodality.

**Boeriis and Holsanova** combine semiotic and cognitive approaches and present a new methodology for deriving the dynamics of visual segmentation in relation to the underlying cognitive processes. By means of eye tracking and verbal protocols, visual segmentation – as suggested by the social semiotic approach – is traced in the behaviour of individual viewers who perceive images and create meaning. The interdisciplinary approach developed in this article offers new perspectives on the ways images are segmented and interpreted by the recipients.

**Bucher and Niemann** study audience responses to PowerPoint presentations and focus on knowledge-related differences in processing multimodal messages. The authors approach the question of how meaning is constituted by different modes empirically, from a recipient's perspective. The authors use eye-tracking methodology, knowledge tests and interviews to explore the dynamics of attention allocation in relation to comprehension and integration of various modes.

**Müller, Kappas and Olk** use an interdisciplinary combination of three methods – iconology, eye tracking and psychophysiological reaction measurements – to analyze examples from press photography. They propose a Visual Communication Process Model integrating three processes: visual perception and attention, meaning attribution, and emotional reactions to mass-mediated visuals.

**Gidlöf, Holmberg and Sandberg** investigate potential, actual and perceived exposure to online advertising among Swedish 15-year-olds. The authors use a combination of preliminary survey, eye tracking and retrospective interviews to study how teenagers perceive online ads. The results are interesting both in terms of developing a theory of ad perception and for formulating practical guidelines on internet advertising for children.

**Morrow et al.** study comprehension processes associated with learning about health through multimodal materials. Their article focuses on the role of pre-existing knowledge for processing multimodal messages by older adults. A combination of eye-tracking methodology and comprehension tests is used to investigate the relation between knowledge and allocation of attention in the interaction with complex materials.

**O' Halloran et al.** present an interactive software tool providing a digital platform for multimodal analysis. Illustrated by an analysis of a TV interview, the authors demonstrate the potential of the tool in revealing the interaction of linguistic, visual and audio modalities. The software gives insights into the complexity of semiotic acts and the unfolding process of intersemiosis, and provides possibilities for further development of multimodal theory.

In a review of a book on *Multimodal Metaphor*, **Stoeckl** underlines the importance of merging the cognitive and multimodal paradigms. Cognitive linguistics uses multimodal texts to study the diverse manifestations of conceptual metaphors in pictures, sound and gestures to see how metaphors are constructed combining these modes. Multimodality theory looks at the crucial function of metaphors for linking various modes in multimodal discourse. One of the promising questions for future research is how the specificity of the mode constrains and facilitates metaphor construal.

### 3. CONCLUSIONS

The aim of the issue is to exchange current and novel methodological approaches in order to analyze visuality and multimodality by using a multidisciplinary

framework. The articles cover and integrate a wide range of theoretical and methodological approaches to visual communication and multimodality and use a triangulation of methods to study the following issues: dynamic aspects of image perception; the role of individual differences and expertise; the role of the goal/task and context for perception and interpretation of visuals, attentional and cognitive processing underlying interaction with visuals; the role of knowledge; the emotional impact of visuals; and the process of meaning-making (intersemiosis) and the relation between visual attention, meaning attribution and emotion. In future research, we argue for more scholarly attention to be devoted to individual perception and interpretation of visuals by using a multimodal, interdisciplinary framework and integrated methods. The present studies provide examples of such a multidisciplinary methodological approach.

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