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Media content analysis: Its uses; benefits and best practice methodology

Jim Macnamara
University of Technology Sydney

The 'power' of media

Mass media are believed to cause violence, sexual promiscuity and contribute to discrimination against women. Media advertising is used to sell products and services. News in leading media has been shown to significantly affect stock prices; lead to corporate collapses; cause falls in sales of products; result in the resignation of senior office-holders – even bring down Presidents. Further information on the effects of mass media is provided in Macnamara (2003), *Mass Media Effects: A Review of 50 Years of Media Effects Research*.

Sociologists have been interested in mass media content since the early 20th century, starting with Max Weber who saw media content as a means of monitoring the 'cultural temperature' of society (Hansen, Cottle, Negrine & Newbold, 1998, p. 92).

Media content analysis – an overview

Media content analysis is a specialized sub-set of content analysis, a well-established research methodology. Neuendorf (2002) describes content analysis as "the primary message-centred methodology" (p. 9) and cites studies such as Riffe and Freitag (1997) and Yale and Gilly (1988) which "reported that in the field of mass communication research, content analysis has been the fastest-growing technique over the past 20 years or so" (Neuendorf, 2002, p.1). Riffe and Freitag (1997) found that the number of content analyses published in *Journalism & Mass Communication Quarterly* increased from 6.3% of all articles in 1971 to 34.8% in 1995 – nearly a six-fold increase. Fowler (as cited in Neuendorf (2002) reported that by the mid-1980s over 84% of masters level research methods courses in journalism in the US included content analysis (p. 27)

Content analysis is used to study a broad range of 'texts' from transcripts of interviews and discussions in clinical and social research to the narrative and form of films, TV programs and the editorial and advertising content of newspapers and magazines.

Media content analysis was introduced as a systematic method to study mass media by Harold Lasswell (1927), initially to study propaganda.

Media content analysis became increasingly popular as a research methodology during the 1920s and 1930s for investigating the rapidly expanding communication content of movies.

In the 1950s, media content analysis proliferated as a research methodology in mass communication studies and social sciences with the arrival of television. Media content analysis has been a primary research method for studying portrayals of violence, racism and women in television programming as well as in films.

Lasswell, Lerner and Pool (1952) said: "… content analysis operates on the view that verbal behaviour is a form of human behaviour, that the flow of symbols is a part of the flow of

events, and that the communication process is an aspect of the historical process … content analysis is a technique which aims at describing, with optimum objectivity, precision, and generality, what is said on a given subject in a given place at a given time (p. 34).

Lasswell's better known statement which succinctly encapsulates what media content analysis is about, published in 1948, (as cited in Shoemaker and Reese, 1996), describes it as:

> Who says what
> through which channel
> to whom
> with what effect (p.12).

A widely used definition of content analysis which illustrates the early focus on *quantitative* analysis was provided by Berelson (1952) who described it as a "research technique for the objective, systematic and quantitative description of the manifest content of communication (p. 18). While it remains oft-quoted, this definition has been found wanting in several respects. First, the word "objective" is disputed by researchers including Berger and Luckman (1966) in their classic text, *The Social Construction of Reality*, in which they point out that even the most scientific methods of social research cannot produce totally objective results. Specifically in relation to media content, they point out that media texts are open to varied interpretations and, as such, analysis of them cannot be objective. Also, some criticize the definition as restrictive, pointing out that latent as well as manifest content can be analysed. But, mostly, the early approach to content analysis was criticized because of its focus on basic quantitative elements and an inherent assumption that quantitative factors indicated likely social impact.

Other definitions of content analysis include:

- "Content analysis is any research technique for making inferences by systematically and objectively identifying specified characteristics within text" (Stone, Dunphy, Smith & Ogilvie, 1996, with credit given to Holsti, p. 5);

- In more contemporary times, Weber (1990) says: "Content analysis is a research method that uses a set of procedures to make valid inferences from text" (p. 9);

- Berger (1991) says: "Content analysis … is a research technique that is based on measuring the amount of something (violence, negative portrayals of women, or whatever) in a representative sampling of some mass-mediated popular form of art" (p. 25);

- Neuman (1997) lists content analysis as a key non-reactive research methodology (i.e. non-intrusive) and describes it as: "A technique for gathering and analysing the content of text. The 'content' refers to words, meanings, pictures, symbols, ideas, themes, or any message that can be communicated. The 'text' is anything written, visual, or spoken that serves as a medium for communication" (pp. 272–273);

- Kimberley Neuendorf (2002) is one of the most prominent contemporary researchers using, teaching (at Cleveland State University) and writing about media content analysis. She provides this definition: "Content analysis is a summarizing, quantitative analysis of messages that relies on the scientific method … and is not limited as to the types of variables that may be measured or the context in which the messages are created or presented". Noteworthy about Neuendorf's definition is that she argues that media content analysis is quantitative research, not qualitative, and she strongly advocates use of

scientific methods "including attention to objectivity-intersubjectivity, a priori design, reliability, validity, generalisability, replicability, and hypothesis testing" (p. 10). Neuendorf argues that qualitative analysis of texts is more appropriately described and categorized as rhetorical analysis, narrative analysis, discourse analysis, structuralist or semiotic analysis, interpretative analysis or critical analysis (pp. 5-7). However, she acknowledges that "with only minor adjustment, many are appropriate for use in content analysis as well". In *The Content Analysis Guidebook*, Neuendorf discusses an "integrative" model of content analysis and notes that a range of methodologies can be used for text analysis, even though she maintains a narrow definition of content analysis (p. 41);

- Shoemaker and Reese (1996) are other prominent authors on media content analysis. They do not fully support Neuendorf's strict interpretation of content analysis as quantitative research only. Shoemaker and Reese categorize content analysis into two traditions – the behaviourist tradition and the humanist tradition. The behaviourist approach to content analysis is primarily concerned with the effects that content produces and this approach is the one pursued by social scientists. Whereas the behaviourist approach looks forwards from media content to try to identify future effects, the humanist approach looks backwards from media content to try to identify what it says about society and the culture producing it. Humanist scholars draw on psychoanalysis and cultural anthropology to analyse how media content such as film and television drama reveal 'truths' about a society – what Shoemaker and Reese term "the media's symbolic environment" (pp. 31–32). This dual view of the media also helps explain the age-old debate over whether mass media *create* public opinion, attitudes and perceptions (effects) or *reflect* existing attitudes, perceptions and culture. Most researchers agree that, with limitations, mass media do both. Shoemaker and Reese say that social scientists taking a behaviourist approach to content analysis rely mostly on quantitative content analysis, while humanist approaches to media content tend towards qualitative analysis. They also note that social scientists may use both types of research as discussed in the following.

Berelson (1952) suggested five main purposes of content analysis as follows:

- To describe substance characteristics of message content;
- To describe form characteristics of message content;
- To make inferences to producers of content;
- To make inferences to audiences of content;
- To predict the effects of content on audiences.

Carney (as cited in Neunendorf, 2002) broadly agreed with this view summarizing the three main uses of content analysis as (a) descriptive; (b) hypothesis testing and (c) facilitating inference (p. 52).

Neuendorf (2002) points out that inferences cannot be made as to producers' intent or audiences' interpretation from content analysis alone, arguing that an integrated approach is required involving use of content analysis with other research such as audience studies. However, Neuendorf supports Carney's view of media content analysis as useful for "facilitating" inference even though it cannot directly prove it and, further, Neuendorf adds that content analysis has some predictive capabilities as well as other specialist uses. Neuendorf concludes that there are four main approaches to and roles of content analysis:

- Descriptive;
- Inferential;

- Psychometric; and
- Predictive (p. 53).

While psychometric refers to specialized medical and psychoanalytic uses of content analysis for interpreting the text of patient interviews or statements, the three other approaches are highly relevant to a range of applications. The first and most basic role, descriptive, provides insights into the messages and images in discourse and popular culture represented in mass media. The inferential and predictive roles of content analysis, even though they are 'facilitating' rather than conclusive, allow researchers to go further and explore what media content says about a society and the potential effects mass media representations may have on audiences.

However, the reliability of media content analysis for description of mediated discourses, and particularly for drawing inferences or making predictions concerning likely effects of these mediated discourses, depends on the methodology employed.

Key methodological decisions and considerations in media content analysis are discussed in the following.

Quantitative v qualitative content analysis

Shoemaker and Reese (1996) note that media content is characterized by a wide range of phenomena including the medium, production techniques, messages, sources quoted or referred to, and context, and they say that the task of content analysis is "to impose some sort of order on these phenomena in order to grasp their meaning." They continue: "Part of this ordering process consists of singling out the key features that we think are important and to which we want to pay attention. Researchers approach content in different ways, using different conceptual and methodological tools" (p. 31).

Quantitative content analysis collects data about media content such as topics or issues, volume of mentions, 'messages' determined by key words in context (KWIC), circulation of the media (audience reach) and frequency. Quantitative content analysis also should consider media form (eg. visual media such as television use more sophisticated semiotic systems than printed text and, thus, are generally regarded as having greater impact). Neuendorf (2002) says: "What's important is that both content and form characteristics ought to be considered in every content analysis conducted. Form characteristics are often extremely important mediators of the content elements" (p. 24).

While Neuendorf argues that media content analysis is quantitative only, Shoemaker and Reese's categorization of content analysis into humanist and behaviourist traditions indicates that content analysis can be undertaken using both approaches. They say: "Behavioural content analysis is not always or necessarily conducted using quantitative or numerical techniques, but the two tend to go together. Similarly, humanistic content study naturally gravitates towards qualitative analysis." Shoemaker and Reese further note: "Reducing large amounts of text to quantitative data … does not provide a complete picture of meaning and contextual codes, since texts may contain many other forms of emphasis besides sheer repetition" (p. 32).

Researchers who advocate analysing latent as well as manifest content as a way of understanding meanings of texts integrate qualitative and quantitative message analysis. Media researchers Newbold et al. (2002) note: "The problem [with quantitative content analysis] is the extent to which the quantitative indicators are interpreted as intensity of meaning, social impact and the like. There is no simple relationship between media texts and

their impact, and it would be too simplistic to base decisions in this regard on mere figures obtained from a statistical content analysis" (p. 80).

In simple terms, it is not valid to assume that quantitative factors such as size and frequency of media messages equate to impact. Nor is it valid to assume that these quantitative factors are the only or even the main determinants of media impact.

Neuman (1997), in a widely used text on social research methodology, comments on the quantitative-qualitative dichotomy in content analysis: "In content analysis, a researcher uses objective and systematic counting and recording procedures to produce a quantitative description of the symbolic content in a text" but he adds "there are qualitative or interpretative versions of content analysis". Neuman notes: "Qualitative content analysis is not highly respected by most positivist researchers. Nonetheless, feminist researchers and others adopting more critical and interpretative approaches favour it" (p. 273).

Newbold et al. (2002) note that quantitative content analysis "has not been able to capture the context within which a media text becomes meaningful" (p. 84) and advocate attention to qualitative approaches as well. Proponents of qualitative text analysis point out factors that have a major bearing on audience interpretation and likely effects, include:

- Prevailing **perceptions of media credibility** (e.g. a report in a specialist scientific or medical journal which will have greater credibility than a report on the same subject in popular press);

- **Context** (e.g. a health article published or broadcast during a disease outbreak will be read differently than at other times);

- **Audience characteristics** such as age, sex, race, ethnicity, education levels and socio-economic position which will all affect 'readings' of media content.

Qualitative content analysis examines the relationship between the text and its likely audience meaning, recognizing that media texts are *polysemic* – i.e. open to multiple different meanings to different readers – and tries to determine the likely meaning of texts to audiences. It pays attention to audience, media and contextual factors – not simply the text.

Accordingly, qualitative content analysis relies heavily on researcher 'readings' and interpretation of media texts. This intensive and time-consuming focus is one of the reasons that much qualitative content analysis has involved small samples of media content and been criticized by some researchers as unscientific and unreliable.

In summary, quantitative content analysis can conform to the scientific method and produce reliable findings. Qualitative content analysis is difficult and maybe impossible to do with scientific reliability. But qualitative analysis of texts is necessary to understand their deeper meanings and likely interpretations by audiences – surely the ultimate goal of analysing media content. So a combination of the two seems to be the ideal approach.

Within mass media and communication studies, most media researchers do not draw the sharp definitional distinctions that Neuendorf does between text, content and discourse analysis. Media researchers and academics such as Newbold et al. (2002), Gauntlett (2002) and Curran (2002) refer to quantitative and qualitative content analysis and most view the fields as complementary and part of a continuum of analysing texts to try to determine their likely meanings to and impact on audiences.

Hansen et al. (1998) comment: "… rather than emphasizing its alleged incompatibility with other more qualitative approaches (such as semiotics, structuralist analysis, discourse analysis) we wish to stress … that content analysis is and should be enriched by the theoretical framework offered by other more qualitative approaches, while bringing to these a methodological rigour, prescriptions for use, and systematicity rarely found in many of the more qualitative approaches" (p. 91).

Shoemaker and Reese's (1996) categorization of a humanist approach which studies media content as a reflection of society and culture, and a behaviourist approach which analyses media content with a view to its likely effects, is also useful in understanding how media content analysis should be conducted. Any research exploring media content for both what influence it may have on and for how it might reflect society – i.e. employing both behaviourist and humanist traditions – should use a combination of quantitative and qualitative content analysis.

It can be concluded from Hansen et al. (1998), Shoemaker and Reese (1996) and others cited, that a combination of quantitative and qualitative content analysis offers the best of both worlds and, further, that a combination of quantitative and qualitative content analysis methodologies is necessary to fully understand the meanings and possible impacts of media texts.

It is important to note that some researchers reject altogether the view that the meanings of texts can be accessed through analysis of the texts (Newbold, et al., 2002, p. 16). Certainly, researchers using content analysis need to be cautious in making predictions of likely audience effects, as already noted. However, while audience research remains a primary approach to gain direct insights into audience perceptions, it too faces methodological problems. Respondents forget where they received information from (e.g. many respondents in interviews and group discussions say "someone told me" when, in fact, they received the information through mass media). Others lie – perhaps not intentionally, but often people do not want to admit that they read some 'trash' magazine or watched daytime television. Furthermore, respondents talking directly to a researcher sometimes say what they think the researcher wants to hear, referred to as 'response generation' (interviews and ethnographic research methods are affected by researcher intrusion). Audience studies also have their own problematic issues with sample, question construction and interpretation of responses.

Media content analysis is a non-intrusive research method that allows examination of a wide range of data over an extensive period to identify popular discourses and their likely meanings. Another benefit of content analysis is that it can be conducted frequently (eg. every month), whereas audience research such as large-scale surveys are, because of their cost and time taken, restricted to once per year or every few years. Shoemaker and Reese (1996) propose that "media content and media effects [i.e. audience] research can be combined to help our understanding of the role that the mass media play in society" and also to understand societal attitudes (p. 256).

Human v computer coding

Media content analysis increasingly uses computer programs. Computer software is applied at two levels:

1. For storing, analysing and reporting research data such as coding and notations by researchers (including constructing tables, charts and graphs); and

2. In some cases, for automatic scanning of texts and identification and coding of words and phrases. This stage can lead to automation of the entire process of coding and analysis, or provide partial automation with a combination of computer scanning and coding along with human notations manually entered into the program.

In the first level, texts are read and coded by humans (usually trained researchers) and computer software programs are used as tools to assist in the analysis in the same way they are used to analyse the results of surveys and other research. Programs commonly used at this level are databases for data storage; SPSS for statistical analysis; Excel for tabulation of data and calculations such as pivot tables; and Excel or graphics programs for generation of charts. Also, a range of specialist commercial media content analysis systems are used for storing, analysing and reporting media analysis data such as CARMA® (Computer Aided Research and Media Analysis), Delahaye (now part of AB Observer/Bacon's Information Services), Echo Research, IMPACT™ and Millward Brown Précis. Most are database programs with customized data entry screens and fields created for the specialized needs of media content analysis. Many of these proprietary programs have specialized features such as inbuilt media databases providing circulation and audience statistics and sometimes demographic data which enriches and speeds up media content analysis.

At the second level, computer software automatically conducts either all or a large part of content analysis including scanning texts using Optical Character Recognition (OCR) technology and matching words and phrases in texts with 'dictionaries' of key words and phrases previously set up in the software program. Some programs do all coding automatically, while others allow the researcher to enter notations and comments and tag or link these to relevant articles. Software programs such as General Inquirer developed at Harvard University in the 1960s; NUD*IST; NVIVO; TextSmart by SPSS; INTEXT; TextAnalyst; TEXTPACK 7.0, CATPAC, DICTION 5.0, DIMAP and VBPro perform a variety of content analysis functions. Mayring (2003) also cites experience using two German software programs for qualitative text analysis, MAXqda (MAX Qualitative Data Analysis for Windows) and ATLASti.

A number of social researchers claim that computers are not relevant to media content analysis, suggesting that it must be done manually by detailed human study (Newbold et al., 2002, p. 84). This claim, per se, is Luddite, or more likely confuses the two levels of computerization in media content analysis. Few would argue that using a computer database, spreadsheet, or a specialized program to store and analyse data entered by researchers is inconsistent with the scientific method. It is most likely that use of computers enhances accuracy of analysis.

However, Neuendorf (2002) says that "the notion of the completely 'automatic' content analysis via computer is a chimera … The human contribution to content analysis is still paramount" (p. 40).

Most content analysts agree with this viewpoint based on professional experience. Automated (fully computerized) content analysis makes mostly arbitrary associations between words and phrases. While neurolinguistic software programming and Artificial Intelligence (AI) systems in which computers are purported to 'learn' to interpret the way humans do are developing, such programs remain unreliable for subtle and sophisticated interpretational work and their analysis is simplistic. Neuman (1997, p. 275) gives the example of the word 'red' and how it can be used with multiple nuances that are not visible to a computer:

> "I read a book with a red cover that is real red herring. Unfortunately, its publisher drowned in red ink because the editor couldn't deal with the red tape that occurs when a book is red hot. The

> book has a story about a red fire truck that stops at red lights only after the leaves turn red. There is also a group of Reds who carry red flags to the little red schoolhouse. They are opposed by red-blooded rednecks who eat red meat and honour the red, white and blue …"

Machine coding of the above text would be very unlikely to identify the range of meanings of the word 'red'.

A further disadvantage of automated computer coding is that it results in what Neuendorf (2002) terms "black box measurement". Most software programs do not reveal the details of their measures or how they construct their scales and indexes. The researcher enters text into "a veritable black box from which output emerges" (p. 129). This is inconsistent with the scientific method of research which requires that full information is disclosed on how results were obtained. Also, it limits replicability as other researchers cannot conduct similar studies unless they use the same software program and, even then, key functions and calculations are hidden within the 'black box'.

When content analysis is conducted across multiple languages and cultures, such as for global or non-western media studies, the problems of machine coding become even more marked, as most automated coding systems work with English language text only and computer translations are unreliable except for the most rudimentary applications.

Furthermore, and perhaps most important of all, computers cannot consider the *con*text of content; they only view the text which can result in narrow incomplete interpretations.

However, computers can clearly support quantitative and qualitative content analysis by serving as a repository for coding data and provide powerful tools for analyzing and reporting research.

When human coding is used, the software employed for data storage and analysis is not materially significant to the research, provided a reliable program is used. Methodology is more important, as is the training of the coders who need to conduct the analysis in accordance with strict criteria.

Quantitative content analysis methodology

Quantitative media content analysis should be conducted in accordance with 'the scientific method', Neuendorf (2002) argues, involving the following elements.

- **Objectivity/intersubjectivity**
  A major goal of any scientific investigation must be to provide a description or explanation of a phenomenon in a way that avoids or minimizes the biases of the investigator and, while true objectivity may not be possible, it should strive for consistency and what scholars term intersubjectivity (Babbie, 1986, p. 27; Lindlof, 1995 as cited in Neuendorf, 2002, p. 11). Objectivity, or intersubjectivity, is maximised by several techniques, most notably selection of a representative sample. *(See 'Media content sample')*

- ***A priori* design**
  Media content analyses often fail the test of objectivity/intersubjectivity because researchers construct the list of issues and messages being studied as they go, adding issues and messages as they find them in articles, arguing that they need to begin media content analysis before they can accurately identify the issues and messages contained in the content.

A deductive scientific approach to research design requires that "all decisions on variables, their measurement, and coding rules must be made before the observation begins" (Neuendorf, 2002, p. 11). An inductive approach which measures variables after they have been observed leads to major biases and invalidity in a study. In effect, it allows issues, topics and messages to be added to the list of those tracked at the whim of the researcher, and those added during a study may have been present from the outset but not observed, leading to inaccuracies in data.

Kuhn's (1970) observation in his seminal work on paradigms that the scientific requirement for deduction to be based on past research, theories and bodies of evidence is self-limiting and does not foster innovation is noted. Equally, the view of some media researchers that it is difficult to identify the variables for study (issues and messages in media content analysis) before they begin analysis of media content has some basis. However, this apparent dichotomy can be overcome. Exploratory work can and should be done before a final coding scheme is established for content analysis to identify the issues and messages appropriate for study. Neuendorf (2002) says: "Much as a survey researcher will use focus groups or in-depth interviewing (qualitative techniques) to inform his or her questionnaire construction, so may the content analyst use in-depth, often contemplative and incisive observations from the literature of critical scholars." Furthermore, Neuendorf suggests that media content analysts can "immerse himself or herself in the world of the message pool" by conducting "a qualitative scrutiny of a representative subset of the content to be examined" – i.e. conduct preliminary reading of texts within the field (pp. 102–103).

Thus, a grounded theory approach, as explained by Glaser and Strauss (1967) and Strauss and Corbin (1990), can be applied to identify issues and messages appropriate for analysis through preliminary reading of existing research literature in the field and reading of a sub-sample of the media content to be studied.

In media content analysis, *a priori* design is operationalised in a Coding System. A key component of a Coding System is a comprehensive written **Code Book** or **Coding List**. This contains the list of variables (units of analysis) to be researched and provides researchers involved in the project with a consistent framework for conducting the research.

Content analysis should involve examination of multiple variables (i.e. **multivariate** analysis) – not be a simplistic rating of a single variable such as positive, negative or neutral which is univariate and tells us little about the likely meaning and effects of a text. The primary units of content analysis (variables) are messages expressed as words or phrases – e.g. 'violent', 'leader', 'funding should be increased', etc. The Coding List should establish all the messages (both positive and negative) that are relevant. In addition, the Coding List may establish certain categories of issues or topics, and may further identify names of certain sources (individuals or organizations) to be analysed in association with issues or messages.

All positive messages identified for analysis should be equally matched with their corresponding negative form, and vice versa, to ensure balance. For instance, if 'boys in schools are aggressive and violent' is analysed, the oppositional positive message 'boys in schools are not aggressive or violent or are passive and non-violent' should equally be analysed in the research. Failure to apply equal vigour to analysing oppositional messages can seriously distort and invalidate a study.

As well as the specific subject-orientated issues and messages to be analysed as part of a study, a content analysis coding system should also allow coding of other key variables that determine the likely impact of a text. In specialist content analysis software programs, these variables are often built in as standard 'fields'. If not, they should be established in the Coding List. Typical variables identified by researchers as important and required for Best Practice content analysis include:

- *Media weighting or categorization* to allow high circulation, high rating or highly influential media to be scored higher than small, less important media;
- *Prominence* to record impact factors such as page number or order in an electronic media bulletin and use of photos or visuals;
- *Positioning* such as headline mentions, first paragraph mentions, prominent mentions, or passing mentions and 'share of voice' in articles;
- *Size* of articles or length of radio and TV segments;
- *Sources* quoted including the balance of supportive and opposing sources cited in the texts and their position/credibility (e.g. an official government authority or known expert is likely to be more credible than a little known unqualified source).

Samples of coding lists and coding forms are published on the Cleveland State University, Ohio Web site as an adjunct to *The Content Analysis Guidebook* authored by Kimberley Neuendorf (2002) and can be downloaded free of charge from (*http://academic/csuohio.edu/kneuendorf/content/hcoding/patcball/html*).

- **Intercoder reliability**

A rigorous 'scientific' approach to media content analysis to gain maximum reliability requires that **two or more coders** are used – at least for a sample of content (called the reliability sub-sample). Even when a primary researcher conducts most of the research, a reliability sub-sample coded by a second or third coder is important to ensure that, in the words of Tinsley and Weiss (1975), "obtained ratings are not the idiosyncratic results of one rater's subjective judgement" (p. 359).

Neuendorf (2002) says: "There is growing acknowledgement in the research literature that the establishment of intercoder reliability is essential, a necessary criterion for valid and useful research when human coding is employed." Neuendorf adds: "This has followed a period during which many researchers were less than rigorous in their reliability assessment" (p. 142). Reporting on an analysis of 486 content analysis studies published in *Journalism and Mass Communication Quarterly* from 1971 through 1995, Riffe and Freitag (1997) found that only 56% of these reported intercoder reliability and that most failed to report reliability variable by variable, which is recommended. Even as recently as 2001, a study of 200 content analyses by Lombard, Synder-Duch and Bracken (2003, 2004) found that only 69% discussed intercoder reliability and only 41% reported reliability for specific variables.

A number of statistical formulae have been developed for measuring intercoder reliability. Researchers propose that coding between coder pairs and multiple coders should be compared at two levels: (a) agreement and (b) co-variation (Neuendorf, 2002, p. 144). Agreement is a simple comparison of the level of agreement between the coders' scores and ratings. Co-variation assesses whether, when scores do vary as they no doubt will in human coding, they go up and down together – i.e. whether there is consistency or a high level of variance. Bartko and Carpenter (1976) note that in clinical and other psychological research, researchers report co-variation and not simple agreement, while

in communication and business research simple agreement only is reported. Neuendorf, citing Tinsley and Weiss (1975), concludes: "The best situation, of course, would be one in which coded scores are shown to have both high agreement and high co-variation" (Neuendorf, 2002, p. 144).

In terms of specific formulae to use, Lombard et al. (2003) report:

> [T]here are few standard and accessible guidelines available regarding the appropriate procedures to use to assess and report intercoder reliability, or software tools to calculate it. As a result, it seems likely that there is little consistency in how this critical element of content analysis is assessed and reported in published mass communication studies. Following a review of relevant concepts, indices, and tools, a content analysis of 200 studies utilizing content analysis published in the communication literature between 1994 and 1998 is used to characterize practices in the field. The results demonstrate that mass communication researchers often fail to assess (or at least report) intercoder reliability and often rely on percent agreement, an overly liberal index. Based on the review and these results, concrete guidelines are offered regarding procedures for assessment and reporting of this important aspect of content analysis.

Lombard et al. (2004) note that there are "literally dozens" of different measures or indices of intercoder reliability. Popping (1988) reported 39 different "agreement indices". However, Lombard et al., Neuendorf (2002) and a number of other researchers agree that the following indices are the most reliable and important:

- Per cent agreement (basic assessment);
- Scott's *pi* (π);
- Cohen's *kappa* (κ);
- Spearman's *rho*;
- Pearson's correlation coefficient (r);
- Krippendorf's *apha*; and
- Lin's concordance correlation coefficient (r_c).

According to professional and academic content analysts, "… the reliability sub-sample should probably never be smaller than 50 and should rarely need to be larger than about 300" (Neuendorf, 2002, p. 159).

'Blind coding' should be conducted by coders of the intercoder reliability sub-sample (i.e. neither coder should see coding of the others prior to completion of the assessment) to minimize what researchers term 'demand characteristic' – a tendency of participants in a study to try to provide what the primary researcher wants or to skew results to meet a desired goal.

Intercoder reliability should ideally be assessed for each of the variables studied – in the case of content analysis, for all messages and issues analysed. Thus, in analyses with a wide range of issues and messages, intercoder reliability assessment is a time-consuming and challenging process.

The relatively complex formulae for calculating these reliability indices are provided in Neuendorf (2002). Manual calculation requires familiarity with statistics and considerable time – no doubt the reason that most content analyses do little more than assess percent agreement, if that, as reported by Riffe and Freitag (1997 and Lombard et al. (2003).

However, a number of software programs help calculate intercoder reliability assessment, including statistics programs such as SPSS which can assess Cohen's *kappa* (κ) and

Simstat from Provalis Research which can calculate a number of intercoder reliability statistics. Also, specialist software programs have been and are being developed for this purpose including Popping's AGREE (1984) and Krippendorf's Alpha 3.12a, although the latter is a beta (test) program and not available widely (Lombard et al., 2004). A US company, SkyMeg Software, in consultation with academics from Cleveland State University, has developed PRAM (Program for Reliability Assessment of Multiple Coders) which can calculate reliability statistics for each of the most recommended indices. PRAM is still in development and an academic version alpha release 0.4.4 available as at January 2004 was found to contain some minor 'bugs' and 'clunky' features. However, release notes on the program state that all coefficients have been tested and verified by Neuendorf's students at Cleveland State University. The program, which analyses coding data exported to Microsoft Excel® spreadsheets, provides reliability statistics for each variable assessed on a scale of 0 – 1 where one is 100% agreement or co-variation (SkyMeg Software, 2003).

Neuendorf (2002) notes in relation to coder reliability that "most basic textbooks on research methods in the social sciences do not offer a specific criterion or cut-off figure and those that do report a criterion vary somewhat in their recommendations" (p. 143). However, Neuendorf cites Ellis (1994) as offering a "widely accepted rule of thumb". Ellis states that correlation coefficients exceeding 0.75 to 0.80 indicate high reliability (p. 91). In relation to specific statistics, Frey, Botan and Kreps (2000) declare 70% agreement (0.70) is considered reliable. Popping (1988) suggests 0.80 or greater is required for Cohen's *kappa* which he cites as the optimal (ie. strictest) measure, while Banerjee, Capozzoli, McSweeney and Sinha (1999) propose that a 0.75 score for Cohen's *kappa* indicates excellent agreement beyond chance. Riffe, Lacy and Fico (1998), without specifying the type of reliability coefficient, recommend high standards and report that content analysis studies typically report reliability in the 0.80 to 0.90 range.

As Neuendorf (2002) notes, it it is clear from a review of work on reliability of content analysis that reliability coefficients of 0.80 or greater are acceptable to all and 0.75 is acceptable in most situations. Furthermore, Neuendorf notes that the 'beyond chance' statistics such as Scott's *pi* and Cohen's *kappa* are afforded a more liberal criterion.
A further principle of sound research is that agreement and co-variation rates between coders, along with details of the intercoder reliability sample, are reported in the research (Snyder-Duch, et al, 2001; Neuendorf, 2002). Such data should be appended to a content analysis report, along with the Code Book/Coding list and details of methodology used.

Strategies to maximize agreement and co-variation and, if necessary, address low agreement or high variation between coders are:

1. Pre-coding training to familiarize all coders with variables such as issues and messages for analysis and guidelines for classifications and coding;

2. Pilot coding (doing a test first);

3. Review of the Code Book/List and re-briefing to ensure descriptions and instructions are clear;

4. Retraining if required.

- **Validity**
  Validity of content analysis is achieved through thoroughly understanding the research objectives, preliminary reading of a sub-set of relevant content (what Neuendorf calls

'immersion in the message pool'), and careful selection of the sample of media content to be analysed. *(See 'Media content sample')*

- **Generalizabilty**
  Generalizability refers to the extent to which research findings can be applied to and taken as a measure of the target population generally (in the case of content analysis, the target population is the total mass media message pool). Generalisability is largely determined by selection of a representative and sufficiently large sample, as well as the overall thoroughness of the methodology. *(See 'Media content sample')*

- **Replicability**
  Replicability, the ability and degree of difficulty or otherwise for other researchers to replicate the research to confirm or challenge the results, is a key criterion for all scientific research. Replicability is determined by full disclosure of information on methodology and procedures. In the case of content analysis, this should include the Code Book/Coding List; coding guidelines and instructions to coders; method of coding used in the case of human coding; details of any software programs used; and all data supporting conclusions. As Neuman (1997) notes, a researcher undertaking content analysis "carefully designs and documents procedures for coding to make replication possible" (p. 274).

Media content sample

Sampling for media content analysis comprises three steps, Newbold et al. (2002) propose:

1. Selection of media forms (i.e. newspapers, magazines, radio, TV, film) and genre (news, current affairs, drama, soap opera, documentary, and so on);

2. Selection of issues or dates (the period);

3. Sampling of relevant content from within those media (pp. 80–81).

The simplest form of selecting content for analysis is a *census* – i.e. selection of all units in the sampling frame. This provides the greatest possible representation. However, a census may not be possible in some cases – e.g. where a large volume of media coverage has to be analysed such as a study over many months or years. In such cases, a sample of media content may be selected. Sampling needs to be conducted in an objective way, ensuring reliability is maintained.

Typical methods of sampling for media content analysis include:

- *Systematic random* (selecting every n^{th} unit from the total population of articles or advertisements/commercials for study);

- *Purposive* such as selecting all articles from key media (and not from less important media. This is valid provided there is some basis for the criteria applied);

- *Quota* such as selecting a proportion of articles from each of several regions or areas (either geographic, demographic, psychographic, or subject category);

- *Stratified composite samples* constructed by randomly selecting units for analysis (articles or ads) from certain days or weeks over a period.

Riffe, Lacy and Fico (1998), Riffe, Lacy and Drager (1996) and Riffe, Lacy, Nagovan and Burkum (1996) have identified the most accurate sampling methods for analysing weekday TV news and media publications over a period and report that stratification by month or week provides the optimum result. However, often a purposive method focusing on the most relevant media is appropriate.

Editorial or advertising media content can be collected in a number of ways including:

- Reading and manually 'clipping' relevant items from newspapers and magazines and taping electronic media broadcasts;
- Subscribing to a media monitoring service;
- Downloading items from online media sites. However, it should be noted that online editions often do not contain all printed and broadcast content – e.g. special supplements and sections may not be available online;
- Online news services such as Factiva, Lexis-Nexis and Dow Jones. It should be noted similarly that these services often provide a narrow sample of media content, usually from major newspapers only.

Two methods are used for recording coding: (a) electronic into a computer system and (b) 'paper coding'. In modern computerized content analysis systems, the Coding List is usually contained in software menus or screens and coding data may be entered directly into a computer system. However, many coders still prefer 'paper coding' (i.e. writing coding on to the articles or transcripts or recording coding on a coding form attached to the text.) 'Paper coding' data is later entered into a computer system for analysis.

During coding, issues and messages are identified by either, or a combination of (a) word-matching (i.e. an exact match), and (b) presence of acceptable synonyms or similar phrases. Acceptable synonyms or similar phrases should be identified in guidelines provided to coders attached to or as part of the Coding List. For example, if 'participatory' is a message for analysis, acceptable synonyms could be 'joins in activities', 'works with others', 'takes part' and 'engages'. The more comprehensive the Coding List and guidelines to coders, the more reliable the analysis will be. Coding guidelines should be strictly followed.

Reading and coding for content analysis is a time-intensive process and produces a veritable 'data mountain'. However, 'coding' allows key data about media articles and programs rather than the full text to be entered into a computer database, providing data reduction and, when a scientific method has been employed, quantitative analysis can be carried out using computer-aided statistical and reporting tools.

Qualitative content analysis

Qualitative content analysis can, to some extent, be incorporated within or conducted simultaneously with quantitative content analysis. For instance, positive and negative words and phrases can be analysed to identify the tone of text. Also, analysts can record notations during coding in relation to contextual factors.

However, in many cases, in-depth analysis of selected content using qualitative research methods is required to fully understand the potential meanings (manifest and latent) for audiences and likely effects of texts.

The precise methodology best used for qualitative message or text analysis is poorly defined. McKee (2004) notes that "we have a very odd lacuna at the heart of cultural studies of the media. Textual analysis is the central methodology, and yet we do not have a straightforward published guide as to what it is and how we do it". He explains this as partly:

> … the ambivalence of cultural studies practitioners towards disciplinarity and institutionalization [which] lead (sic) to an odd interpretation of our axioms that knowledge is power, that discourses define reality and that there is no such thing as 'objective' knowledge. We know that every methodology is partial, producing particular kinds of information. Linked with an anti-displinarian trend, this seems to have led us to refuse to think seriously about our own methodologies. Instead, we tend towards a kind of 'transgressive' methodological approach, where we do whatever takes our fancy.

McKee adds: "we insist that the specificity of any methodology must be investigated to reveal the limits to the kinds of knowledge it can produce, and yet our own central methodology is woefully under investigated, and still largely intuitive".

Despite this lack of specific guidelines for qualitative text analysis, research procedures for qualitative text and message analysis are informed by the work of Denzin and Lincoln (1994); Hijams (1996); Mayring (2000; 2003); Patton (1990; 2002); Robson (1993); and Silverman (1993) and these can be drawn on to frame a study with reasonable levels of reliability and validity.

Qualitative message analysis methods applicable to analysis of media content include text analysis, narrative analysis, rhetorical analysis, discourse analysis, interpretative analysis and semiotic analysis, as well as some of the techniques used in literary studies such as critical analysis, according to Hijams (1996).

Within the broad hermeneutic tradition concerned with text analysis, there are two main strands particularly relevant to qualitative content analysis. The first, **narratology**, focuses on the narrative or story-telling within a text with emphasis on meaning that may be produced by its structure and choice of words. The second draws on **semiotics** and focuses attention on signs and sign systems in texts and how readers might interpret (decode) those signs (Newbold et al., 2002, p. 84).

Semiotics utilizes a number of different approaches, description of which is outside the scope of this paper other than a broad summary of their essential elements. Two main streams of semiotics, sometimes referred to as semiology and semiotics, have evolved from the work of Swiss linguist Ferdinand de Saussure and American Charles Sanders Peirce respectively.

While quantitative content analysis has its complexities and requires considerable statistical rigor to comply with the requirements of scientific research, as outlined earlier in this chapter, the coding task in quantitative analysis is predominantly "one of clerical recording", according to Potter and Levine-Donnerstein (1999, p. 265). In comparison, they note "objectivity is a much tougher criterion to achieve with latent than with manifest variables" as studied in qualitative content analysis. Newbold et al. (2002) warn:

> The logic of deconstructing latent meanings, and privileging them over the more obvious 'manifest' ones, is questionable, for the audience may not see this latest dimension; the analysis may be longer than the text. The task is time-consuming, and often tells us what we already know in a language we don't understand (p. 249).

Newbold et al. go further in warning of the inherent challenges in semiology, the tradition of semiotics based on theories developed by de Saussure, in the following terms:

> The scientific validity of semiology is questionable – in comparison with traditional positivistic science, at least – for it is not replicable (it is impossible to repeat with exactly the same results). It is not easy to show that semiology examines the subject it sets out to study … (p. 249).

However, like others, Newbold et al. acknowledge that there are advantages of using semiology as a tool. "It exposes the ideological, latent meaning behind the surface of texts, allowing us to grasp the power relations within them" (p. 249).

The essential concepts of semiotics and semiology are that words and images are signs that 'stand for' or 'signify' something else beyond their obvious manifest meaning and relate to one another to form codes or code systems – collectives of signs that produce certain meanings (Newbold et al., 2002, p. 87; Selby & Cowdery, 1995, p. 47).

Early semiotics took a structuralist approach, seeing the meaning of signs as largely fixed and interpreted according to a system, whereas later post-structuralist influenced semiotics theory saw signs as interpreted by audiences – often differently to the intentions of the author and differently between audiences.

Jensen (1995) brought together what he terms an integrated social semiotics theory of mass communication which draws on structuralist semiotic research as well as more modern post-structuralist theories of active audience participation in interpretation of mediated meanings. In other words, elements of both de Saussure influenced semiology and Peirce influenced semiotics can be applied and each has something to offer to a comprehensive study of mass media representations.

Newbold et al. (2002) observe: "So in studying media texts … we can use these ideas as they can provide a way of assessing the meaning production in a text" (p. 87). They cite Van Zoonen (1994) who explains that semiotic analysis of a media text can begin by identifying the signs in the text and their dominant characteristics. Then, citing Selby and Cowdery (1995), they say "these signs can be analyzed as a result of selection and combination" (Newbold et al., 2002, p. 87).

Images such as photographs and icons are key signs in media texts. For instance, a photograph of a man holding a baby suggests fatherhood, family commitment and, depending on how it is composed, gentleness and caring. For instance, a photograph may contains several signs such as the man cradling the baby's head in his hand and or gazing at the baby with a kind and caring expression (signifying love and protection), or holding the baby with outstretched arms away from his body and peering quizzically at the infant (signifying confusion and aversion). Road signs and international symbols such as $ representing dollar or money, © for copyright and ⃠ for 'No' (as in No Entry or No Smoking) are examples of icons and symbols that signify meanings beyond themselves. Similarly, audiences routinely interpret the sign + as denoting the mathematical function of addition and × as multiplication, while the slightly different ✝ is symbolic of Christianity or the Christian Church.

In terms of language, Campbell and Pennebaker (2003) and others identify pronouns as key signifiers of meaning in texts and a focus of qualitative text analysis. Campbell and Pennebaker investigated the relationship between linguistic style and physical health using latent semantic analysis to analyse writing samples provided by students and prison inmates. Campbell and Pennebaker reported that change in the frequency with which participants used

pronouns (e.g. I, me, he, she) is the linguistic feature that best predicts improvement in physical health. Their data showed that flexibility in pronoun use is associated with improved physical health (pp. 60–65). Over-use of personal pronouns such as I, me and my can also indicate self-centredness and egotism.

Other key text elements commonly studied in qualitative content analysis are:

- Adjectives used in descriptions (positive and negative) which give strong indications of a speaker's and writer's attitude (e.g. it was 'disgusting');
- Metaphors and similes used (e.g. labelling a car a 'lemon' or a person a 'rat');
- Whether verbs are active or passive voice;
- Viewpoint of the narrator (i.e. first person, second person, third person);
- Tonal qualities such as aggressiveness, sarcasm, flippancy, emotional language;
- Binaries established in texts and how these are positioned and used;
- Visual imagery in text; and
- Context factors such as the position and credibility of spokespersons or sources quoted which affects meaning taken from the text (e.g. if one message is presented by a high profile expert it will generally outweigh a non-expert opinion).

Mayring (2000) developed a number of procedures for qualitative text analysis, among which he says two are central: inductive category development and deductive category application. Inductive analysis involves working from specific observations of categories and patterns (eg. issues or messages) to a broad theory or conclusion. Deductive analysis involves working from a broad theory or general position to specific observations to confirm or disprove the former (Trochim, 2002). After inductively determining categories, Mayring (2003) says "the qualitative step of analysis consists in a methodological controlled assignment of the category to the passage of the text".

Mayring's procedures bring some systematic approach to qualitative text analysis. In essence, his method involves *a priori* design of the categories – they should not be created as the analyst goes along – and, importantly, this method requires matching of a category to a passage of text; not matching of the text to a category. By starting with pre-determined categories, which by their nature are specific, this increases the systematicity of qualitative analysis.

Intercoder reliability assessment also should be used with qualitative analysis to assist reliability and validity, Mayring (2003) recommends, although he notes that more flexible measures need to be applied. His studies maximized reliability and validity by using "only trained members of the project team" and he reduced the standard of coder agreement stating that Cohen's *kappa (κ)* of 0.7 would be sufficient.

Mayring (2003) also notes that several computer programs have been developed for qualitative analysis, but he stresses that these are to "support (not to replace) steps of text interpretation". He reported experience using MAXqda (MAX Qualitative Data Analysis for Windows**)** (dressing&pehl GbR & Verbi GmbH, 2004).

Sample for qualitative analysis

Sampling for qualitative analysis is not required to meet the statistically valid formulae of quantitative analysis. Nevertheless, sampling for in-depth qualitative study should not be simply drawn at the researcher's whim, and even random methods may not yield useful data as the purpose of qualitative research is to investigate certain issues or themes in detail. Random or even representative methods of sampling may not capture the issues or themes

which are the subject of qualitative analysis. Miles and Huberman (1994) argue that sampling strategies for qualitative research should be driven by a conceptual question, not by concern for "representativeness" (p. 29). They suggest instead, three techniques which can be used together to yield rich results in qualitative analysis:

1. Selecting apparently typical/representative examples;
2. Selecting negative/disconfirming examples; and
3. Selecting exceptional or discrepant examples (p. 34).

By choosing a combination of typical, disconfirming and exceptional examples for study, qualitative analysis can explore the boundaries of the data field and identify the range of views including discordant ones and extremes in various directions, as well as the typical. While quantitative research has the benefit of yielding empirical data that is generalisable and representative with a high probability, it reduces research findings to the average or median position on key questions. Qualitative analysis using the sampling approach identified by Miles and Huberman allows exploration of discourse at various points within the range.

An overview of the processes of content analysis by Kimberley Neuendorf (2002) is provided in Figure 1.

Commercial Media Analysis

Commercially, media content analysis has a number of uses and offers significant benefits to companies, organizations, government agencies and political parties – particularly those that receive wide media coverage.

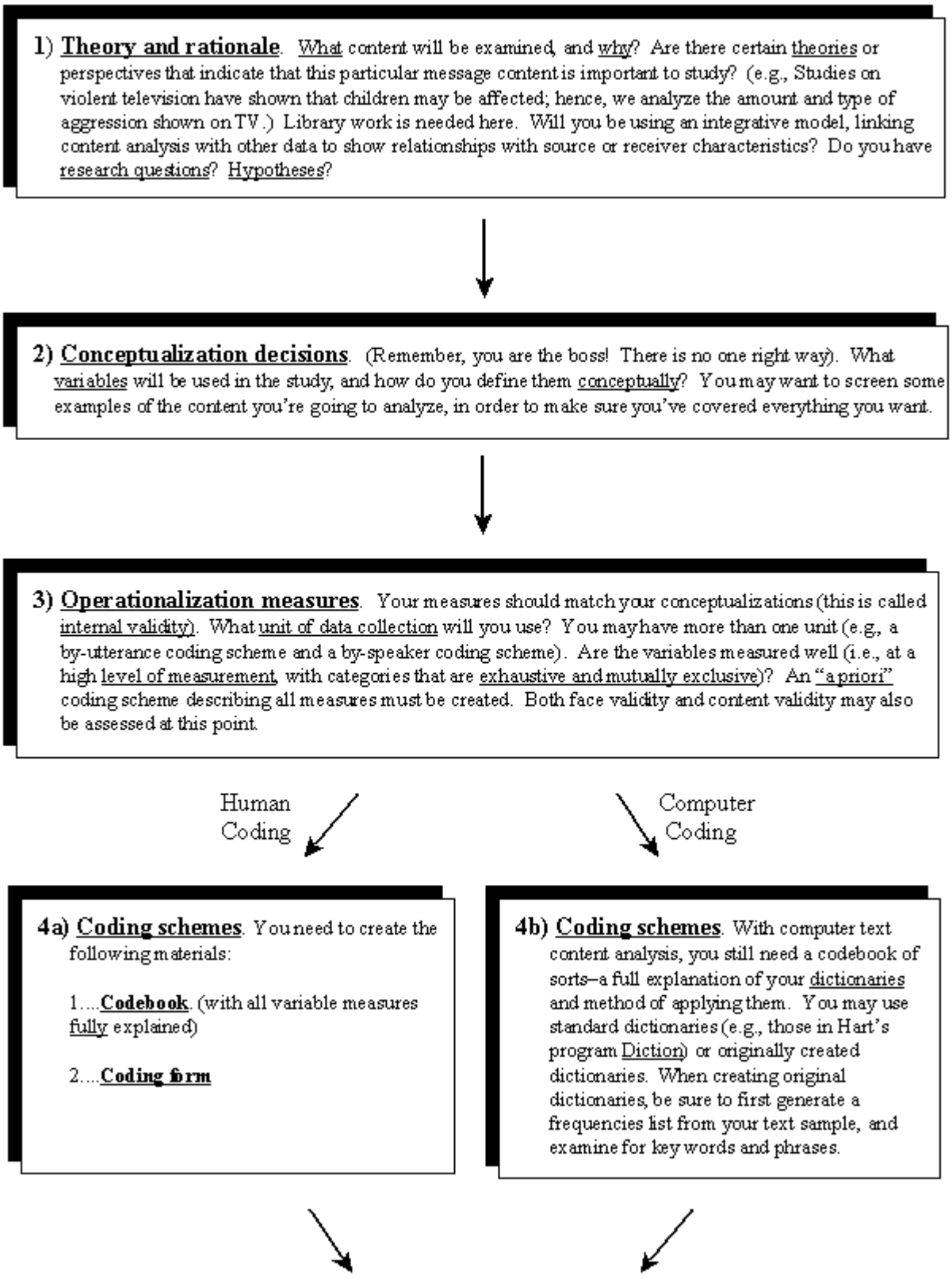
In practical terms, organizations receiving a small amount of publicity can review media coverage using personal observation. But, when multinational companies and large organizations receive hundreds or even thousands of mentions in mass media, often in a number of countries and in multiple languages, simple observation cannot provide reliable understanding of likely outcomes and effects.
Media content analysis is increasingly used commercially because of the two key roles of the mass media.

Mass media – the world's most powerful communication channel

While media effects theory is a complex and ongoing field of research, many research studies show that mass media have significant impact and effects on public awareness, perceptions and sometimes behaviour such as buying decisions and voting. CEOs, marketers, advertisers and PR professionals know that mass media are important influences affecting brands, reputation, corporate image and the success of marketing and communication campaigns. It is because of this influence that mass media are used for advertising products and services.

Editorial media content also influences readers, viewers and listeners – sometimes even more than advertising. But unlike advertising, editorial is highly variable in content and format. It may be critical, promote competitors, or raise issues impacting an organization. And mass media are also increasingly global. Reports from far corners of the world can impact a share price, a brand or reputation. So understanding the content of editorial mass media is increasingly important for organizations involved in public communication.

Media Content Analysis Flowchart



Continued over:

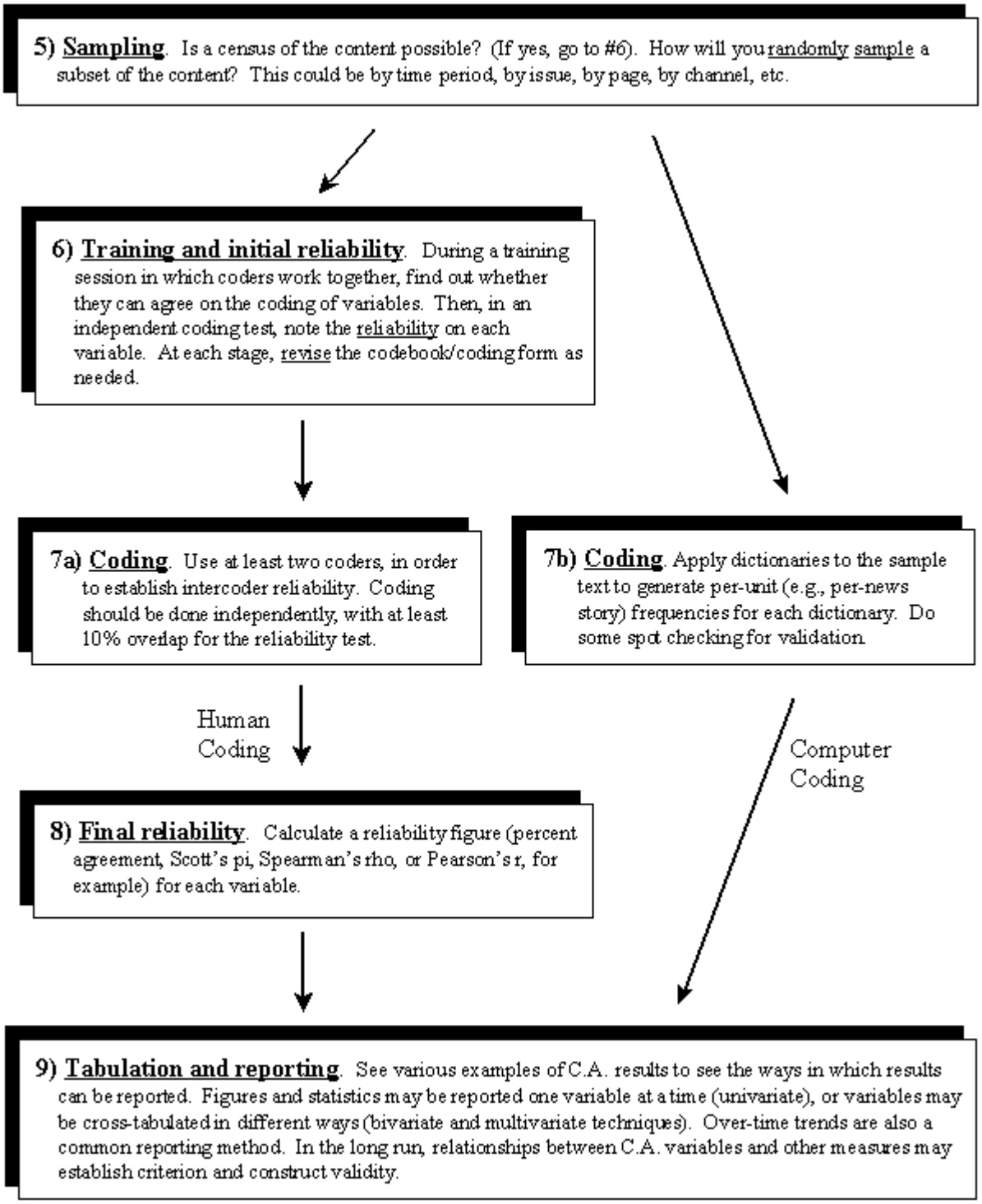


Figure 1. *A flowchart for the typical process of content analysis research (Neuendorf, 2002).*

Mass media – one of the world's largest databases

As well as *influencing* public opinion, mass media *reflect* opinion and perceptions through reporting what other people, companies and organizations are saying and doing. Furthermore, the media report issues and trends, often 'breaking' news and setting or framing the agenda of public debate. *(See Macnamara, 2003 for more information on effects of mass media.)*

Media analysis therefore provides two types of research:

1. **Evaluation** to measure effectiveness of an organization's communication (PR) to and through the media including audience reach, messages communicated, 'share of voice' and benchmarking its profile against competitors or in its sector;

2. **Strategic insights** and intelligence through issues tracking (environmental scanning), competitor analysis and trend identification.

Figure 2 provides an overview of the four roles and uses of media content analysis within these two areas – i.e. for formative (strategic planning) research and for evaluation.

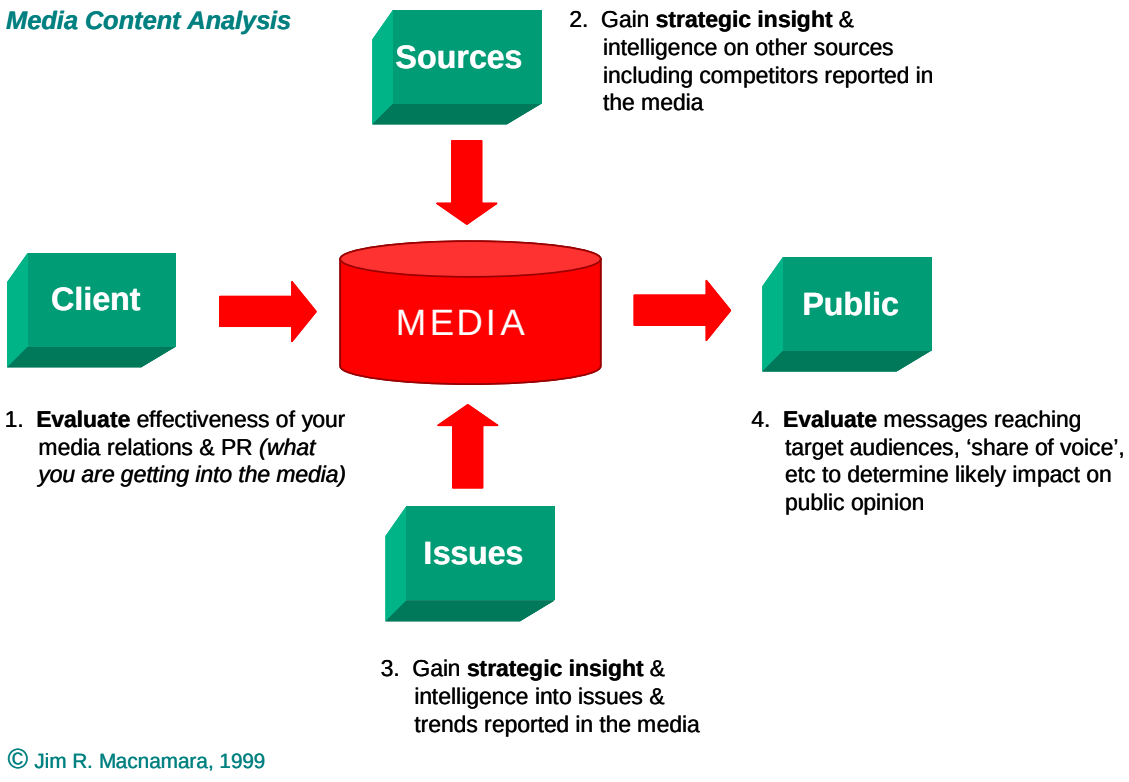


Figure 2. *The four roles of media content analysis*

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* *Jim Macnamara PhD, MA, FPRIA, FAMI, CPM, FAMEC is Professor of Public Communication at the University of Technology Sydney and Director of the Australian Centre of Public Communication, positions he took up in 2007 after a 30-year professional career spanning journalism, public relations, advertising, and media research. He is the author of 12 books including 'The 21st Century Media (R)evolution: Emergent Communication Practices' published by Peter Lang, New York in 2010.*