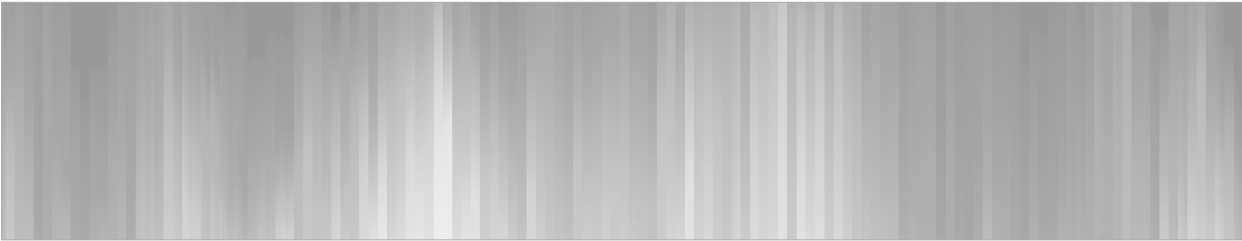


PART 4

Analytical Frameworks and Approaches





Quantitative Content Analysis of the Visual

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INTRODUCTION

In this chapter we describe visual content analysis of journalistic images. In order to answer more complex questions than commonly addressed with visual content analysis, we have developed a coding strategy addressing specific phases of Knieper's (2003) scheme for the process of image communication.

We will first provide a brief overview of quantitative content analysis, its strengths, issues and limitations. We then describe how Knieper's (2003) scheme of the process of image communication can help to focus visual content analysis appropriately. After this backdrop of the image communication process, we then develop strategies for systematic coding of images, demonstrating the use of these strategies on images sourced from the G8 summit in Heiligendamm, 6–8 June 2007.

OVERVIEW OF QUANTITATIVE CONTENT ANALYSIS

Quantitative content analysis is an empirical method for the systematic analysis of well-defined, audio, textual, visual and/or audio-visual media content (Krippendorf, 2004; Rössler, 2005; Früh, 2007). It is a non-reactive method, which requires deciding whether to analyze all available content or only a representative sample, defining the sample period, sample material, sample unit and unit of analysis, and compiling a code book. Recruiting and coaching coders is also important, as well as fixing interpretation rules and procedures, and evaluating possible costs for the entire project. Methodologically, quantitative content analysis must comply with the scientific criteria of objectivity, reliability and validity. Commonly, the quantitative analysis of media content is concerned with a large quantity of media messages

which are surveyed to produce generalizable predictions. Such research aims to show trends in the content of media messages rather than gain a profound understanding of a single (media) message (Rössler, 2005: 16). Quantitative content analysis of visual content presents particular challenges, which we discuss below.

By 'visual content' we refer to graphic images such as photographs, moving images, paintings, drawings and sculptures (Mitchell, 1987: 7–46; Knieper, 2003; Müller, 2003: 18–31). Even though immaterial mental images (for example, Knieper, 2003; Müller, 2003) and materialized pictures play an important role in the process of image communication, only the latter are appropriate for visual content analysis; their objectification, even in non-material, electronic form, provides a basis for a scientific observation. In this chapter, we focus especially on pictures in a journalistic context, touching only marginally on moving pictures and audio-visual media. Many insights from the content analysis of pictures are transferable to moving pictures and audio-visual media, but the analysis of moving-picture sequences adds several challenges outside the scope of this chapter.

Strengths

As long as the research hypotheses refer to manifest, unambiguous and clearly defined attributes, the content analysis of pictures is a relatively uncomplicated method.

[V]isual content analysis is a systematic, observational method used for testing hypotheses about the ways in which the media represent people, events, situations, and so on. It allows the quantification of samples of observable content classified into distinct categories (Bell, 2001: 14).

Visual content analysis can answer the questions of who or what is represented by the media and count the number of appearances of actors or themes using frequency analysis. By concentrating simply on certain aspects

of the (visual) media messages, this method can be used to reduce the complexity of media content. Common research questions relating to the priority/salience of media content, bias or historical changes in modes of representation can also be answered quantitatively (Bell, 2001: 14).

Quantitative content analysis is a highly standardized method which claims to provide 'objective' or intersubjective replicable and valid results. Another strength of this method is its ability to reduce the visual material to a small number of codes, which can be counted and analyzed mathematically/statistically. This method (in contrast to qualitative content analysis) can thus be used to deal with a large amount of visual data, which allows generalizable predictions to be deduced from the research material.

Issues in the research phases

In general, a quantitative content analysis consists of five phases. First, the main unit (basic population) needs to be defined. In this phase, the researcher also decides whether to take a sample unit or to examine the whole research material and selects the unit of analysis (full pages, articles, pictures, infographs and so forth). Secondly, the researcher compiles a code book, which contains the categories to be used to code the research material. This is followed by encoding in the third step and later the data analysis. Finally, the results are summarized and published. In the following section, we direct explicit attention to the issues of visual content analysis, which may occur in the first four phases.

Defining the main unit, sample unit and unit of analysis

The main question in this first phase is to ask what kind of visual material needs to be examined. What will the main unit of analysis be? The answer to this question depends

on the research question. Quantitative content analysis usually demands a definite research question with a clear focus (Früh, 2007: 78). The main unit could consist of all articles concerning a specific media event in the last decade, or refer to all pages of an online magazine published in the last 3 months. To overcome this issue it is necessary to explicitly define what is to be understood as 'visual content'.

Additionally, quantity does not always mean relevance. This is especially true for visual data. It might be the case that there is just one picture of an important event. Because of its uniqueness it could be more expressive or immersive than 1000 photographs of a regular happening that all look alike. The more precisely the researcher formulates the research interest, the more accurately the main unit can be identified and the more reliable the results will be.

It is then only possible to take a representative *sample unit* if all elements of the main unit have an equal chance of selection for analysis. Visual content makes the sampling difficult, for example, if there are different pictures of the same event. To determine the size of the sample unit depends on the variation in the visual content. 'If there is a whole range of extreme variations, the sample size must be large enough to contain examples of those extremes' (Rose, 2001: 59). Additionally, visual media content is usually integrated in a newspaper page or online homepage; photographs are also contextualized by headlines, text and captions. It is therefore necessary to archive the picture with the entire context that surrounds it.

Having determined the main unit and sample unit, the next question to answer is what the unit of analysis will be. Concerning visual context in general, it is possible to code photographs, illustrations, infographics, caricatures, etc. If one is also taking into account online content, pop-up windows, animations, audio-visual media, advertising spots and so on can also be examined. Regarding the identified research question, the researcher must now decide whether to

simply concentrate on photographs, or to also analyze other visual content.

Compiling a code book and defining categories

Categories should be relevant to the research question, which means they should be useful to deduce answers related to whatever the interest of the study might be. Is the code book suitable for operationalization? This question asks whether it is possible to transfer theoretical constructs into variables, which can later be counted and correlated. Categories of a quantitative content analysis must at least be exhaustive and discreet (exclusive) (Rössler, 2005: 93). 'Exhaustive' means 'every aspect of the images with which the research is concerned must be covered by a category' (Rose, 2001: 60). 'Exclusive' defines that categories should not overlap.

A quantitative content analysis usually starts with examination of formal categories such as picture size, picture position in the newspaper text, the amount of space allocated relative to the presented text and so on. Whether a photograph is presented at an exclusive angle to the paper side might also be relevant. This information might support conclusions regarding salience/priority of visual content. Furthermore, counting pictures of the same event in different media (newspapers, online journals, magazines and the like) provides data on the (absolute and relative) frequency of visual media content.

After determining these more 'objective' categories, the coding may then also include more 'subjective' categories concerning the content of the visual data. Analysis of the content of a photograph could start with questions about the people shown. Who is portrayed? How many people are presented? What is their position in the picture? Is there something specific to say about their gesture or mimic? Secondly, the representation of the place shown should be examined. Where was

the photograph taken? At what time and in which context was it taken? In addition, production factors can be coded such as light source, choice of camera, focal length and exposure time, contrast, image sharpness, etc. These categories are problematic, however, in that they are not always easy to identify by simply 'looking at' the visual material. We will show later in this chapter how this can be overcome by taking into account the complex process of image communication.

Encoding the research material and data analysis

Even though the coding of formal categories (for example, image size, position) is a relatively uncomplicated procedure, it is especially problematic to code categories concerning the content of photographs. This is the case because the recipient usually attributes meanings to a picture in fractions of seconds (see Todorov et al., 2005). It is therefore necessary to train coders in order to overcome their subjectivity and to gain inter-coder reliability. The research material needs to be presented randomly to several coders. Their coding can then be compared; if there is a high level of agreement between the results from different coders, the method is assumed to be reliable.

Another issue of content analysis of the visual is the handling of large sets of visual data. While there are several, more or less useful, software programs to code text material; there is still no well-proven, reliable method to code photographs or other visual content.

In the fourth step of content analysis the coded data is analyzed. Pictures are polysemic and therefore can have several meanings depending on the context in which they are presented. This ambiguity makes it difficult to validate the results of an analysis of visual content. To overcome this issue, data interpretation must be explicitly fixed before analysis of the visual material starts.

PRACTICAL APPLICATION – QUANTITATIVE ANALYSIS OF VISUAL JOURNALISTIC CONTENT

Having introduced the main steps of quantitative content analysis, we will now give example strategies for the coding of images sourced from the G8 summit in Heiligendamm, June 6–8 2007. The research process starts with a theory-driven study of the research subject. It is necessary to name a research hypothesis (which claims a correlation between at least two variables) or at least a specific research question. For our example, possible research questions include: Which photographs of the G8 summit were shown by the German media? What topics were visually reported on? Did the media prefer to refer to the summit of international politicians itself, or to concentrate on protests by Greenpeace or other interest groups, and so forth. Did reporting change between the first and last report on the event? The main unit for such a study would include all media content (print, television, radio and online content) published and distributed in Germany. As all newspapers have an online presence, it would also be useful to integrate the (visual) content of online pages. Because handling such an enormous amount of material is not practical, one might reduce it by concentrating on a specific medium (for example, the Internet), and compare only two magazines, or take into account just one specific online newspaper (for example, *Die Welt*).

The G8 summit took place 6–8 July 2007. However, it is likely that an online newspaper would report on the summit during a period longer than these 3 days alone, so that it would be rational to analyze the reporting several weeks before and after the actual event. In this way, one could demonstrate a possible change in the topics presented. To concentrate on the 'visual reporting' of the G8 summit in the online version of the German newspaper *Die Welt*, for example, our main unit could be every online edition

of this newspaper published from the 15 June 2007 to the 29 July 2007, excluding audio-visual content and hyperlinks which possibly lead to other pages and other photographs.

It may be difficult with visual content (as it can sometimes be with textual content too) for researchers to collect all of the relevant pictures. For example, depending on how well funded the research is, it might be too expensive to buy the rights for certain photographs or to pay the costs for online archives.

Having compiled the main unit, the next step is to decide whether or not to take a sample unit. If the number of photographs contained in the main unit is manageable, then sampling is not necessary. Otherwise, one can, for instance, randomize the pictures, by selecting a significant number of images to analyze in lottery style (Rose, 2001: 57). Our example research question asks whether there was a development in the 'visual reporting' (such as, for example, the media centering on the protesters early on, the politicians and their decisions during the summit, and the costs of the summit after the event), which requires a stratified sample. This requires dividing the material into data sets for the weeks before, during and after the summit, and then taking a systematic sample (for example, every third or fifth of the numbered photographs). Each photograph retrieved for the sample is then a unit of analysis.

Figures 14.1–14.6 show some of the pictures of the G8 summit that were presented online by *Die Welt* (2007). Figures 14.1–14.3 show the attendant politicians in several situations. Figures 14.4–14.6 present the demonstrators who protested against the summit.

A code book for our research needs to contain categories that are able to answer the research question. Operationalization means transferring specific aspects of the research question into concrete instructions for the coder. We are searching for a change in the reporting on the G8 summit. Our code book therefore needs to include categories related to this question. For our example, we will

need formal ('objective') categories such as the 'publishing facts', with variables like *publishing date* of the photograph (before, during and after the summit), *picture size* (small, medium, large) and *position on the page* (top, centre or end of the page) and so forth. When searching for change in reporting and the topics represented visually, it is also necessary to name (subjective) categories related to the content of the photographs. An example category is 'people in the picture'. The following variables might belong to this category: *gender*, with the value 'male', 'female' and 'unknown'; *profession/function* (politician, police officer, other officials, protester, other civilians, unknown); *clothes*, *gesture*, *mimic*; and so on. Every coder is also a recipient, with their own socially constructed perspective, so that researchers need to be aware of this variation in perspective during coding. To avoid individuals impacting the results and to guarantee inter-subjective replicability or inter-coder reliability, coders require explicit instructions for coding parameters in a 'media picture'.

Later, when the data are being analyzed, variables such as *publishing date* and *profession/function* can be considered in relation to each other. A possible result might be that more pictures of protesters and police officers were reported before, than during, the summit, and that during the summit most pictures showed politicians.

Overcoming limitations of quantitative content analysis

Quantitative visual content analysis is, however, problematic when predictions about relevance or meanings of visual representation need to be made, because pictures are ambiguous and polysemic; their potential impact on the recipient is hardly predictable.

Coding photographs by simply looking at the picture and counting what is shown is almost impossible. To understand the meaning of visual content, and therefore be able to code and count it, it is essential to compile



Figure 14.1–14.3 Pictures of the attendant politicians at the G8 summit at Heiligendamm, 7 June 2007 presented by *Die Welt* (2007). Reproduced with permission: © 2007 ddp images GmbH



Figures 14.4–14.6 Pictures of the demonstrators at the G8 summit at Heiligendamm, 7 June 2007 presented by *Die Welt* (2007). Reproduced with permission: © 2007 Agence France Press GmbH

contextual information from the photograph. Analysis of visual content is almost impossible without taking into account the context in which the visual was produced and finally received. We therefore suggest in this chapter that visual content analysis should additionally integrate the complex and multilevel process of image communication.

THE PROCESS OF IMAGE COMMUNICATION

The process of image communication is characterized by a high degree of influence by the involved agents, who may be advisors/consultants, the depicted actors, the originator of the picture, media production companies and/or the recipient. In visual content analysis, all the agent groups need to be considered because each selects, interprets, reduces and constructs media content within a particular context; by doing so they decisively affect the meaning and impact of pictures, which ultimately form the basis for the sample unit to be examined by the researcher. In addition, individual characteristics of the agents subconsciously affect the production and reception process of pictures. These include individual experiences, different socialization processes, opinions, cultural background and so on. This concept of acting agents, with individual impact as well as social structures and contexts playing an important role, leans towards the 'Theory of Structuration' (Giddens, 1988).

Giddens (1988) argued that structure can be conceptualized as rules and resources that actors mobilize in interactions that extend across space and over time. By using these rules and resources, actors sustain or reproduce structures in space and time. Rules are generalizable procedures that actors understand and use in various circumstances. Giddens posits that a rule is a method or technique, which actors know about, often only subconsciously, and which provides a relevant formula for action. From a sociological

perspective, the most important rules are those that agents use in the reproduction of social relations over significant lengths of time and across space (Turner, 1998: 492).

The unconscious and informal rules that determine human behavior in interaction with others require special consideration for the content analysis of pictures. The close relation between acting agents and social structures representing contexts in which they act is also significant for the process of image communication.

Figure 14.7 shows the process of image communication with the various contexts, picture stages and actors. In general, only contextualized, media-published pictures are available for content analysis. The process of image communication is therefore researched backwards or forwards from the concrete 'media picture' (see Figure 14.7), depending on whether the research hypothesis requires predictions about the communicator or recipient. Beginning with the concrete 'media picture' allows conclusions to be drawn about the 'concept picture' or the 'transfer picture'. Particular processes of selection, interpretation, reduction and construction in the encoding process may be revealed. In this way the intentions of agents and agencies (advisors, spin doctors, originators and the like) to produce a particular impact on the recipient through their editing of the 'media picture' become more obvious. It is also possible – although much more difficult – to project future effects on the recipient based on the 'media picture'.

Trying to predict or describe 'pictures in mind' or 'cognition pictures' of recipients can only be successful, however, if content analysis results are strengthened with insights from other disciplines, such as media impact studies, cognitive psychology, sociology, etc. Nonetheless, regardless of whether the process of image communication is focused backwards or forwards (concentrating on the communicator or the recipient, respectively), content analysis is usually an appropriate basis and useful start for answering several research questions. The kind of question to

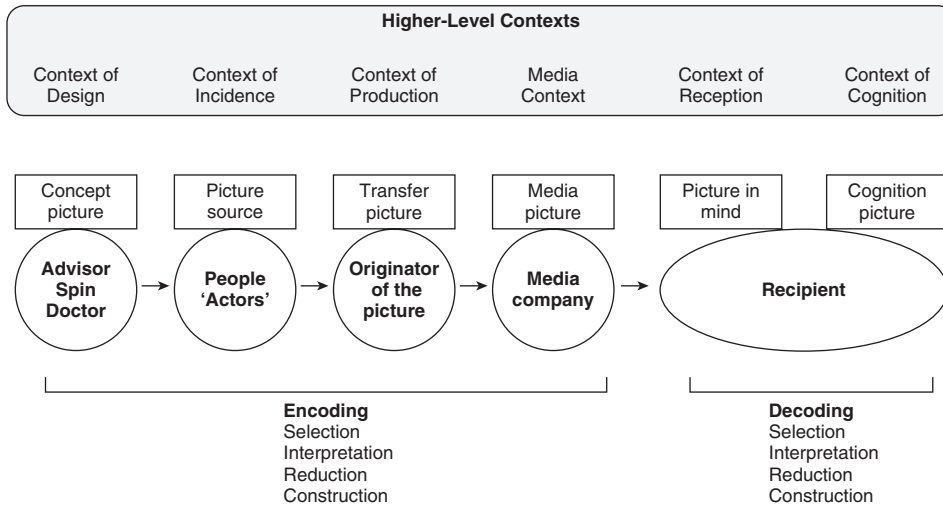


Figure 14.7 The process of image communication: © 2010 Bock, Isermann and Knieper

be answered determines which of the named contexts in Figure 14.7 should be examined, and which contexts might provide further insights. The scheme of the image communication process (Knieper, 2003, 2006) thus helps to concretely locate where answers need to be derived for different research questions.

The 'concept picture' (see Figure 14.7) originates if, for example, a public policy organization is staging a certain event (Knieper, 2006: 29–39; Forster and Knieper, 2008: 434–441). This staging of so-called pseudo events (Boorstin, 1961; Kepplinger, 1996: 13) may continue to the extent that an event is exclusively organized for media representatives and, without their appearance, would not take place or would be reduced to absurdity. Such an agency might comprise public relation consultants, election campaign leaders or consulting agencies, who mostly intend to influence the recipient in some way, or produce a certain reaction. Content analysis in the '*context of design*' conveys findings with limitations. A close examination and evaluation of the degree of staging in pictures demands much time to gather data about who is part of the brain trust that staged the media event, and what

the intentions were for doing so. The research effort and complexity of information to be studied invite qualitative methods such as iconology (Panofsky, 1984) or iconological context analysis (Knieper, 2003; Forster and Knieper, 2008). However, basic assumptions about potential impacts of pictures and their construction can also be determined from quantitative content analysis in the '*context of design*'.

In the '*context of incidence*' (see Figure 14.7), the actual visible agents appear (for example, politicians) as the people who are later shown in the 'media picture'. This second level of the process of image communication concerns the actual event that is transferred into the image content by the 'originator of the picture'. For content analysis to simply compile data about how often a person is depicted is easily operationalizable. However, research questions requiring a closer, more intensive study of the representation of a person and possible appeal of the picture are more demanding. This is especially the case because the influence of visible elements such as positioning, shown body details, size of the face, face or hair attributes, facial displays, direction of view, head posture, physique, clothes, body poise,

gestures, moves and dynamics, acting, touch and interaction with people and things, etc., are as yet insufficiently researched (Kinnebrock and Knieper, 2008).

Recipients allocate meanings from pictures in fractions of a second (Todorov et al., 2005) and – at least for representation of people – in a relatively stable way across cultures (Curran et al., 2001). The recipient spontaneously attributes several characteristics, including competence, attractiveness, health, youthfulness or assertiveness, to the person depicted in the picture. Cunningham (1986), for instance, demonstrated that recipients suppose attractive persons to be more intelligent and self-confident significantly more often than less attractive persons. These phenomena can be explained by the model of visual stereotyping. For this reason, the perception of stimuli in democratic election campaigns, for instance, may influence attribution processes of recipients, making them prefer a certain political agent. This process of attribution by the recipient as a result of spontaneous visual perception happens involuntarily, and is influenced by personal experiences, learned previous knowledge and the individual's construction of reality. What is still missing, however, is a systematic cataloguing of attribution processes on the basis of pictures and their elements. The fact that recipient interpretations of single elements in a picture can change reciprocally with specific combinations of picture details, strengthening or weakening attributions, adds further complexity to the problem. Petersen (2001, 2003), therefore, demands a systematic and long-term research program for iteratively exploring the meaning of pictures or picture details.

In the '*context of production*' (see Figure 14.7) and within image restrictions, the photographer, camera person, designer or painter transfers an actual event into the 'transfer picture' (Knieper, 2003: 193–212). This is the first of three important acts of selection within the process. In this case, the selection is made by the 'originator of the picture' as the communicator. Subsequent selections are made by the 'media

company' – also a communicator – and by the viewer of the picture, the recipient. During the '*context of production*', the photographer only maps part of the whole scenery, which was presented during the (pseudo) media event and also decides which parts not to photograph. By doing so, he or she makes a first preselection of media content, which the recipient sees later. Again, at this point in the process, individual characteristics, abilities and skills of the originator of the picture influence the picture production together with the '*context of production*'. The producer of the picture makes many different decisions within the '*context of production*' (Müller, 2003: 47–48; Knieper, 2005a: 56–70, 2005b: 85–86). These decisions include the choice of camera (digital or analogue), focal length and exposure time (depth of focus, dynamic), perspective (worm's eye view, normal, bird's eye view), light source (flash or available light), field sizes (detail, long shot, medium shot, etc.), format (height, horizontal format), picture composition (golden ratio, etc.) and also technical parameters (monochrome or color, ISO-norm, resolution, etc.). These parameters have a broad influence on the picture and its impact on the recipient. By giving precise instructions for content analysis coding, such parameters can be operationalized relatively easily. Again, combinations of parameters may change the meaning of a picture, so that it is not only important to record the parameters precisely but also to formulate explicit interpretation rules for combinations of parameters.

The contextualizing and editing of the 'transfer picture' by the media company in the '*media context*' (see Figure 14.7) leads to the final 'media picture', which is distributed as a print, television, film or online product. Depending on the medium in which the 'media picture' is published, it may appear with audio or textual elements. The context in which the media picture is finally represented also influences how the recipient perceives a picture, so that for content analysis, questions of weighting need to be decided on. Do recipients decode pictures and

audio-visual media content together? Do context-integrated pictures have the same meaning as stand-alone pictures? Is it reasonable to assume in general the equal impact of pictures, moving pictures, caricatures, etc.? Whether, for instance, a picture is more meaningful than the associated headline of an article has still not been answered definitively. Reception and media impact studies present arguments about the unequal influence of different media, even though reciprocity or correlation between different types of media and the recipient's patterns of reception has not yet been adequately researched or understood. The Poynter Institute for Media Studies has conducted several eye-tracking studies to answer such questions. While previous studies suggested that recipients pay more attention to textual elements, the Poynter research shows that the mental weighting processes of media content is much more complex (Poynter Institute, 2000). Pictures or headlines can be eye-catchers depending on the layout of newspaper or online pages. Alternative design elements such as information graphics, charts, etc., similarly aim to attract attention to specific content (Bucher and Schumacher, 2007; Poynter Institute, 2007).

The perception or decoding by the viewer is the last step of the process of image communication. In these contexts, the '*context of reception*' and '*context of cognition*' (see Figure 14.7), the recipient decodes the media picture, which becomes a 'picture in mind' and later a 'cognition picture' (see Figure 14.7). This decoding and interpretation process is highly complex and again influenced by individual characteristics of the recipient, such as individual experiences and schemata, cultural or social symbols and the entire reception context as well as framing effects. On the basis of several sign stimuli, the recipient activates cognitive schemata for systematizing and interpreting visual information (for example, Fiske and Taylor, 1991). A skin-head, combat boots or specific symbols in a picture of a demonstration might, for example, be the sign stimulus for a recipient to

classify the picture as radical right wing. The received media picture becomes an immaterial mental image or 'picture in mind' and through physiological and cognitive processes a 'cognition picture' in the head of the recipient. 'Cognition picture' in this context should be understood as an illusion of a mental image that originates from neuronal activities in the head of a thinking individual. In general, this 'cognition picture' does not correspond to the immaterial 'concept picture' planned by the picture producer, because the complex, interconnected process of image communication – which is characterized and influenced by several social structures and contexts as well as the involved individuals – evokes a range of encoding–decoding differences that impede (for example, through existing connotations) a distinct allocation of meaning. Moreover, the saved 'cognition picture' is modified by other visual impressions in the brain of the recipient between the actual event and reception of the 'media picture'.

QUANTITATIVE CONTENT ANALYSIS OF THE VISUAL AND THE PROCESS OF IMAGE COMMUNICATION

We will now explain how the process of image communication can be used as a basis for practical implementation of quantitative analysis of visual content, and how it may help to overcome some of the issues and limitations of quantitative content analysis. Using Knieper's (2003) scheme of the image communication process described above, we give here example strategies for the systematic coding of images, demonstrating their use on images sourced from the G8 summit.

Context of design

Content analysis may aim, for example, to determine how authentically (realistically) a media event was represented in the media, or how intensively the visual representation in

the ‘media picture’ was manipulated. The first question might be whether a preceding planning authority was responsible for the media event. Genuine, mediated and staged events need to be distinguished (Kepplinger, 1996: 13) and this is mostly possible without extensive research by simply studying the available ‘media picture’. For example, probable hints for the staging of events are the presence of media representatives, a speaker’s desk, podium or stage and the appearance of prominent persons or politicians, etc. From these aspects, corresponding categories for the content analysis can be derived, as shown and explained in the following example. Figure 14.8 was taken at the G8 summit in Heiligendamm in 2007 and shows the heads of government of the eight largest national economies of the world. The apparent spontaneity mediated by the picture easily hides the fact that the event was planned and the scene arranged well in advance.

One category might be ‘staging’. A question for the coder would be whether there is a speaker’s desk, a tribune or a similar platform in the picture (variable a: speaker’s desk/tribune/platform; with values: yes, no, unknown). A second question might be whether the shown actors are staged in a specific way (variable b: actors; with values: staged, not

staged, other). The third question might then be whether there are media representatives/journalists represented in the photograph (variable c: media representatives/journalists; with values: present, absent). With the answers for the three questions: ‘no tribune’, ‘specific staging’ and ‘absent journalists’, it becomes obvious that the picture of the G8 summit in Heiligendamm was staged to a high degree. Additional research would reveal further insights. The oversized roofed wicker beach chair in which the politicians are positioned implies an enormous organizational effort in the run-up to the summit and photo-shooting. The chair had to be exclusively manufactured by the beach chair company Korb GmbH on the Isle of Usedom. This idea was suggested by the Schwerin project group Landesmarketing, as the beach chair is a typical German product, which celebrated its 125th anniversary in 2007, and would thus serve well to advertise the region. Additionally, a beach chair provokes the association of a holiday, a sense of togetherness and privacy. Thus the delegates of the G8 summit presented themselves (or were presented) as a large peaceful family.

The arrangement of the agents corresponds with the protocol of G8 summits: the representative of the host country, Germany, is



Figure 14.8 G8 summit at Heiligendamm, 7 June 2007. Reproduced with permission: © 2007 ddp images GmbH

seated centrally, framed by the heads of government of the USA and Russia. Delegates from France and the UK are then seated to the left and right, with representatives from Italy and Canada, Japan and the United Nations on the outside. This background information would not be necessary for a quantitative content analysis, but enriches the insight into the research topic.

The absence of media representatives in this picture is also a sign of a high degree of staging, because the accredited journalists are purposely positioned opposite the scene (see Figure 14.9), so that the private atmosphere in the picture is not disturbed by media self-reference. For example, a photographer shown in the later ‘media picture’ might remind the recipient that the photo was taken at a press conference.

If the photographers are only allowed to take pictures from a fixed camera position,

almost identical pictures of the same media event emerge, only distinguished from each other by a slight horizontal shift of the camera angle and a temporary phase shift (depending on when photographers pressed the shutter release button). This example shows how it is possible – at least according to camera perspective and camera position – to manipulate probable media impact of the ‘concept pictures’ (and later ‘transfer pictures’ as well as ‘media pictures’) by allocation of space for positioning the camera and staging the media event.

We can usually assume that staged events covered in detail by the media are sophisticatedly prepared and that details such as location, setting, clothes, gestures and facial expression of the acting agents are not chosen coincidentally, but are consciously used to provoke a certain impact, for example, on the recipient of the later ‘media picture’. It is



Figure 14.9 Photographers at the G8 summit at Heiligendamm, 7 June 2007 presented by *Die Welt* (2007). Reproduced with permission: © 2007 dpa Picture Alliance GmbH

also useful to examine the acting agents in the '*context of design*' for information on the possible impact of a picture. The kind of event taking place also influences what kind of media representatives attend. At a staged press conference, it is likely that professional photographers and journalists are present, while at a genuine event probably only amateur photographers are present, producing snapshots, which do not conform to regular quality standards.

Context of incidence

In the '*context of incidence*' (see Figure 14.7) agents appear who are later represented in the picture. This context is therefore especially important in frequency analysis to determine how often specific agents are portrayed in the media. Answers to more profound research questions (such as 'What action was the depicted person performing?' and 'What was the impact?') can be interpreted from the '*context of incidence*', although this is a more complex task. The more complex or multilayered a research question is, the more important it becomes to examine in detail the other five contexts and agents in the process of image communication. For frequency analysis of agents in media pictures, the category construction is simple, reduced to a dichotomous variable – namely, appearance and non-appearance of an agent in a picture.

Accurate identification of a person in a 'media picture' corresponds to the occurrence of a name in a textual frequency analysis. However, it is also possible to analyze the weighting of an agent, for example whether he or she dominates the event or is a minor character, is presented as sympathetic or not, etc. In this case the picture size, the context in which it is presented in a newspaper or the length of the newspaper text, etc., need to be considered as well.

The categorizing in general (regardless of the level of complexity of the quantitative content analysis) should first address occurrence

for frequency analysis and then move on to weighting and valence evaluation.

The entire impact a picture of a person may have on the recipient can only be fully analyzed if the whole process of image communication is taken into consideration. To make an assertion about the complex and multilayered impact of persons represented in images, it is necessary to enrich the proposed categories and research questions with results from examining other aspects such as the contexts of production, media contextualizing and reception.

Context of production

The 'originator of the picture' makes many decisions during the production process. Besides the first motivation for the production, there are many technical and creative decisions. For example, if it is interesting to see how a politician is represented in the media, then it is useful to examine the '*context of production*' closely. Decisions made by the 'originator of the picture' over how to take the picture and what to include are influenced by his or her individual preferences and technical skills. They are also influenced by media socialization, which again is shaped by viewing patterns and visual standards, which are already established and which contribute to meaning potential as well as sales potential. Again, if the research question underpinning a quantitative content analysis is to determine the degree of staging of a media event by studying the published 'media picture', then the quality of these pictures in terms of their professional production hints that professional media representatives took part in the planning and documenting of the media event. Assuming that in current journalistic contexts, professional pictures (with high definition, correct lightning, etc.) are fundamental benchmarks for professional photographers, the absence of such professional pictures could indicate that the picture recorded a genuine event, rather than a mediatized or staged one. Content analysis

can verify this by examining the named parameters, such as resolution (high or low), image noise, definition (high or low), over- or underexposure. The main category here could be 'production factors' or 'technical parameters'. Instructions for the coder would be to ask if there is a recognizable image sharpness (variable a: image sharpness; with values: yes, no, unknown). Another question might be whether the picture was correctly exposed (variable b: exposure; with values: overexposed, correctly exposed, underexposed, unknown). A picture might be coded as recognizably sharp, correctly exposed (no high lights or 'flooded shadows'), with homogenous tonal value, optimal contrast and high resolution. This might then be a hint for the researcher that the picture was produced by a professional photographer or an image agency.

Media context

How the 'media picture' itself as a part of a sample unit/unit of analysis can be coded with a strictly quantitative content analysis has been demonstrated above. We now address how research questions in communication studies can be answered by examining the '*media context*'.

Stock photo agencies provide the media with the 'transfer picture', which is further edited and contextualized by the 'media company'. For many research questions, examining how pictures are contextualized (for example, in a newspaper page) is of major importance, because the appearance of a picture in specific media (Internet, paper, television, etc.) arouses certain expectations. The way a recipient decodes ambiguous pictures is influenced by the context in which the 'media picture' is published (caption, or other related text elements such as headlines and sub-lines and article text). It has become less important for the media to answer all of the 'Who?', 'What?', 'When?' and 'Where?' questions, etc., in a picture caption (Beifuß et al., 1984: 193). Increased de-contextualizing

of 'media pictures' is driven by changes in journalistic handling of pictures and the increasing tendency to visualize everything. For example, if no appropriate picture is available, an editorial team may choose a picture from the archives and fail to clarify in the caption whether the picture derives from the current event or from a completely different context. Quantitative content analysis of the visual therefore has to deal with the fact that pictures in a journalistic context might be 'recycled' from other media events. The researcher has to identify them and to specify how to handle those pictures, whether they are excluded from the analysis or not.

Context of reception/context of cognition

Research questions addressing the impact of pictures and the allocation of meaning require analysis of the '*context of reception*' and '*context of cognition*'. Most of the decisions which influence the media impact, however, have already been made in earlier contexts. We have discussed above how content analysis of 'media pictures' provides hints about their probable impact on the recipient. To complement such content analysis findings for deeper insights into the recipients' decoding of 'media pictures', we need to complete user surveys or experimental setups.

For example, to answer whether recipients regard a 'media picture' as authentic, content analysis of picture content and technical and functional parameters can be interpreted to derive the potential impact on recipients. However, this is where quantitative content analysis reaches its limits, because it tries to assume the (unknown) cognitions of a recipient. Most recipients may not have the skills to critically analyze pictures or media, or be sufficiently self-reflexive. A picture interpreted from content analysis as 'professionally taken' may be interpreted as perfectly 'authentic' by a recipient. An unskilled viewer of the beach chair picture (Figure 14.8) might interpret the scene as private and familial and

also harmonious, because of the polite interaction of the referents and might therefore assume the picture to be very authentic. A professional and highly staged picture could very well convey high authenticity and the illusion of a spontaneously taken snapshot. The results from quantitative content analysis in relation to the impact of pictures are therefore only partly satisfactory. Such results need to be complemented using methods appropriate to media impact studies.

CONCLUSION

The process of consolidating visual communication studies is ongoing (Emmison and Smith, 2000; Knieper and Müller, 2001, 2003, 2004; Van Leeuwen and Jewitt, 2001; Müller, 2003; Petersen and Schwender, 2009). Research findings that explicitly explain the impact of pictures and interdependencies between pictures and other media are still missing. Logically, such findings should be the theoretical basis for quantitative content analysis from which research questions are deduced and to which the research design and methodology are adapted. Currently, several disciplines contribute insights to answer questions of semantization or allocation of meaning to visual content: for example, sociology (especially context aspects such as thematic contexts, contexts of acting or figures, functions of figures, etc.), communication studies (especially aspects of representation, such as camera angle or field sizes, perspectives, later on also aspects of figure) or (social) psychology (aspects of figure, such as positioning, shown details of the body, face size, parameters of face and hair style, facial displays, direction of view, physiques, etc. (Bock et al., 2009). For a first overview on combining results from different disciplines, see for example Fleissner (2002) or Kinnebrock and Knieper (2008). Productively combining the findings from these disciplines will overcome current

methodological weaknesses by creating a solid theoretical foundation for content analysis of the visual.

The systematization of visual communication within the above-introduced process of image communication might be a first important step in this direction. It helps to usefully locate concrete research questions, with the associated contexts and agents. Furthermore, the theoretical findings which already exist for several contexts of the process of image communication (for example, of production, reception, etc.) can now systematically be linked with future research questions.

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