A “Mix of Attributes” Approach to the Study of Media Effects and New Communication Technologies

By William P. Eveland, Jr.

The purpose of this article is to discuss the media effects approach broadly, to point out limitations the traditional approach imposes on the field, and to discuss a “mix of attributes” approach with a focus on the study of “new” technologies for the dissemination of news. It is argued that the mix of attributes approach would better serve to advance both theory and empirical research, not only in the area of new media technologies, but also for more traditional media effects research.

Research in mass communication can be classified into paradigms that summarize the general theoretical and methodological approaches used in the field. Among the common categories is what has been called the “media effects” approach. Along with critical studies, cultural studies, and the uses and gratifications approaches, media effects is one of the major paradigms in mass communication. The purpose of this article is to discuss the media effects approach broadly, to point out the limitations this approach imposes on the field, and to discuss a “mix of attributes” approach with a focus on the study of “new” technologies for the dissemination of news. This approach can help to set the agenda for theory and research, not only in the area of new technologies, but also for traditional research on television and print media.

What Do We Mean By Media Effects?

In the field of mass communication, the term “media effects” is a common one; in fact, media effects is often considered the “dominant paradigm” (McLeod, Kosicki, & Pan, 1991). One of the major graduate texts in mass communication identifies itself as focusing on media effects (Bryant & Zillmann, 1986, 1994, 2002), as do a number of undergraduate texts (e.g., Jeffres, 1997; Perse, 2001; Sparks, 2002). In

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broader discussions of the field, the media effects approach is defined in opposition to critical studies and cultural studies (McLeod et al., 1991). Moreover, the public and government officials often think from the perspective of media effects when they express concern over media violence, pornography, advertising, and so forth. Given this, it is important to begin with a clear definition of what the media effects approach entails. Interestingly, there appears to be little discussion of the overarching media effects perspective.

Most definitions of the media effects approach are quite vague or simple. For instance, in Perspectives on Media Effects, Bryant and Zillmann (1986) simply state that media effects refers to “the social, cultural, and psychological impact of communicating via the mass media” (p. xiii). Perse (2001) interprets the study of media effects to be “the study of how to control, enhance, or mitigate the impact of the mass media on individuals and society” (p. ix). Emmers-Sommer and Allen (1999) operationally define media effects studies in their meta-analysis as studies that “involve direct use of the mass media” and “independent or predictor variables that involved the mass media . . . or the effects of various independent or predictor variables . . . on media outcomes” (p. 487).

What is clear from these definitions is that there has been little effort made to discuss what it is about mass media that is producing effects. Certainly, many authors have worked to define what “mass media” are and are not (e.g., Beniger, 1987; Morris & Ogan, 1996), but typically this definition process has taken place outside the context of explicating what media effects are. For instance, it is of only minimal value if authors help us determine that effects of telephones are outside the purview of mass media research (because telephones are not mass media) but effects of television are appropriate to study (because television is a form of mass media). What is needed is a more thorough discussion of what it is about mass media that produces effects.

Perhaps the clearest and most explicit discussion of what the media effects approach entails is provided by McLeod and his colleagues (McLeod et al., 1991; see also McLeod & Reeves, 1980). They identify the media effects approach as having five central characteristics: (a) a focus on the audience; (b) some expectation of influence; (c) a belief that the influence is due to either the form or content of a “media message system” (McLeod et al., 1991, p. 236); (d) the use of “variable” terminology and discussion of causality; and (e) the creation of empirically testable hypotheses. The important point here is that McLeod and his associates discuss the notion of effects being caused by one of two aspects of mass media—either their content or their form (see also McLeod & Reeves, 1980), but this issue receives relatively little discussion even though it is possibly the central issue in media effects research. The authors note that most media effects research focuses on the effects of media content, although it is also possible to study form or “diffuse-general” (McLeod et al., 1991, p. 247) effects independent of content. Such effects would include, for instance, weight gain from television viewing not as a result of advertising for fattening products, but due to the sedentary nature of television viewing and its displacement of physical activity (Robinson, 1999). Inherent effects of the medium, such as those discussed by McLuhan (1964), are also included among diffuse-general effects.
Jeffres (1997) devotes some discussion in his book, *Mass Media Effects*, to the independent variables in media effects research. He divides these into three categories: media/channel differences, media uses, and framing. In addition, he notes that a number of structural aspects of media messages can produce effects. His discussion, in conjunction with that of McLeod and associates (1991), leads us closer to a full understanding of what media effects are and how they are produced, but leaves much more work to be done.

**A Mix of Attributes Approach to Defining Media**

The relative dearth of discussion of what media are in the context of media effects is a major limitation in the development of theory in the area of media effects. One way to fill this vacuum of conceptualization of media is to adopt what will here be called the mix of attributes approach. Although the fundamentals of this approach are not particularly innovative (see Salomon, 1979)—at least as early as Cantril and Allport (1935) researchers have worked to link the attributes of a new medium to its potential effects—it deviates from current common practice among most media effects and new technology researchers in a number of ways.

First, the mix of attributes approach to defining media plays down the qualitative or discrete distinctions between media in favor of considering specific media as concrete operationalizations along an abstract continuum that is best examined quantitatively. That is, instead of focusing on qualitative differences between, say, television and feature films, or between newspapers and books, or between newspapers and television, the differences among these media are considered to be primarily quantitative in nature. This is particularly useful, given current trends toward media convergence that make qualitative distinctions less tenable.

Because it is unlikely that any single continuum could contain all of the various media, the second feature of the mix of attributes approach is that it considers media to be multidimensional in their attributes. That is, instead of focusing on a single attribute such as interactivity (Rafaeli, 1988), the mix of attributes approach argues that each medium is composed of a wide variety of attributes. Thus, as opposed to a unidimensional continuum, media should be defined by a continuum existing in multidimensional space. The number of dimensions is limited only by the attributes on which media vary that can be identified by theorists and researchers.

Finally, the mix of attributes approach to defining media stresses the importance of a historical perspective instead of what sometimes seems to be an ahistorical perspective in current new technology research. In the recent history of “new” media research, it often seems as though each “new” medium is defined as qualitatively different from those that came before it, or that some new feature exists in the new medium that did not exist in the past. Rarely, for instance, do researchers studying Web surfing make reference to the similarity in function of the computer mouse and the television remote control, or the relationship between the concepts of television “grazing” (Eastman & Newton, 1995) and Web “surfing.” However, a historical approach would stress the importance of seeing how what
appears to be a new attribute of a new medium is merely a variation on existing media. In so doing, research on new technologies can avoid reinventing the wheel upon the introduction of each new medium and thus devote more energy toward integrated theories of media instead of medium-specific theories. Ultimately, this might obviate the need for a separate area of new technology research in communication.

**Potential Media Attributes**

In proposing a mix of attributes approach to defining media, it is central to discuss the various attributes that may together define a medium. In this section I will consider a number of attributes that can be used to define each medium. It is important to note that these attributes are often, in practice, correlated in terms of their co-occurrence in various communication technologies. In this article I am unable to identify all of the relevant attributes for defining media. Instead, I propose six initial attributes for consideration: interactivity, organization (or structure), control, channel, textuality, and content. I focus on these attributes because they appear to be the most relevant to my own research on learning from media. However, surely there are additional attributes of media important for this and other areas of media effects research. Thus, this article does not include an exhaustive discussion of all media attributes, but instead serves as a starting point for a more thorough explication of the attributes that comprise media.

This begs the question: How should future researchers determine the attributes of media, and how will we know when we have exhausted all of the possibilities? It is difficult to specify a formula for identifying additional attributes of media. The process is, like the identification of new variables in any research paradigm—or theory construction itself—partly deductive and partly inductive. Informal observation may point toward the importance of some attributes, whereas deductive logic based on prior theory might shed light on attributes previously ignored. There is no formulaic approach to identifying the attributes of media. However, it seems that the value of any attribute proposed by a researcher is likely to be directly proportional to the empirical impact of that attribute on media effects. That is, attributes identified but found to have little influence on media effects are likely to fall by the wayside, and rightly so.

**Interactivity.** Newhagen and Rafaeli (1996) argue that one of five defining features of the Internet is interactivity, or “the extent to which communication reflects back on itself, feeds on and responds to the past” (p. 6). They also note, however, that “it can be consciously programmed in or kept out” (p. 6). This implies two things. First, interactivity is not a constant, even in a particular medium like the Internet, but instead it is a variable (see also Morris & Ogan, 1996). On the other hand, Newhagen and Rafaeli appear to be arguing that communication via the Internet is more likely to be interactive than other forms of communication. Although this may or may not be true, it seems that all media could be evaluated in terms of the extent to which they were able to achieve or encourage interactivity. Moreover, there are variations within media in terms of the extent to which interactivity was incorporated by designers or used by users.
Organization (or structure). There are a number of ways to think about the organization of media. Jeffres (1997), for instance, identifies narrative structure as one feature of television that may produce effects (see Lang, 1989). Newhagen and Rafaeli (1996) refer to “hypertextuality” as a form of organization, but really seem to mean the extent to which content is organized linearly or nonlinearly. Organization or structure of media may be a very important variable for producing media effects (Eveland, Cortese, Park, & Dunwoody, 2002; Eveland, Marton, & Seo, 2002) as well as being a significant dimension of difference both across and within media (e.g., see Eveland, Cortese, et al., 2002; Eveland, Seo, & Marton, 2002; Lang, Geiger, Strickwerda, & Sumner, 1993), and thus should be more fully conceptualized. If necessary, this attribute could be broken down into subdimensions.

Control. Another attribute of media is the amount of control provided to the user (Eveland & Dunwoody, 2001). In some ways this attribute overlaps significantly with interactivity and organization and in fact may be the product of the two. Control is facilitated by a medium to the extent that the user can easily alter the pace of presentation (i.e., taking the time to reread a story versus quickly skimming it, viewing an image for a shorter or longer period of time), the order of presentation (i.e., viewing one program before or after another, reading the end of the story before reading the beginning), and the amount of content presented (i.e., reading a short compared to a long version of a story, adding detail to various aspects of the content).

Channel. The channel attribute is one of the more traditional means of defining a medium and is based upon the senses used to receive the message. Current media employ the visual channel, the audio channel, or both, and the relative weight of each channel can vary. This distinction—audio, visual, and audiovisual—has been central to cognitive psychological approaches to media effects (e.g., Penney, 1975) and some efforts within communication to compare the effects of, for instance, radio versus television (DeFleur, Davenport, Cronin, & DeFleur, 1992; Katz, Adoni, & Parness, 1977). However, it is unlikely that audio and visual are to be the only channels through which we will receive mass media content in the future. Virtual reality machines may begin to employ the tactile (physical touch) channel. In fact, currently a number of video game machines employ the tactile sense to increase involvement and simulate reality. Further in the future, other channels for mass-mediated communication might include the olfactory (smell) channel and maybe even the gustatory (taste) channel.

Textuality. Media may vary in the extent that they use textual symbols, that is, formal representations of alphanumeric characters that require formalized learning to comprehend. This characteristic, although correlated with the physical medium of communication, is technically independent of it, at least among visual media. Textual messages can be conveyed via film, television, paper, and computer. Although textuality is correlated with being visual, textuality can also be communicated in a tactile manner (i.e., Braille) or even through audio (e.g., Morse code). However, clearly not all visual media are highly textual. Nontextual messages, such as pictures, can also be conveyed by any visual medium.

Content. McLeod et al. (1991) identify content as one of two sources of media effects, the other being “diffuse general.” I have specifically relegated content as
the final attribute of media to be discussed in part because, as McLeod and associates have noted, “Content-specific formulations continue to dominate conceptions of media effects” (p. 247). I argue that to focus merely on content as the relevant aspect of media for producing effects is, in many respects, to abandon that which makes communication a field unto itself. For instance, to explicitly or implicitly claim that it is merely the content that produces the effect of media violence on aggression is to make media effects research redundant with research in psychology or sociology that examines the effects of exposure to violence in unmediated contexts on aggression. The theoretical question for our field, and for media effects more specifically, should be whether or not the influence of media violence is the same as for unmediated violence, and what factors (i.e., attributes of the media) would produce any difference. If the effects of given content are the same regardless of how the audience member received them, mediated or unmediated, then there is really little reason for a separate area of theory on media effects.

The benefit of content distinctions, then, is to observe how they might interact with other media attributes to produce different effects across various media or between mediated and unmediated contexts. If we do not include some theoretical concept besides “content” in our formulation of media effects theories then they are not media effects theories at all, they are content effects theories. Most current theories in media effects are, in fact, content effects theories. This is why it is so simple for media effects researchers to borrow theories from psychology. What media effects researchers need to do is to develop theories of media effects, with media conceptualized as a mix of attributes. This, in conjunction with content effects theories, will not only distinguish communication as a unique field independent of psychology or sociology, but it may also reverse our theoretical trade deficit with other, more mature fields.

A Conceptual Application of the Mix of Attributes Approach to News

One important area of media effects research has been the role of news media in preparing the public to perform its civic duty through participation in the democratic process. A central concern is whether or not the public is sufficiently informed to do so (Delli Carpini & Keeter, 1996). Thus, mass communication researchers have for decades studied the effects of news media on political and public affairs knowledge. One aspect of this research has examined whether there are differences across media; that is, is the public better served in getting its news from television or the newspaper (Chaffee & Kanihan, 1997)? This area of research is particularly relevant to the present discussion because it concerns not only whether media generally contribute to political and public affairs knowledge (presumably by comparison to the absence of media), but also whether different media have different effects. In order to better demonstrate how one might apply the mix of attributes approach to defining media, below I offer some initial definitions of four media relevant to this area of effects research: traditional print newspapers, online (Web) newspapers, television news, and radio news. It should be understood that these definitions are preliminary and are subject to empirical validation. This
potential for empirical validation is, in fact, one of the benefits of the mix of attributes approach.

Traditional print newspapers are low in interactivity. They do not respond to the prior choices made by readers. In organization they are only moderately linear, however. The newspaper is not organized so that it must be read from cover to cover. Instead, it is organized by section (sports, metro, business) and stories are relatively distinct and thus need not be read in any particular order. However, within a given story the organization is linear, taking an inverted pyramid style. This moderate level of linearity, in conjunction with other factors, leads traditional print newspapers to be relatively high in terms of user control. The user may control the pace—reading, rereading, or skimming stories—as well as the content and sequence of exposure to various articles. Traditional print newspapers are highly visual and have no audio component. They are, however, high in textuality, with most of the space of the paper (excluding advertisements) being taken up with words as opposed to pictures. Content is quite variable, but by definition deals primarily with news as opposed to entertainment fare.

Online newspapers share many of the characteristics of print newspapers. In practice, online newspapers are only moderate in interactivity due to the frequent lack of chat functions. Similarly, the structure of online newspapers is similar to traditional print newspapers in that within most stories they are linearly organized with an inverted pyramid style. For those papers that provide direct hyperlinks between stories, the structure becomes less linear, but this function is not as common in online newspapers as one might expect, given the capabilities of the Web (Lin & Jeffres, 2001). Control is high, as users are able to adjust the pace, sequence, and content of the medium. The inclusion of audio and audiovisual actualities in many online newspapers leads to a rating of moderate in terms of audio and high in terms of visual. Online newspapers are only slightly less textual than traditional print newspapers, and this difference is due to the use of audio and audiovisual clips to supplement direct quotations and paraphrasing in articles. Content tends to be news related, but it is variable across sources and over time.

Television news is, in practice, low in interactivity. Moreover, its structure is highly linear in that a given newscast progresses from a clear beginning (top stories) to end (weather and sports in local news, in-depth features in network news), and within stories it tends to take a narrative format. Television news is very low in user control, because neither the pace, nor the sequence (if one wants to see sports before weather, for instance) can be controlled by the user without the inclusion of some additional technology like a VCR. Television news is high in both audio and visual attributes, but is normally low in textuality. Again, content varies by news program, but generally focuses on news information, broadly defined.

Radio news is, like television, low in interactivity. Its structure is linear and stories generally follow a narrative format. Again like television, radio news is low in user control because the pace, content, and sequence of radio news cannot be altered by the user. Radio news, unlike the other three forms of news described here, is entirely auditory and has no textual component. The content of radio news varies but is, for the most part, focused on current events.
An Empirical Example of the Mix of Attributes Approach

In order to demonstrate some of the benefits of the mix of attributes approach, I will briefly describe a series of studies I have conducted with various collaborators over the past several years. Although these studies only implicitly follow the mix of attributes approach—none reference it directly—they do demonstrate how it may be applied in a research program.

Eveland and Dunwoody (2002) were interested in the effects of communicating the same information online compared to a traditional print magazine. We believed that the Web encouraged a different information structure compared to traditional print media, primarily through the interlinking mechanism commonly employed in hypermedia systems like the Web, but rarely found in traditional print magazines. In addition to the basic media comparison question, we designed our study to assess the reasons behind differential learning of the same content portrayed in print versus online media that had been identified in a previous study (Eveland & Dunwoody, 2001). Two mediator variables, selective scanning and elaboration, were examined because theory suggested that both would be related to the attribute of structure that was a key component of difference between traditional print and online media. We conducted an experiment in which content was held constant across two conditions—traditional print and a hyperlinked Web version—and the two mediators were measured. Initial results indicated that learning was greater in the print than the online condition. More thorough analysis suggested that the effect of medium (really the attribute “structure” or possibly “user control”) could be explained through its effect on the mediator variables. The Web condition encouraged more elaboration and selective scanning than the print condition. Elaboration then increased learning, whereas selective scanning decreased it. Once these two mediators were controlled, there were no direct effects of the manipulation of medium (or structure). Unfortunately, technological medium and information structure were confounded in the study design.

This confound was addressed in several later studies in which the technological medium was held constant and only the structure of the information was manipulated (Eveland, Cortese, et al., 2002; Eveland et al., 2002). Moreover, because the structure of information appeared to be an important variable, we began to consider additional dependent variables that might be influenced by information structure (as opposed to information content). The first two experiments (Eveland & Dunwoody, 2001, 2002) had employed measures of factual knowledge as criterion variables. However, we believed that because information structure was being manipulated, the structure of cognition might be an important outcome variable. Thus, the focus on the attribute of structure led to later studies in which the effect of manipulating information structure on knowledge structure took center stage (Eveland, Cortese, et al., 2002; Eveland et al., 2002). These studies replicated prior results on the benefits of linear information presentation on learning of factual knowledge. They also demonstrated, however, that learning of information structure was greater for nonlinear information designs, suggesting that some forms of learning benefitted from by the traditional organization of print information whereas
other forms of learning benefitted from the nonlinear organization of information most often found online.

Ultimately, for research to be most valuable, it must be brought into the real world. Thus, we also worked toward more generalizable findings by comparing naturally occurring content from various media—television news, newspaper news, and online news—that were expected to vary according to their information structure (Eveland, Seo, & Marton, 2002). Findings from this research were generally consistent with earlier results, with media having more integrated information structures (online news) producing greater structuring of information in memory, but media typically presenting information in a more linear manner (television news and print newspapers) producing more accurate recall. Of course, this more ecologically valid research cannot as clearly demonstrate exactly which attribute of the different media was operative because of a lack of control over the stimulus materials, but the earlier experimental work provides strong clues. Together, these studies suggest some of the benefits of following the mix of attributes approach. Below I describe in detail the potential benefits of this approach.

Benefits of the Mix of Attributes Approach

As already noted, there are a number of benefits of the mix of attributes approach, and the benefits are both empirical and theoretical. They include (a) more clear explication of each new medium; (b) the facilitation of theorizing regarding the effects of media; (c) the identification of new independent variables beyond medium (i.e., attributes); (d) the identification of new dependent variables through the identification of new independent variables; (e) the ability to explain prior and future null findings for media effects; (f) the ability to understand and incorporate atypical applications of media technologies in our theories; (g) the elimination of the need to recreate the theoretical wheel with the introduction of each new medium; and (h) facilitation of the creation of new media.

Clarity in Media Explication

A central benefit of the mix of attributes approach is the requirement of researchers to clearly explicate their concepts. For instance, if it is central to the definition of traditional print newspapers that their stories employ an inverted pyramid structure and that television news follows a narrative structure, then it should be obvious that research comparing television news and newspapers must not hold the organization of information constant. To do so, and then not find effects, would not be an ecologically valid comparison. Such has been the limited value of some early television news versus print comparisons to generalize an effect of textuality or channel to the effect of the medium more generally (DeFleur et al., 1992; Stauffer, Frost, & Rybolt, 1981). This is basically a limitation of conceptualizing media as a single attribute (e.g., textuality) as opposed to a multidimensional mix of attributes. Although we can isolate single attributes and manipulate them in the laboratory—and we should—ultimately inferences about media in the real world
must be based on the multidimensional mix of attributes. Put another way, we need to consider not only the effects of each attribute independently, but also how the attributes interact as concrete operationalizations of mass media.

As important as conceptual clarity is the increase in empirical clarity. The application of quantitative criteria to the conceptualization of media in the mix of attributes approach permits the conceptual definitions of media to be tested empirically. That is, once clear conceptualizations of each media attribute are provided, operational definitions for each of the attributes can be developed as they would be for any other concept. Once conceptual and operational definitions of attributes exist, the definition of any medium could be tested against a reality criterion and the medium can be placed in the multidimensional space described earlier.

For instance, consider the mix of attributes definition of television news discussed above. I argued that television news is low on control, high on audio and visual components, low on textuality, and with content focusing on news. Perhaps some readers would disagree with my explication of television news. A benefit of the mix of attributes approach is that we could settle our debate about the attributes of television news by conducting a content analysis to compare television news to news in some other medium on the various attributes, or to compare it against the criterion implied in my explication.

In order to do so, we must first be certain that there are clear conceptual definitions available for each attribute. Then, operational definitions for each attribute must be constructed. Suppose we employ “the proportion of a unit of content for which textual representations are a central feature” as an operational definition of textuality. This could then be measured directly. We would first identify a pool of programming that would be relevant to television news, then sample from that pool. We might include 6:30 p.m. broadcasts from the three major networks, plus similar broadcasts from CNN, Fox News, MSNBC, and PBS. After a formal content analysis, we could determine whether or not any or all of these programs met the explication of television news offered above and to what extent specific programs deviated from that explication. Moreover, had we chosen to apply definitions to online newspapers, print newspapers, radio news broadcasts, and so forth, we could determine whether the relative ranking of each medium on each attribute as explicated was accurate.

Facilitation of Theorizing About Media Effects
Potentially the most important benefit of the mix of attributes approach is that it should facilitate theorizing about how media effects take place. By boiling down media to their component attributes, researchers will be forced to consider not “television” to be the independent variable, but some combination of the attributes of television, either in a linear or interactive combination. Thus, when a researcher claims that individuals learn more from television news than newspapers, a clear explication of the attributes of each medium will offer a starting point for identifying just what it is about television news that produces greater learning than from newspapers. Might it be that the inverted pyramid structure of newspapers is difficult to follow compared to the chronological presentation of television news?
Or is it the presence of visual images in television that makes learning easier? Or the absence of text that might be above the comprehension level of most users? Or the lack of decision making about what content to select and what to avoid that is necessary when viewing television news compared to reading a newspaper? Or some combination of these? Once the researcher has clearly explicated the media of interest, much of the initial work toward theory building has been done because the relevant variables (the attributes) have been specified.

A number of researchers have decried the lack of theory in mass communication, and particularly the lack of original theory developed in this field by comparison to theories borrowed from psychology, sociology, political science, and economics (e.g., Berger, 1991). By focusing the field back on media through the mix of attributes approach, we are likely to develop more and better theories that are centrally relevant to issues important to mass communication research. Historically, by abandoning our home turf and simply borrowing theories from other fields, we have relegated ourselves to the role of the underachieving younger sibling of fields like sociology and psychology that generally have higher standings than communication in the eyes of administrators and the public.

Identification of New Independent Variables

Most media-related variables in quantitative mass communication research today center around exposure to (or maybe attention to or some other form of use of) the content of a given medium. This is because, in many ways, media appear to be primitive terms in our field, irreducible to some lower level. However, by following the mix of attributes approach, mass communication researchers will greatly extend their domain of independent variables related to media. That is, instead of employing “television news” as an independent variable, one can employ the various attributes that make up television news as independent variables in both linear and interactive combinations. Story structure may be theorized to have an effect, and then this variable can be manipulated in the context of television news by using either inverted pyramid or chronological story orders. By the same token, and as some have done (Edwardson, Grooms, & Pringle, 1976; Edwardson, Grooms, & Proudlove, 1981), one can compare television news stories that are highly visual to those that are the visual equivalent of a radio news broadcast (i.e., talking head). There has been, to date, relatively little theorizing about the influence of various attributes of media by comparison to the theorizing and research on the effects of media generally or media content. The application of the mix of attributes approach should encourage researchers to expand their repertoire of independent variables, which should increase the predictive strength of our research.

Identification of New Dependent Variables

The advent of new independent variables should bring with it the introduction of new dependent variables. As researchers begin to move beyond the effects of a medium to examine the effects of media attributes, new dependent variables should suggest themselves. As was apparent from the earlier example of research fitting within the mix of attributes approach on learning from media, including the notion of organization or structure into the definition of a medium and the domain of
independent variables, suggests that some other structure may be a meaningful dependent variable. So, when researchers manipulate the structure of a medium, they should look for an influence on the structure of an individual's cognition (Eveland et al., 2002). The move from a focus on persuasion in early mass communication research to the dependent variable of cognition (through theories such as agenda setting and cultivation) produced a revolution in the field that led to the rejection of the limited effects era (Becker, McCombs, & McLeod, 1975). By sensitizing researchers to new dependent variables through the identification of the central attributes of media, the mix of attributes approach may facilitate the next step in our evolution of thinking about what kinds of effects mass media may have.

**Ability to Explain Null Findings**

Some researchers have come to the conclusion that there is no evidence of media effects. From the conceptualization of media as technological appliances, this is a logical conclusion. For instance, educational psychologist Richard Clark (1983, p. 445) argued:

> The best current evidence is that media are mere vehicles that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes changes in our nutrition. Basically, the choice of vehicle might influence the cost or extent of distributing instruction, but only the content of the vehicle can influence achievement.

However, from a mix of attributes perspective it is easy to explain away the null findings described by these scholars (see Clark, 1985). We need simply to ask “what attributes of media might have been theorized to cause the relevant effects?” and “what attributes of media were manipulated or measured in the research?” If the answers to both questions are not identical, there is a simple explanation for the null findings. Clark’s (1983) claim cannot be sustained if the attributes that were expected to produce effects were held constant along with presumed extraneous variables in the experiments. The flip side of this coin is also true. If the attribute specified by theory to produce an effect is manipulated while all others are held constant, and no effect is produced, it provides a clear rejection of the theory compared to the ambiguity produced when multiple attributes are manipulated simultaneously but not independently.

**Ability to Incorporate Atypical Uses of a Media Technology**

In my earlier example of the conceptualization of television news, I argued that it is low on textuality. Therefore, I might develop a theory that claims that those low in education can learn more from television news than from newspapers because the low textuality of television requires a lower threshold of formal education before meaningful learning can take place. Someone might argue, however, that the current application of CNN’s *Headline News*—with its scrolling headlines at the bottom of the screen and bullet points related to current stories consuming much of the left side of the screen—is high in textuality. It is reasonably clear that
this particular form of television news is relatively high in textuality (compared to most network television news) and thus may not produce the predicted effects. Thus, my theory can much more easily handle this atypical application of the medium of television than could a theory that simply defined television news as a news program delivered via the technological appliance called television. More generally, the mix of attributes approach can help us identify these atypical cases of the application of a technology (i.e., a thesaurus, a dictionary, and an encyclopedia all are structured more like the Web than are traditional novels or books) and the unique effects they may produce.

Eliminates the Need to Reinvent the Wheel With Introduction of New Media

It often seems that each new technology that comes along produces a subset of researchers who believe that this medium “changes everything.” Virtual reality, these researchers might argue, requires new theories and new concepts, which then require all new research. Similarly, the Internet and its World Wide Web are somehow supposed to be fundamentally different from all that has come before, and thus research and theory must start from scratch (Gunter, 2003).

The mix of attributes approach makes such extreme reactions to new media difficult to sustain. From the mix of attributes approach almost every new medium would merely represent a new point on the multidimensional continuum of attributes that make up all other media. In some rare cases the introduction of a new medium might suggest the addition of a new attribute to the mix, but researchers will most often realize that existing media can be scored on that attribute as well, and that it had merely been ignored in past research. For instance, many new media technologies have been touted as introducing interactivity to mass media (Heeter, 1989), going at least as far back as experiments in the 1970s with interactive cable television such as the QUBE system in Columbus, Ohio (see Abramson, Arterton, & Orren, 1988) and early video games (Rice & Williams, 1984). This suggests that it was not the Internet that brought us the concept of interactive mass media. It is fairly simple to consider the level of interactivity of old media as well. Just because a medium typically falls on the low end of the continuum for an attribute, that does not mean the attribute does not or did not exist.

The logic of the mix of attributes approach, then, will encourage theory that focuses on the attributes of media. Theories that do so can then easily incorporate new media with a different mix of attributes—no new variables, nor new theories, are likely to be required with the introduction of a new medium or an advance on an old medium. This will allow researchers to devote their effort to more inclusive and general theories of media effects as opposed to the exhausting work of developing new theories with each new technological advance—especially as advances come more and more quickly and media seem to change on a yearly basis.

The Development of New and Better Media

If theorists and researchers can identify the attributes of media that are responsible for both the good effects and the bad effects of media, and attributes are conceptualized not as stark categories designed for existing media but instead as a theoretical continuum that could cover both existing and fantasy media, academic
researchers could more easily contribute to the creation of new media that would better serve societal functions. That is, most research in mass communication has been reactive—focused on studying the effects produced by existing media. The mix of attributes approach would encourage research to be proactive—focused on identifying the combination of factors that would increase the most desirable effects and decrease the most abhorrent media effects. Once this ideal mix of attributes was identified, theorists and researchers can proactively work with engineers to develop new media forms as opposed to simply reacting to the media forms we have today.

Conclusions

Too much research in the current media effects paradigm does not actually address the effects of media. Instead, it focuses on the effects of content that are simply carried by various media. A mix of attributes approach is needed to bring attention to what it is about media that produce effects. This is not to say that the effects of media content are unimportant—it is hard to conceive of most media effects without content. Moreover, the way individuals use media can alter the nature of media, for instance, those who use television news for its audio content but do not actually pay visual attention to it are not receiving visual information from this visual medium. However, these criticisms do not eliminate the need for researchers to devote more attention to how media content interacts with the other attributes of media or how the nature of a medium permits or encourages various types of uses. Thus, even researchers who do not operate from a media effects perspective can benefit from a consideration of media not as qualitatively different entities but as a mix of attributes. The move toward a focus on a mix of attributes would encourage a number of positive outcomes that could potentially revitalize the study of media effects and bring a measure of recognition and independence to the field of mass communication.

References


