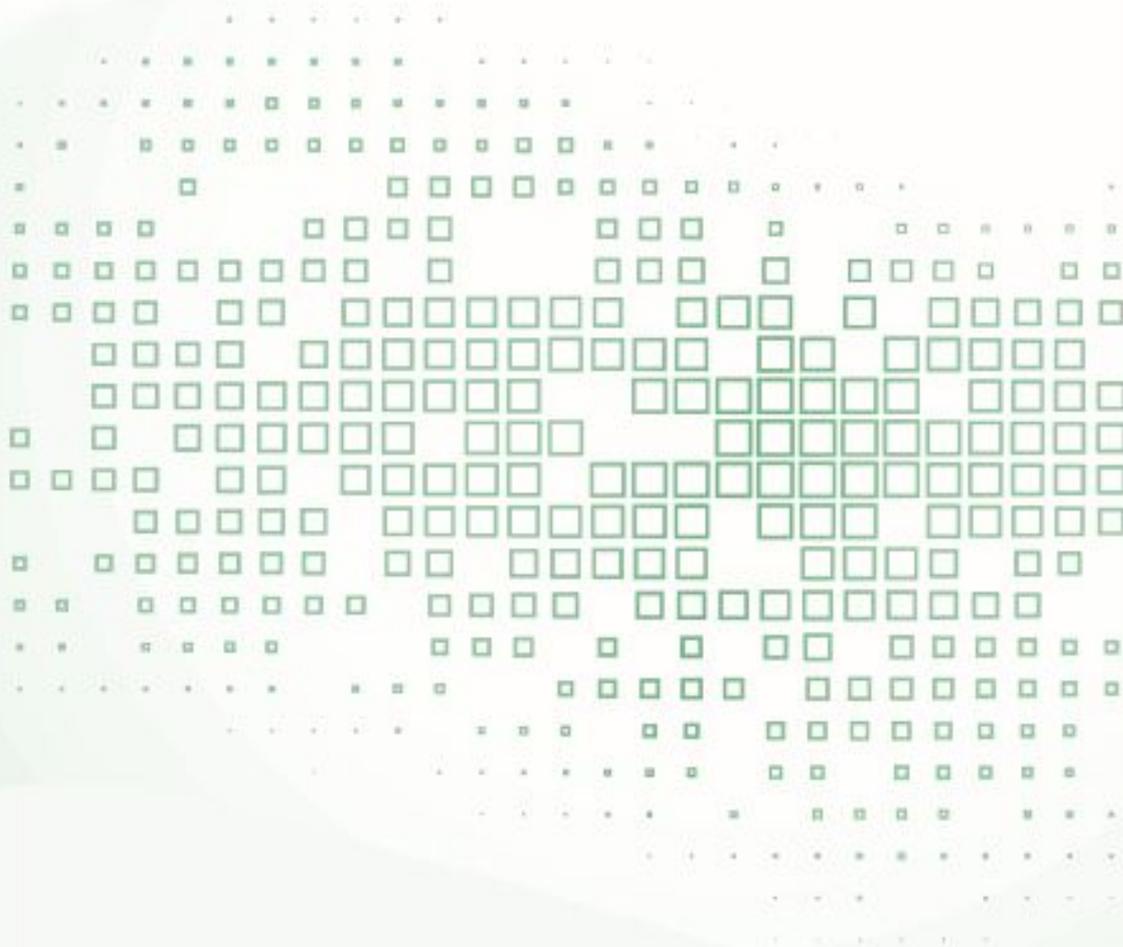


# The Digital Difference

EVOLVING MEDIA TECHNOLOGY AND THE  
THEORY OF COMMUNICATION EFFECTS



**W. Russell Neuman**



# The Digital Difference



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MEDIA TECHNOLOGY AND THE THEORY  
OF COMMUNICATION EFFECTS

*W. Russell Neuman*



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*In memory of Margaret W. Neuman*



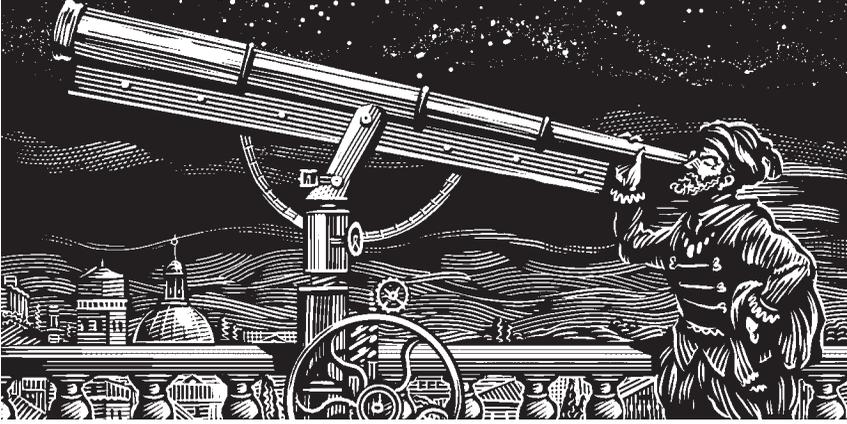
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## 2

### The Prospect of Precision



It is the mark of an educated man to look for precision in each class of things just so far as the nature of the subject admits.

—ARISTOTLE

To speak with precision about public opinion is a task not unlike coming to grips with the Holy Ghost.

—V. O. KEY JR. (1961)

The state of research on media effects is one of the most notable embarrassments of modern social science.

—LARRY BARTELS (1993)

CHAPTER 1 MADE the case that the field of communication research has been organized around a particular Kuhnian puzzle—the issue of media effects historically framed by a deeply ingrained concern about propaganda effects following the Second World War. Kuhn’s model of scientific paradigms, of course, posits the existence of not just a puzzle, but a puzzle paired with a methodology designed to “solve” the puzzle. This chapter focuses on that evolved methodology that has, like the puzzle, dominated the field for the past half century. And, as noted above, given the shift from push to pull media, the methodology may also benefit from

refinement in consideration of the new media environment. The central theme—the prospect of precision in measuring what the media do—is based on the premise that the phenomenon of human communication is particularly resistant to reliable measurement and the use of traditional social scientific quantitative analysis. It is resistant for two reasons: (1) profusion, the incredible abundance of words and images in the individual's daily environment, increasing even more in quantity and diversity in the digital age, and (2) polysemy, the fact that each of these words and images is subject to dramatically variant interpretation by different individuals.

Economics deals with profusion and large quantities, but the monetary units studied are clearly defined and their value, at any point in time, not subject to divergent interpretation possibly based, for example, on deeply ingrained values and social identities as is the case in communication. Political science deals with large quantities, as well, but, like economics, voting statistics, for example, are quantitatively clear-cut; a vote is a vote. Sociology, a more diverse field of study deals with issues of inequity in class, status, and power, and, again, like economics, measures of such phenomenon as socioeconomic status are no longer controversial or problematic. The measurement of meaning, however, is fraught with additional levels of complexity. Trying to document whether a persuasive message has had an identifiable effect on an audience member within the churning message flows of modern society is like trying to count all the stars in the heavens.

### **Counting Stars**

Counting stars is difficult because there are so many of them, because they are in constant motion, because they are frequently obscured, and because they are, in fact, inaccessible to direct examination. The faint, flickering patterns of light are ephemeral. Human thinking about heavenly bodies resonates with the most famous and one of the most historically controversial of scientific paradigm shifts—the transition in human perception of a geocentric to a solar-centric solar system. It is difficult for the human being looking up at the nighttime sky to make sense of the distance of and volume of individual stars, let alone to understand their structure and profusion. Typically we can see several thousand stars with the naked eye. Astronomers explain that what we see at night is really an infinitesimal fraction of the trillion stars in our own galaxy. From other astrophysical

measurements and theory, scientists estimate that there are about a trillion galaxies. So when we look up, although faint beyond human perception and obscured in various ways, we are looking at a trillion trillion stars (Comins and Kaufmann 2011). Indeed, we have been looking at the evening sky and struggling to make sense of it since the beginning of human life on earth. For most cultures the patterns of the stars are interpreted as figures of humans and animals and, of course, divinities of various sorts. We look up and see the hunter Orion with a club and a sword belt and household objects like dippers, big and small. We exhibit some remarkable creativity in perceiving patterns among the stars and attributing meaning and causation to them. But it would appear to be foolish to try to actually count them, to enumerate each one for a precise quantitative assessment. For some critics such an enterprise would be an exercise in hubris; for others, worse than hubris—such an ill-advised venture into the nature of the heavens would be blasphemous. For the purposes of the extended metaphor concerning a search for precision, the lesson is a little less harsh: precise measurement of the expansive phenomena of human communication is extraordinarily difficult and will require both the perseverance and analytic creativity in interpreting limited and error-filled data. Perseverance and analytic creativity have served modern astronomers well. The splintered enterprise of communication research should take heart.

### **The Fundamental Paradigm of Media Effects Research**

The evolved research paradigm for media effects research is remarkably simple—it consists largely of the analysis of correlations between variation in media exposure and variation in behavioral response. At this level of description it might strike one as an entirely reasonable model for organizing and testing hypotheses and, it would appear, relatively easy to implement. The seminal experimental design was pioneered by Carl Hovland and his associates at Yale as they systematically varied the character of persuasive messages and assessed the relative degree of evident attitude change (Hovland, Lumsdaine, and Sheffield 1949; Hovland, Janis, and Kelley 1953). The corresponding survey design was developed by Paul Lazarsfeld and colleagues at Columbia, who examined the changes in vote intention for voters of different backgrounds and for those routinely differentially exposed to newspapers and radio (no television yet) (Lazarsfeld,

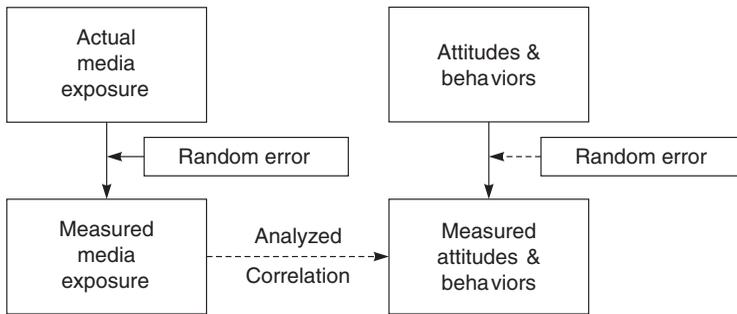


Figure 2.1. Fundamental Analytic Model of Media Effects

Berelson, and Gaudet 1944). The systematic quantitative assessment of mass media content known as content analysis was explored by Harold Lasswell and his team of propaganda researchers in Washington during World War II and later at Stanford and Yale (Lasswell 1935). Lasswell's dream study design developed back in the 1930s (but never fully implemented) was the World Attention Survey, which proposed to correlate newspaper content with different predominant attitudes and behaviors of different nations (Lasswell 1941). The following sections of this chapter review in some detail why, unfortunately, what appears at first glance to be a reasonably specified and straightforwardly implemented analytic causal model turns out to be anything but. The fundamental model has been diagrammatically expressed numerous times (McQuail and Windahl 1993; Jensen 2011) albeit seldom with reference to the prospect of measurement error, but at its core has the fundamental structural properties as expressed in Figure 2.1. This model is elaborated as the chapter proceeds.

Each chapter section explores examples of research and various calls to action for refinement of research that have been articulated over the years as scholars have struggled with the theories and with the data. But two themes, as noted above, will dominate the review, the two challenges that are characteristic of although not entirely unique to the study of human communication: the issues of profusion and polysemy.

Briefly, the profusion of common messages over virtually all media and accumulatively over many years for any adult subject results in the practical impossibility of finding a defensible control group, that is, an otherwise socially and psychologically equivalent sample that is not exposed. If the same fundamental messages and narratives are also present in books,

motion pictures, broadcasting, and print media, then measuring the use of different media (as typically done in the uses and gratifications tradition) is not particularly helpful. If one systematically varies exposure and non-exposure to, say, three persuasive messages or three particularly violent narratives in an experiment and then looks for differential responses in otherwise equivalent samples, one can explore message effects only *at the margin*—that is the difference between a subject who has seen 100,000 such messages and one who has seen 100,003. If one examines comparisons across nations and cultures who are exposed to systematically varied messages, it is not practically possible to parse out differences in communication flows from other differences in culture, social structure, economics, and historical context.

Correspondingly—polysemy results in a broad and complex distribution of potential behavioral responses rather than a single measurable “effect.” Thus a persuasive message carefully designed to, say, demonstrate the “benefits of healthy eating” may for a number of those exposed simply remind them of their hunger pangs as they make a mental note to head out for a generous helping of sugary or salty fast food as soon as the study is finished.

### **Profusion’s Challenge to Measurement**

Dealing thoughtfully, precisely, and realistically with these massive flows of mediated text, audio, and images is the challenge at hand, and an attempt to respond to this challenge represents one of the central themes of this book. Chapter 3 is entitled “The Paradox of Profusion” and addresses these new trends in the tidal quantities of communication flows further. For now attention is drawn to questions of appropriate methodology and the prospect of some reasonable precision and reliability of measurement.

One might approach the question of exposure to, for example, depictions of violence with a new and novel methodological approach. What if instead of systematically varying levels of exposure to violence experimentally, a researcher simply sat down with a few young respondents and asked them to remember as many as possible of the presumptive 100,000 mediated violent acts they have seen or read about that they could recall. The researcher could assure them, “Take your time—we have all day.” It is likely that that the respondents’ memory for specific depictions would be

exhausted in a few minutes after recalling several dozen shootings, stabbings, stranglings, and perhaps a poisoning or two. The subjects would be reminded that social scientists usually also include “verbal threats of potential violence” in their counts of depictions of violence, and that might stimulate another dozen or so recollections of threatened violence. This is an essential characteristic of the causal dynamics of media effects. The ratio of actual exposures to those exposures that can be recalled or otherwise identified is many thousands of actual exposures to every recalled exposure, something in the order of 10,000 to 1. There may well be important subliminal effects of exposure to violence without explicit recall, but subliminal processes are even more elusive and resistant to assessment.

Take any number of theoretically prominent phenomena in the tradition of communication research—stereotypes about young African American males, differentiated gender roles, the trustworthiness of the federal government, the conspicuous consumption of consumer goods, sexual behavior (Jeffres 1997; Perse 2001; Preiss et al. 2007; Bryant and Oliver 2009; Sparks 2010). How many relevant messages has, say, a healthy, active, and engaged twenty-year-old been exposed to accumulatively in his or her life thus far—messages in school, media messages observed directly or passed on by parents or peers? Ten thousand messages for topics this broadly defined is probably too low. One million messages—perhaps too high. It is difficult to tell, but perhaps something in the neighborhood of 100,000. Only a tiny percentage of relevant messages can be explicitly remembered, but there is no reason to believe various forms of potential “effects” would require explicit and current conscious awareness.

The scientific understanding of human behavior is based on the careful analysis of variation—thus inevitably the first paragraphs of any traditional social science study report identifies the “variables” of primary interest and a few hypotheses about the structural relations among them. And most studies in mass communication are no exception. Communication researchers routinely rely on such variables as self-reported exposure to television or newspapers in survey studies or systematically varied exposure to several minutes of persuasive messages or narratives in experimental studies. What is typically taken as nonproblematic, and what clearly should not be, is the character of the underlying distribution of those variables.

**Communication at the Margin.** Communication researchers, not surprisingly, tend to focus on the potential role of media depictions and persuasive messages in domains of social life that are currently attracting interest and controversy. Thus, for example, the depiction of racial or gender stereotypes, news reports and political ads, the depiction of violence and sexuality have each inspired large components of the accumulated research literature (Berger, Roloff, and Roskos-Ewoldsen 2009). This may be as it should be, but it creates a fundamental challenge to research design because the quantities of media content that deal with race, gender, public affairs, and the like is massive and utterly pervasive. Take as a case study the depiction of interpersonal and social violence in the media.

The question of whether violent media content raises the propensity for violence in the modern world is a staple of communication theorizing. It has roots in the earliest prototypical effects studies in the first half of the twentieth century (Wartella and Reeves 1985). It spawned several thriving academic journals devoted to this specific topic and other research reports on media and violence continue to represent a dominating presence in numerous other journals in the field of media psychology. One review study succeeded in tracking down thirty-five hundred studies on this media violence published since 1950 (Grossman and DeGaetano 1999).

Experimentalists in this tradition will routinely assign random subsamples of subjects (usually youthful subjects who are of obvious particular interest) to different conditions defined by the presence and corresponding absence of depicted violence in film or video narratives, text-based scenarios, or video games. Typically differences in self-reported propensity for or actually observed antisocial behavior immediately following exposure are found to be in evidence. But it is difficult to interpret these associations as causal in the traditional scientific sense of a meaningful and potentially longer-term change of state. The reason is that the only variance available to be scientifically explored is *variance at the margin*. By the time they finish elementary school, the average American youngster has witnessed 100,000 violent acts and about 8,000 murders on television alone (Huston et al. 1992). At an average of fourteen violent acts per hour (Strasburger and Wilson 2002) even in the programming aimed at children (aside from programming for adults children routinely watch), how is it possible not to be working with slivers of difference in exposure

at the tip of a massive distribution of exposure? The few children from intensely religious or other ideologically motivated households who have little or no exposure to this component of popular culture represent an interesting curiosity but embody an entirely noncomparable subsample for purposes of research. It is, of course, true that accumulative exposure over time could represent a highly significant effect. But in the real world with longitudinal field data researchers are forced to confront the causal difference between exposure to typically something of the order of 85,000 violent acts as opposed to 115,000. Because of the fundamental fact of communicative profusion, such empirical and analytic challenges are simply inherent in the phenomenon at hand.

**Systematic Inattention and Forgetting.** It is unrealistic to imagine that even some rare individual with something approaching a photographic memory could possibly resurrect anything more than a few percent of such media depictions of violence, sexuality, or persuasive political arguments. It is the nature of the beast—or in this case the nature of the causal processes under study. The fact of the matter is that our cognitive systems are thankfully designed to forget large portions of our visual and auditory perceptions. The human brain functions with entirely separate systems for long-term and short-term memory (Cowan 1998; Klingberg 2009). We recall our hotel room number while we are at the hotel, but a week later can typically no longer resurrect the specific number as it is no longer relevant. Like many of the sensory perceptions of our existence, to keep such context-specific details in memory would simply clutter our minds. The way humans (in fact all organisms) deal with immense flows of sensory data is that they filter out, ignore, and forget all but a few fragments of perception. We attend to the salient elements of our environment that our relevant for survival and reproduction. We may remember our first kiss, our first day at school, and when we tried to dance like John Travolta in *Saturday Night Fever*. Systematic inattention and selective attention are simply inevitable responses to tidal quantities of mediated messages in our environment. We do recall having seen John Travolta in another movie of that era, *Urban Cowboy*, but we can't recall anything else about it except that he rode on some sort of mechanical bull in a honky-tonk bar trying to impress the girl. (Who was that actress?)

**Reinforcement.** The communication research paradigm typically identifies the key dependent variable to be “attitude change.” The implication, of course, would appear to be that if a fixed belief or opinion was not subject to evident change there was no “effect.” But given that there are competing flows of pro and con messages on most contested issues and certainly as well in the domain of product marketing, a potentially important communication “effect” may be the reinforcement of a given belief or opinion in the face of competitive messages. If it can be demonstrated that in the absence of a reinforcing pattern of messages, beliefs and attitudes would indeed change in response to a communication environment, that would unambiguously represent an “effect.” As a result of Joseph Klapper’s (1960) famous discussion of reinforcement and the troubling association of reinforcement with the dreaded evidence of “minimal effects,” the paradigm of accepted research design has awkwardly and unfortunately avoided the systematic study of patterns of reinforcement. Given that one of the most widely acknowledged factors in selective attention and selective recollection is familiarity, this one-sided methodological focus on attitude change has constrained theoretical and empirical progress.

**Opinion Change versus Opinion Creation.** There have been several references to the carefully constructed and cumulative research designs of the Hovland team at Yale in the 1950s. As psychologists with a background in learning theory, it was not surprising that their attention was drawn to cognitive dynamics rather than the embedded social character of the topics they picked for their experimentally manipulated attitude change experiments. In marked contrast to the sociologists at Columbia who found very little evidence of change over an election period in the socially embedded beliefs concerning policy, party identification, and candidate preference, the Yale group members were relatively casual about the topics they picked. In fact they made an unapologetic point about picking topics that subjects were not likely to be familiar with to increase the likelihood of demonstrating “attitude change.” Some topics were notoriously strange or obscure—one persuasive message focused on the consumption of chocolate-covered grasshoppers and another on the esoteric issue of requiring dentists to carry liability insurance. In retrospect, many analysts of the field remarked that what was described in the original studies as evidence of attitude change was in many cases more appropriately charac-

terized as attitude creation (McGuire 1985). Accordingly, as the hard work of methodological refinement continues and paradigmatic goals evolve from celebrating not-so-minimal effects to systematically assessing the conditions of effects, careful attention to the embeddedness, strength, or level of commitment to opinions and beliefs subject to change or reinforcement will become more clearly identified.

**Cultivation Analysis: A Small Step.** One of the most creative and influential approaches to dealing with the profusion of media messages and the more subtle and potentially subliminal influences over time of mediated themes was developed by George Gerbner and his colleagues at the University of Pennsylvania under the banner of cultivation analysis. Gerbner was not a fan of traditional effects research and explicitly avoided the term *effects* in opting for *cultivation*, which captured the prospect of the long-term envelopment of individuals in a particularized message environment (Gerbner 1956, 1967, 1969). The research team focused on broadcast television and pioneered a survey-based approach to matching beliefs about such issues as the threat of crime and the prominence of the medical and law enforcement professions with self-reported levels of daily television viewing (Gerbner et al. 1976, 1978, 1979, 1980; Gerbner and Gross 1976). Despite Gerbner's critical bent, he ended up adopting a classic variation of the fundamental communication research paradigm. The surveys revealed that those who reported higher viewing levels were more fearful of crime and exaggerated the percentage of law enforcement and medical professionals (as emphasized, of course, in television's crime and medical genres). The difficulty here is that those of less education and lower social status (who have every reason to be more fearful of street crime and may be less familiar with the distribution of professional careers) watch television at much higher levels and unlike the college-educated respondents, do not seem to feel any embarrassment in describing their viewing levels, which further exaggerates the class-viewing level correlation. As a result it is difficult to adequately control for or parcel out the "TV effect" from the "social class effect" and the "selective exposure effect" (Hirsch 1980, 1981a, 1981b; Hughes 1980; Gerbner et al. 1981a, 1981b; Wober and Gunter 1982; Rubin, Perse, and Taylor 1988; Potter 1994). The attempt to address the issue of long-term and accumulative effects is certainly a step in the right direction and the notion of an "emersion" in a message flow continues to

be intuitively appealing (Shrum 2007), but the simplistic exposure-attitude linkage of the fundamental paradigm breaks down. As Rubin and colleagues conclude—the heavy-viewing–scary-world correlation is largely spurious: “methodology may explain cultivation effects that have been attributed to television exposure . . . it is fallacious to believe that television viewing can have only negative effects . . . other antecedent and intervening variables accounted for more of the variance in the social attitude indices than did exposure levels . . . television [may] affect personal perceptions, not from inordinate exposure levels, but from content selectivity tempered by individual differences and [pre-existing] audience attitudes and activities . . . people actively and differentially evaluate television content before integrating it into social perceptions” (1988, 123–126).

**The Measurement of Media Exposure.** As noted above, the survey methodology is based on self-reports of behavior. Self-reported behavior, it is widely recognized in survey research, is notoriously distorted by multiple sources of systematic and random error. People have a hard time remembering past behavior, are notoriously bad at estimated quantities such as the number of hours of activity, and are subject to severely underreporting behaviors they believe to be socially undesirable. In one classic study, the analyst compared what people said they watched on television in a survey study with actual set-top measurements of their viewing behavior. Lower-class respondents said they watched a lot of quiz shows, dramas, and situation comedies, and that is indeed what they watched. College-educated professionals claimed to watch only sports, news, and public television while the set-top boxes revealed that their diet was pretty much the same as their less educated counterparts—a lot of quiz shows, dramas, and situation comedies (Wilensky 1964).

A central problem for the assessment of communication behavior is that the media activity is often a secondary or tertiary activity—taking place while cooking, cleaning, or talking on the phone (Robinson and Godbey 1997). As a result when researchers measure television or radio listening using the standard twenty-four-hour diary method of time-use assessment, they get exposure rates half that or even less than half of estimates from the ratings services based on set-top and people meter technologies (Robinson 1971).

**Content Differences across Media.** One frequently used methodological tool for the past half century of communication research has been to assess differential exposure to various media. One classic survey-based approach is to compare those who report getting most of their news from a newspaper as opposed to television news. It turns out that those who report depending more on the print media are systematically better informed politically and more politically active in terms of voting and contributing to campaigns (Robinson and Levy 1986). It is widely noted that a network television newscast is only twenty-two minutes long and the text from the newscast would not fill even the front page of the *New York Times*. It is noted that newspapers have much more extensive coverage, which allows those interested to read in greater detail. And it is summarily concluded that this is evidence of a media effect drawn from the difference between television and newspaper news content. The relative preference for different media—notably such phenomena as a preference for books over movies—became a staple of the “uses and gratifications” tradition of research that attempted, appropriately, to acknowledge that active audience motivations and motivated selectivity represent an important part of the paradigm rather than passive bullet-like effects (Blumler and Katz 1974; Rubin 1986). Unfortunately the use of the physical mass medium (movies versus television and the like) as the analytic variable ignored some of the most interesting differences in content and symbolic emphasis. Consider the contrasts in the character of coverage in the *New York Times* versus the *Daily News*, the *PBS News Hour* versus *Entertainment Tonight*.

Interestingly, the past decade of research on the “impact” of the Internet has adopted this medium-is-the-message model of analysis contrasting those who report relying on the Internet versus newspapers and the like. As media convergence continues, what now is simplistically identified as newspaper, radio, or television content will all be equally available on the web. As a result of these developments, analysts will have to be more focused in their matching of differential exposure and differential attitudes and not rely on the more-exposure-to-medium-x-equals-unique-beliefs trope (DiMaggio et al. 2001).

**Hovland’s Paradox: Experiments versus Surveys.** A few years before his untimely death, Carl Hovland, a towering figure of the first generation of

Table 2.1 Hovland's Comparison of Experimental and Survey Methodologies

Factor	Experiment	Survey
1) Exposure	Random assignment	Motivated self-selection
2) Message complexity	Single message	Message campaign
3) Message length	Short	Long
4) Communication context	Authoritative source/ lab	Diverse sources/natural settings
5) Typical sample	Students	Representative adult samples
6) Typical issue	Susceptible to modification	Socially significant, strongly held

communication researchers, published an influential paper in the *American Psychologist*. The title of this 1959 essay explained its purpose with the crispness and clarity that was characteristic of Hovland: "Reconciling Conflicting Results Derived from Experimental and Survey Studies of Attitude Change." Hovland was an experimentalist by training and personal proclivity, but he recognized that divergent findings from surveys and experiments resulted from the fact that each methodology had unique virtues and in the interest of scientific progress; he believed that the most sophisticated theory testing would be derived from integrating the two (see Table 2.1). He mentions, as noted above, that experimental psychologists purposefully select attitudes that are "subject to modification" rather than those that are strongly felt and/or connected with an individual's identity. As a result their work borders on the boundary between attitude creation and meaningful attitude change. Hovland goes on to note that there is no reason experimentalists could not include more socially connected and deeply held attitudes (in addition to novel ones) in their research akin to the work on political party affiliation and candidate evaluation that characterized survey research. So Hovland concludes that there really is not a "divergence" of findings between surveys and experiments, but rather that, for a variety of reasons, the two scholarly traditions ended up studying different kinds of communication situations and different kinds of messages with different characteristic samples. There is no hint in his language proclaiming the superiority of his own research tradition, but rather a clear call for the benefits of multi-method integration structured by common theoretical concerns.

The paradox of this paper is that writing the year before Klapper published his influential review *The Effects of Mass Communication*, which came to be seen as the principal canonic document of the “minimal effects perspective,” Hovland too reflected on the spirit of the time and appeared to emphasize the difference between minimal and significant effects. As Hovland puts it: “The picture of mass communication effects which emerges from correlational studies is one in which few individuals are seen as being affected by communications . . . Research using experimental procedures, on the other hand, indicates the possibility of considerable modifiability of attitudes through exposure to communication . . . The discrepancy between the results derived from these two methodologies raises some fascinating problems for analysis” (1959, 496–497).

However, in due course in his analysis he actually acknowledges that it is not a discrepancy after all, but rather a perfectly reasonable finding that different messages and contexts generate effects of characteristically different magnitudes.

Unfortunately, the challenge for multimethodological approaches to integrated theory Hovland issued in 1959 did not translate into effective practice for active researchers in subsequent decades who in large part continued to specialize in particular message types, contexts, and corresponding methodologies of convenience. This is perhaps not surprising since the academic incentives in communication like other fields continue to reward specialization and identification with smaller, self-identified peer review communities. An academic career, for example, might easily focus on the study of political campaign ads or antismoking public service announcements. The good news is that with the transition from typical one-way push analog media to digital media a variety of field experiments that permit monitoring and manipulating communication flow in natural settings give the field a second chance to take Hovland’s exhortations seriously.

### **Polysemy’s Challenge to Measurement**

When Hovland reviewed the challenges to communication research methodology, he duly noted the difficulty that the phenomenon of selective exposure presents to research design and theory building. Reflecting his own intellectual trajectory from educational and learning psychology to

media effects and perhaps also reflecting the spirit of the times in midcentury he came to characterize the problem quite narrowly. He did this in two ways. First, he more or less identified the situation of motivated avoidance of exposure to a message as exogenous—"outside" the domain of communication research. If the message was not actually conveyed to an audience member, it is not communication, and accordingly outside the paradigm and no longer subject to theorizing. Clearly, and it is increasingly true in a digital world, the motivations for, the habitual patterns of media behavior, and the technical capacities for opting out of or even fast-forwarding through exposure has to be endogenous and subject to measurement, manipulation, and theory testing. Second, again given his tradition of work with authoritative persuasive messages, he treats the phenomenon of exposure to a message with which an audience member disagrees as subject to distortion rather subject to interpretation. When an audience member does not get the message "as intended," it is characterized as a "reception" problem. Thus, according to this view, ambiguity and variegated polysemy of the message and the equally diverse perspectives and evaluative dimensions of an audience member's perception are simply exogenous to the model. But, perhaps, they need not be.

**The Complexity of Selective Exposure and Selective Interpretation.** The widely acknowledged phenomenon of audience self-selection has been a fundamental and centrally troubling challenge to communication research methodology from the outset. It is beyond dispute that partisans are attracted to like-minded content in the media. This phenomenon was addressed by the first generation of quantitative communication researchers and the notion of reinforcement became associated with the notion of "minimal" effects as characterized by Klapper, which in turn became an irresistible bugaboo for researchers to disavow and disprove. (Ironically the phenomenon of reinforcement, as noted above, need not be characterized as the absence of an effect; reinforcement is an effect. Unfortunately, however, as the field of research has evolved, most researchers appear to treat reinforcement as an uninteresting noneffect or dreaded minimal effect.) The key causal challenge, however, is making sense of a correlation between a measure of exposure to a particular type of content and a corresponding measure of an attitude or behavior assessed at one point in time. Recalling the case example of exposure to the depiction of vio-

lence in the media—the delicate challenge continues to be differentiating the fact that those with antisocial tendencies may be drawn to higher levels of exposure to violent genres from the fact that exposure may engender antisocial behavior. (The prospect of a spiral process whereby more exposure leads to higher levels of self-selection will be addressed in the following section.) The classic technique in psychological research to overcome the self-selection problem is random assignment of subjects in the experimental design. It is an effective tool in some instances, but, as noted above, a brief interval of exposure measured in minutes does not come close to capturing the potential causal mechanisms involved in exposure over years to hundreds and thousands of hours of mediated content.

As noted above, the issue of selective exposure has been characterized by some as exogenous because in the traditional “push environment” of headlines and prime-time network television, the capacity to exercise choice was limited. This challenging problem becomes more serious as the high-choice environment of abundant content and sophisticated algorithms of choice and search become available. Audience members so motivated can locate content corresponding to their specialized interests (not just violence but, say, a particular kind of violence), and, again if so inclined, they can view only those parts of a narrative that feature that content (perhaps skipping conversational sequences and going straight to the action scenes). The increased significance of self-selection in the new media environment has stimulated increased attention and concern in the research community, which has adopted the term *endogeneity* (meaning within the model) to identify the problem (Clarke and Kline 1974; Chaffee and Metzger 2001; Bennett and Iyengar 2008).

**Selective Exposure and Spiral Mechanisms.** The fundamental paradigm of communication research with its historic concern about the atomized citizens of mass society posits a fairly straightforward relationship between “cause,” variation in exposure to a persuasive message, and “effect,” variation in attitudes or behaviors. Setting aside the ambiguities of self-report measures for the moment, the model appears to make sense intuitively. The individual viewer or reader cannot influence media content; the character of such content is determined by complex decision processes in large industrial institutions. So any correlation between message exposure and individual outcomes is interpreted as a one-way causal process of “media

effects.” Some individuals may ignore or systematically misinterpret a message, of course, but within this paradigm it is typically defined as random noise or measurement error rather than a causal process in the reverse direction.

But upon reflection it would seem a perfectly straightforward strategy to model the nature of media effects as reciprocal and interactive with some media content potentially resonating with an audience member, which, in turn, over time, effects attitudes and further selective attention and selective perception of further media messages. Such a model would seem to be even more appropriate in an environment of pull media with abundant diversity, instant gratification, and on-screen tabs and buttons that lure individuals to further content (Chaffee and Metzger 2001; Bennett and Iyengar 2008; Brosius 2008). In the American case it appears that the expansion of the media flow is coincident with a more clearly labeled, more partisan, and more intensely opinionated set of media options (Mutz 2006; Nivola and Brady 2006; Harwood 2009; Stroud 2011). Studies of world media have not yet established whether this is a global phenomenon of our age (Esser and Pfetsch 2004).

Given the promise of such a model, one might wonder why it is only rarely invoked. The answer in this case is strikingly clear and powerfully influential. Such research designs are extremely difficult and expensive to implement. Most scholars and students have limited time and limited financial resources and are drawn to the practical simplicity of the single-shot survey or experiment. As noted above, self-reports of attending to a lot of (violent, conservative, sexual) media and self-reports of associated attitudes and behaviors have multiple sources of covariance such as perceived cultural acceptability and style of speech. Attributing all such covariance to “media influence” seductively strengthens the chances that any such hypothesis put forward will be sustained by the data collected. Most researchers are keenly aware of such limitations and engage sophisticated statistical controls to try to distinguish actual causation from mere correlation as best as possible. But without time as an analytic variable built into the research design, a clear distinction eludes even the most advanced statistical manipulations.

In addition to additional cost and complexity, over time studies raise other vexing problems. Inevitably, some subjects will be missing from successive waves of inquiry, and the likelihood of encountering missing data

may be associated with key analytic variables of interest. Over time research by definition requires the researcher to identify specific time intervals for measurement, a design task more difficult than it may first appear to be. In the real world, media effects may only become evident over years or even decades, obviously not a practical time interval for a typical research design. Furthermore, subjects may remember responses made earlier in a questionnaire and attempt to replicate earlier responses to exhibit consistency of view rather than potentially evolving views. Over time research is not an easy undertaking, but for the reasons outlined above, it emerges as an extremely important additional methodological tool for the field to supplement single-time surveys and experiments.

Increased interest in reinforcing spiral mechanisms has been stimulated by an influential article in *Communication Theory* by Michael Slater at Ohio State University. Slater's work on health communication and violence in the media had convinced him that attention to the dynamics of the reciprocal interaction between persuasive media messages and audience member selectivity was critical to understanding how media effects work. His overview paper was entitled: "Reinforcing Spirals: The Mutual Influence of Media Selectivity and Media Effects and Their Impact on Individual Behavior and Social Identity." As a methodologist, Slater devoted a number of pages to a detailed discussion of the mathematical fine points of analyzing over time data. But the core of the paper resonates strongly with the argument being made here. He posits, for example, that reinforcing spiral dynamics are widely acknowledged but seldom explicitly theorized: "Surprisingly, however, there has been limited systematic effort to synthesize the process of media selection and media effects into a more comprehensive model . . . This notion that together media selectivity and media effects form a reciprocal, mutually influencing process is noted or implied, though not extensively developed, in a variety of classic sources" (2007, 281–283).

He reviews the central role of spiral dynamics in the classic studies of spirals of silence by Noelle-Neumann (1984), selective exposure in the uses and gratifications of entertainment media by Zillmann and Bryant (1985), cultivation processes in the work of Gerbner and associates (2002), and extensively the over-time reinforcement of social identity in the work of Tajfel and Turner (1986), another subject that resonates strongly with the argument here. Such methods are difficult and time-consuming, he notes, but the critical requirement is assessment at multiple points in time as

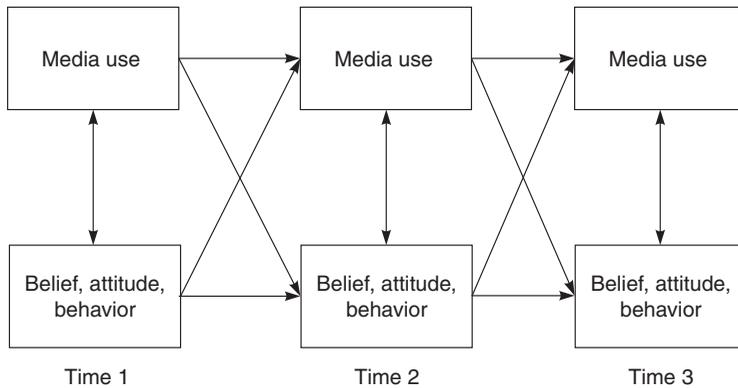


Figure 2.2. Analytic Model for Overtime Assessment of Potential Reinforcing Spiral Effects (from Slater 2007)

noted in this classic three-wave model of analysis, reproduced here as Figure 2.2, an extension of the previous model focusing on over-time dynamics rather than the complexities of self-report measures.

He mentions the interaction of new media and new forms of data collection only in passing, but it is clearly a fertile area of methodological exploration. It is interesting to speculate on how these techniques may give us a better understanding of the ritualized and routinized character of media behavior and how such routines are changing as digital media become both mobile and ubiquitous. Commercial media services such as A. C. Nielsen have been tracking television viewing and radio listening for decades—the “drive time” radio audience peaks reflecting commuter habits and the 9 p.m. evening peak of television viewing reflecting household daily routines have changed little so far (Nielsen 1986, 2010). Newspaper audience research refers to the “newspaper habit” and remorsefully traces its dramatic decline among the young (Bogart 1989). The predictable scheduling of broadcast programming had reinforced the routinization of audience behavior as a sizable proportion of the audience for *The Tonight Show* over the years watched Johnny Carson and then Jay Leno through their toes in bed as a comforting nightly ritual. It is not yet clear how these rituals will evolve, although Nielsen (2010) reports that the bedroom TV has new competition as iPads and e-books crawl into bed with their owners. Ritualized media behavior becomes associated with the reinforcement of social identity as social pressures

especially among younger media users dictates behavior (Anderson and Subramanyam 2011). The evolving linkages between habituated media patterns and social identity and the framing of social issues may well be subtle and complex in the sense of the concept of *habitus* elaborated by Pierre Bourdieu (1991, 1993). These issues will be addressed again in later chapters.

Having reviewed a frustratingly long list of impediments to over-time research, it is fitting to turn to a more encouraging development. As noted above, the digital age provides an abundance of digital footprints. As more and more media messages are digitally mediated through online search, and associated platforms such as iTunes, Amazon, and Netflix, we confront a resource much more accurate than human memory and self-reporting. With appropriate protections of individual privacy, those patterns of content exposure can be associated with later exposure, online behaviors, and even attitudes and beliefs in natural communication flows and, of course, online surveys. Researchers, especially younger researchers, are increasingly intrigued by these possibilities. (Thomas Kuhn would be proud.) This evolving research tradition is generally associated with the term *big data*, and a brief review of its promise and perils is advanced at the conclusion of this chapter. It should be clear that the argument here points strongly and enthusiastically in the direction of this new development (Wu et al. 2011; boyd and Crawford 2012; Choi and Varian 2012)

**The Puzzle of Selective Interpretation.** Setting aside the causal complexities of selective exposure for the moment, the question of what happens when, for whatever reason, an individual is exposed to a persuasive or informational message can be addressed. When in the course of habituated media exposure the sender and receiver come from closely aligned cultural backgrounds and share beliefs and values and the message is relatively straightforward, the odds are enhanced that the message received will coincide roughly with intended meanings of the message as sent. But when the cultural distances and beliefs are more distant and the message richly complex it really gets interesting. Note, for example, the epigram from *New York Times* editor Bill Keller in an essay on the prevalence of conspiracy theories in the public sphere: “Conspiracy theories erupt whenever unfathomable news collides with unshakable beliefs.” He was paraphrasing political historian Robert Goldberg’s (2001) views when he composed

that sentence, but it does capture the dynamic of selective interpretation colorfully, and the phrase was picked up by numerous bloggers. This is, at its core, simply an acknowledgment of the phenomenon of polysemy. Consider the response of public opinion in the Arab world to the events of 9/11. The striking “success” of a small group of Arab terrorists to challenge the American behemoth seemed so incongruous to many Arab observers that they looked elsewhere to explain what happened. It appears that less than one in four of Muslims surveyed in recent surveys believes al Qaeda was responsible for the September 11 attacks. Countries bordering on Israel blame Israel (43 percent in Egypt, for example). And in Mexico 30 percent of the respondents were convinced the whole event was staged by the United States (Kull et al. 2009). These eye-of-the-beholder dynamics are widely recognized, of course, but not yet systematically incorporated into communication research practice.

Analysts can expect any complex message to generate not a single interpretation but a distribution of interpretations. And, again interestingly, under some conditions more of those exposed interpret the message to be at odds with, or even in a completely opposite vein from, the intentions of the message as sent. This is, of course, not a recently discovered insight. It resonates with the powerful imagery of Plato’s fleeting shadows on the wall of the cave or, more recently, Walter Lippmann’s famous discussion of the power of stereotypes in his 1922 manuscript *Public Opinion*. Lippmann takes some care to describe an experiment conducted a few years before in Germany in which a group of psychologists, presumably well-trained observers, unbeknownst to them, witnessed a brief and carefully choreographed scuffle among a group of actors who rushed in and then out of the room. The forty observers were immediately asked to write down in detail what they had just witnessed. Lippmann proceeds to describe the analysis of their “eyewitness” reports:

Only one had less than 20% of mistakes in regard to the principal facts; fourteen had 20% to 40% of mistakes; twelve from 40% to 50%; thirteen more than 50%. Moreover in twenty-four accounts 10% of the details were pure inventions and this proportion was exceeded in ten accounts and diminished in six. Briefly a quarter of the accounts were false . . . The ten false reports may then be relegated to the category of tales and legends; twenty four accounts are half legendary, and six have a value approximating to exact evidence. Thus out of forty trained observers writing a responsible account of a scene that had just happened before

their eyes, more than a majority saw a scene that had not taken place. What then did they see? One would suppose it was easier to tell what had occurred, than to invent something which had not occurred. They saw their stereotype of such a brawl. All of them had in the course of their lives acquired a series of images of brawls, and these images flickered before their eyes. In one man these images displaced less than 20% of the actual scene, in thirteen men more than half. In thirty-four out of the forty observers the stereotypes preempted at least one-tenth of the scene. (55)

Thus Lippmann provides us with a particularly dramatic description of the vagaries of eyewitness accounts and the prominence of the Rashomon effect in human perception. For our purposes this example makes clear the danger in research design of treating a persuasive or informational message as a single object with a single meaning, or as being persuasive in an unambiguous or singular direction.

**Agenda Setting, Framing, and Priming.** There is a particular characteristic of polysemous selective interpretation that has drawn the attention of communication researchers. One could have predicted such a concern given the historically grounded roots of systematic media effects, persuasion, and attitude change research in the shadow of the Second World War as discussed in Chapter 1 and in a recent review of the accumulative character of the media effects literature (Neuman and Guggenheim 2011). Because the emphasis in this research tradition is on “effects,” especially the Holy Grail of finding evidence of “strong effects,” researchers came to grips with repeated cases of relatively small fractions of an audience changing opinions by seizing on the prospect that if an actual opinion position on an issue had not changed, perhaps an interpretation of an issue had. This perspective introduces the influential concepts of agenda setting, framing, and priming to the media effects research paradigm. Each of these research traditions posits that a media depiction may influence audience members to emphasize one or another attribute of a complex issues and events in their thinking as described in Table 2.2.

Although the language of the early studies in each of these three traditions makes it increasingly clear that the researchers viewed these more nuanced concepts and methods as a way to salvage media effects analysis from the discouraging prospect of minimal effects, in retrospect these developments can be seen as an unambiguous step forward as empirical

Table 2.2 Models of Polysemic Effects

	Agenda Setting	Framing	Priming
Analytic emphasis	Media emphasis on some public issues over others potentially raises the salience of those issues in public opinion over time.	Media emphasis on some interpretations and attributes of a complex issue rather than others potentially raises the salience of those interpretations and attributes in public opinion over time.	Media emphasis on some interpretations or attributes of a complex issue over others potentially raises the salience of those interpretations or attributes in short-term memory and thus the cognitive accessibility of those issues in concurrent thinking.
Prominent methodologies	Compare issue salience in media agenda with issue salience in public opinion.	Compare issue interpretations in media with those in public opinion; manipulate emphasis experimentally.	Manipulate emphasis experimentally.

researchers begin to struggle with the polysemic character of the phenomenon at hand rather than ignoring it.

McCombs and Shaw (1972) prominently introduced their notion of media agenda-setting effects by quoting Bernard Cohen's (1963) now famous epigram: "The press may not be successful much of the time in telling people what to think, but it is stunningly successful in telling its readers what to think about." "What to think" clearly refers to the old paradigm of traditional attitude change research and the counterintuitive pattern of low correlations between media exposure measures and attitude change. But now a new wrinkle—the analysis of the relative prominence of some issues over others in public concern, a more subtle dynamic perhaps, but the prospect of a "stunningly successful" effect. The agenda setting literature is immense. In a review published in 2004, Max McCombs notes the existence of more than four hundred agenda-setting studies worldwide. The basic causal model shifts from the individual level to the aggregate level with the proposition that the variation in the quantity of aggregate media coverage of a set of issues and events in the news should be correlated with the proportion of population who rate that issue as an

“important problem” in public opinion surveys. Subsequent studies refined the model by examining the agenda-setting correlation for different types of issues, different types of media, different types of audiences, and different time lags between media coverage and audience response (McCombs and Shaw 1993; Dearing and Rogers 1996; McCombs, Shaw, and Weaver 1997; McCombs 2004; Wanta and Ghanem 2007). A few in this tradition tackled the difficult prospect of measuring both media agendas and public agendas over time to better sort out causal directions (Fan 1988; Neuman 1990), but the number of such attempts is so few that they were eliminated from a meta-analysis with the notation: “Because the majority of agenda-setting studies have used Pearson correlations, eliminating these few time series studies did not substantially reduce the number of studies included in our analysis” (Wanta and Ghanem 2007, 43). It turns out that despite the strong theoretical start and confident language provided by Professor McCombs and colleagues, the accumulated findings assessing the correlation of media and public agendas ranges widely, so widely it would appear that whether an effect is evident is heavily dependent on how the key variables are operationalized. Take the aforementioned meta-analysis of agenda-setting studies, for example (Wanta and Ghanem 2007). The authors’ final sample of studies included forty-five publications and a total of ninety independent tests of the agenda-setting hypothesized correlation between the media agenda and public agenda. The results are reproduced here at Table 2.3. Even an informal perusal of the results reveals that they are inexplicably inconsistent, ranging from a low of a trivial .05 correlation in the McLeod and colleagues (1974) study to the high correlation of .967 from the original McCombs and Shaw (1972) study. The standard meta-analytic technique is simply to average the results found to get a best estimate of the underlying causal pattern, and Wanta and Ghanem calculate that to be a correlation of .53, which would correspond to approximately 25 percent of the variance in public issue salience being associated with media issue salience. But such a technique represents the statistical equivalent of averaging apples and oranges. Until it can be explained why some studies find no meaningful correlation at all while others find a near-unitary correlation, prudence requires caution in drawing theoretical conclusions. Wanta and Ghanem appropriately explored subsets of studies to see if average correlations varied by method but the analysis was inconclusive.

Table 2.3 Meta-Analysis of Agenda-Setting Studies Correlations between Media and Public Agendas

Author	Date	r	N
Atwater	1985	.64-.46	304
Atwood	1978	.44	150
Behr	1985	.73-.37	MIP
Benton	1976	.81-.62	111
Brosius	1992a	.62	1000
Brosius	1992b	.12	1000
Demers	1989	.21-.77	MIP
Eaton	1989	.48	MIP
Einsleedel	1984	.45	488
Erbring	1980	.10-.11	MIP
Funkhouser	1973	.78	MIP
Heeter	1989	.96	193
Hill	1985	.19	1204
Hubbard	1975	.24	150
Iyengar	1979	.35-.47	MIP
Iyengar	1993	.85	1500
Jablonski	1996	.19	1324
Kaid	1977	.64	166
Lasorsa	1990	.57	624
McCombs	1972	.967	100
McLeod	1974	.05-.16	389
Miller	1996	.59	577
Palmgreen	1977	.50-.70	400
Salwen	1988	.54-.98	304
Salwen	1992	.56	629
Siune	1975	.91	1302
Smith	1987	.65	400
Smith	1988	.71	471
Sohn	1978	.24	150
Stone	1981	.47-.55	302
Swanson	1978	.45	83
Tipton	1975	.75-.88	42-303
Wanta	1994a	.54	MIP
Wanta	1994b	.29	341

(continued)

Table 2.3 Meta-Analysis of Agenda-Setting Studies Correlations between Media and Public Agendas

Author	Date	r	N
Wanta	1994c	.60-.92	341
Wanta	1992	.31	341
Watt	1981	.35-.69	MIP
Weaver	1980	.27-.31	339
Weaver	1975	.21-.33	421
Williams	1977	.49-.83	350
Williams	1978	.11-.24	503
Williams	1983	.22-.78	356
Winter	1981	.71	MIP
Yagade	1990	.79	MIP
Zhu	1992	.52	MIP

Furthermore, there is an even more troubling critical problem with the agenda-setting paradigm—how does one distinguish the effects of the nature of an event reported from the effects of the reporting itself? In other words, if a major military engagement or economic or environmental crisis is at hand, it may be that, not unreasonably, both the public and the journalists appropriately and independently perceive the event to be politically significant and newsworthy. The journalists put it on the front page; the public rate it as an “important issue.”

There is not necessarily a causal link between the media emphasis and public response. It might better be described as the independently assessed significance of the issue or event by both the media and the public. This has been acknowledged under the terminologies of *issue obtrusiveness* and *real-world cues* (Zucker 1978; Erbring, Goldenberg, and Miller 1980; MacKuen and Coombs 1981; Behr and Iyengar 1985; Demers et al. 1989). The only way to tease out causal linkages, such as they are, is to develop an independently assessed measure of event magnitude, which should be possible particularly in matters military and economic, for example, and measure variation in event magnitude, media coverage, and public response over time. It is a frustratingly complex enterprise, but the only way to get around the “reality problem” of agenda-setting research. McCombs addressed this issue thoughtfully in his 2004 book *Setting the Agenda* in a chapter entitled “Reality and the News.” Drawing on Lippmann (1922) he notes two things:

(1) sometimes the media get in a tizzy about some issue that turns out to be a false alarm but the public is nonetheless alarmed at least for a time, and (2) complex events are simplified in the public consciousness (the world outside and the pictures in our heads), and the media may play an important role in that simplifying process. Both points are well taken, but the first case is relatively rare (McCombs draws on a few historical case studies) and the second is not agenda setting in the sense of issue salience but what has come to be called “second order agenda setting,” which is basically the phenomenon of framing.

“Framing” in media effects research refers to the prospect that by emphasizing certain attributes of a polysemic issue, actor, or object in the public sphere, the media can influence how the public perceives and responds to these phenomena. Framing effects are not a new development. One could imagine, for example, that in prehistoric times around the campfire perhaps some speakers would tell the story of the day’s hunt, framing the story to emphasize their particular contributions to the collective effort. But in the era of a few predominant mass media reporting the news of the day, such human impulses take on special significance.

Because of the complexities of polysemic communication, there is no straightforward determination of an appropriate hypothesis-testing methodology to explore the conditions under which framing effects may be most evident. Further, most of this work focuses on the framing of a single issue or a few issues and each issue may generate a noncomparable typology of alternative frames of attribute emphasis. Bob Entman’s widely cited review of framing research refers to it as a “fractured paradigm”: “Despite its omnipresence across the social sciences and humanities, nowhere is there a general statement of framing theory that shows exactly how frames become embedded within and make themselves manifest in a text, or how framing influences thinking” (1993, 51). Dietram Scheufele, in a follow-up review, explains why: “Research on framing is characterized by theoretical and empirical vagueness. This is due, in part, to the lack of a commonly shared theoretical model underlying framing research. Conceptual problems translate into operational problems limiting the comparability of instruments and results” (1999, 103).

Framing research has a natural resonance with persuasion and attitude change research because it is often the case that one frame puts an issue in a more positive light than another and accordingly elicits higher levels of

public approval. A classic example of this dynamic from Sniderman, Brody, and Tetlock (1991) is paraphrased in Entman's review: "The effect of framing is to prime values differentially, establishing the salience of the one or the other. [Thus] . . . a majority of the public supports the rights of persons with AIDS when the issue is framed (in a survey question) to accentuate civil liberties considerations and supports . . . mandatory testing when the issue is framed to accentuate public health considerations" (1993, 54).

There is a psychological tradition of framing research that precedes the elaboration of framing effects models in communication research. It was conducted by the Israeli team of Amos Tversky and Daniel Kahneman (Kahneman, Slovic, and Tversky 1982; Kahneman and Tversky 2000). Referred to as *equivalence framing* or *prospect theory*, this pioneering work on human cognitive biases demonstrated dramatic differences in how individuals valued exactly equivalent outcomes depending on whether they were framed as a loss or as a gain. Prospect theory has not yet stimulated a significant level of research in communication. An extensive meta-analysis of 165 studies, for example, of loss-framed and gain-framed persuasive messages found no meaningful differences in their persuasive effect (O'Keefe and Jensen 2006).

There have been, however, identifiable steps forward on another front in framing research in the two decades since Entman pronounced framing research to be a fractured paradigm. Entman's original critique made two points: first, that the hypothesized causal model was unclear, and, second, that each researcher would define the nature of an issue frame anew depending on the issue or issues under study. Important theoretical work on both fronts has been published that allows for more comparable and accumulated findings. The key analytic progress includes the distinction between whether the frame or frames are being analyzed as an independent or dependent variable, attention to level of analysis (media vs. public opinion) and the distinction between a more generalized multi-issue framing mechanism versus a framing mechanism intimately tied to a particular kind of issue such as racial stereotypes or gender roles. An overview of these developments in the literature is summarized in Table 2.4.

Of particular importance is the shift away from trying to demonstrate a not-so-minimal framing effect to identifying consistently important moderating variables—the conditions under which the effects are more or

Table 2.4 Progress in Issue-Framing Research

Causal model	Frame as dependent versus independent variable	Scheufele 1999
Level of analysis	Media versus public opinion frames	Scheufele 1999
Frame type	Single issue versus multiple issues	De Vreese 2005
Moderators of framing effects	Issue importance	Lecheler, de Vreese, and Slothuus 2009
	Knowledge	Krosnick and Brannon 1993
	Strength of prior opinion	Druckman 2001
	Frame strength	Chong and Druckman 2007
	One-sided versus competitive frames	Chong and Druckman 2007
Multiple issue frame typologies	Thematic versus episodic	Iyengar 1991
	Strategic versus issue oriented	Cappella and Jamieson 1997 Neuman, Just, and Crigler 1992
	News story frames	Gamson 1992
	New story frames	O'Keefe and Jensen 2006
	Equivalence frames	

less prominent. Interestingly, in the best sense of a Kuhnian puzzle, results are conflicting among studies on whether the more knowledgeable or less knowledgeable among the citizenry are more susceptible to framing effects (compare Kinder and Sanders 1996 with Nelson, Clawson, and Oxley 1997). The weight of research appears to be moving toward a tentative conclusion that the more knowledgeable are more susceptible because of increased familiarity with the issues and the logical connections between framing elements and policy evaluations (Druckman and Nelson 2003). A general or “all-purpose” model of public issue frames has not yet emerged, but Iyengar’s (1991) distinction between episodic and thematic frames and Patterson’s (1993) work on strategic frames have been influential.

**The Distribution of Responses to Media Messages.** A key development in integrating the inherently polysemic character of human communication into models of communication effects is to acknowledge that a typically

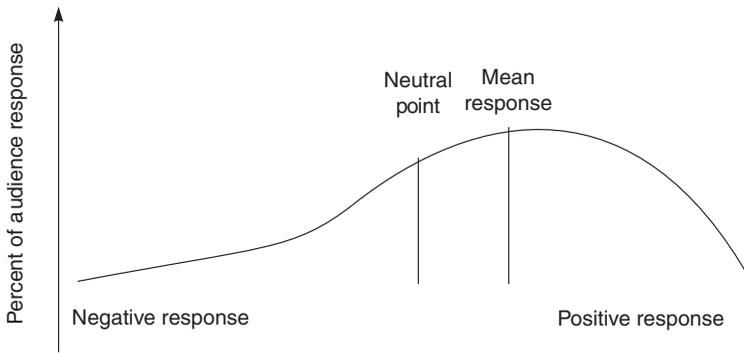


Figure 2.3. Hypothetical Distribution of Responses to a Persuasive Message

complex media message, intended to be persuasive or otherwise, is not likely to stimulate a singular response, but rather a distribution of responses across a population of those who have encountered the message, as depicted in Figure 2.3.

It is well known in the field of health communication where the effects of health-oriented public service announcements are extensively studied, for example, that many messages are misinterpreted by some audience members, and in many cases at least some audience members' attitudes move in the direction opposite of the pro-health direction intended. In one study of public health messages intended to discourage the use of marijuana, for example, the researchers found that those exposed to testimonial messages that smoking pot leads to smoking crack and serious addiction were actually less likely to agree with the marijuana-as-gateway-to-hard-drugs argument than a control group (Yzer et al. 2003). In a parallel antimarijuana study (Hornik et al. 2008), researchers found no decrease in the intention to use marijuana among those exposed to their health message. What they found in an over-time panel was actually a statistically significant increase in reported intention to use marijuana, a finding sufficiently frequently observed as to merit a research jargon terminology: the "boomerang effect." Such null and negative effects are frequently found in assessing traditional commercial ad campaigns, as well, but because such results are somewhat embarrassing to the entities involved (including commercial clients, advertising agencies, and the publishing and broadcasting media institutions) they are labeled "proprietary"

and seldom see the light of day (for some rare exceptions to this pattern, see Schudson 1984; Lodish et al. 1995).

The dominant tradition in survey and experimental research that linked variation in message exposure with variation in attitudinal and behavioral outcomes is to focus on the net or aggregate differences in the key dependent variables. Thus in the experimental tradition, the means of the dependent variable for the control and exposure conditions are compared. In the survey tradition the comparison would be typically the same with self-reported exposure as the independent variable and various attitudinal and behavioral reports as the dependent variables. The statistical techniques engaged are typically an analysis of variance or linear regression. So the distribution of responses to message exposure are brought to bear through the statistical procedures that are derived from the ratio of covariance (or “explained variance”) to total variance. The problem with this dominant tradition is that variation in attitudinal or behavioral responses to a complex message is treated as a statistical artifact necessary to compute the statistical significance of an aggregate “effect” for the population under study. *Given the inherent polysemic character of complex messages, the variance of response could and should be seen as of central theoretical interest.*

Take the following thought experiment as an example. Imagine that researchers tested two political ads for a presidential candidate among potential voters. Both ads are intended to generate support for the candidate because the candidate is committed to not raising taxes. In each case the researchers find a statistically significant increase of 3 percent in support for the candidate among undecided voters after exposure to the ad. In the dominant tradition, the research task is complete—the two ads are equivalent in their power to stimulate aggregate attitude change. But if the variation of response to the ad is three times greater in the first ad compared with the second, there is evidence that something much more complicated is going on in how diverse audiences are interpreting these messages. In one case, for example, there might be a small positive shift in attitudes toward the candidate in question. In the other case there is a large positive effect and a somewhat smaller boomerang effect, leading to an aggregate positive effect equivalent to the first case. Such differences are important, and if researchers are interested in the question of why such messages are effective, rather than just if they are effective, then an examination of variance of response rather than just net response has been central to the

research design. It may be that some audience members interpret the candidate's position as being thoughtfully responsive to public opinion while others see it as cynically pandering to the public mood of the moment. Serious researchers and serious campaign professionals, as well, should want to know why a message works, not just if it does. Such an orientation burdens researchers with much more complex designs that engage a mixture of qualitative and quantitative assessments of the often dramatic variation in how individuals respond to such messages and message campaigns.

**Jackson's Conundrum.** Sally Jackson is a communications scholar and methodologist (and more recently the chief information officer of the Urbana-Champaign campus of the University of Illinois). Her academic specialty is the study of rhetoric and persuasive communication. Starting in the early 1980s she initiated a campaign of persuasion among her disciplinary colleagues to convince them to be a little more careful about drawing conclusions from experiments and surveys. Working with several colleagues, including Scott Jacobs, Daniel O'Keefe, and Dale Brashers, she makes the following argument: "To do empirical research on effects of message variables, it is generally necessary to examine responses to actual messages that represent . . . the values of the variable of interest. The adequacy of actual concrete messages as instantiations of variables is central to any assessment of the validity of such an experiment. During the long history of experimental message effects research, virtually no attention has been paid to this issue. The seminal studies of message effects conducted by Hovland and associates during and after World War II set the precedent for how to deal with 'operationalization' of message variables that has been essentially unchallenged with communication and social psychology" (Jackson, O'Keefe, and Brashers 1994, 984).

She and her colleagues describe communication researchers as interested in such message properties as the trustworthiness of the source or particular rhetorical strategies. In her parlance these are "attributes" of a complex message, and her central point is that the results of any single experiment could have resulted from the many other attributes of the selected concrete experimental message. In other words, communication is polysemic. Thus while as researchers one might attribute the power to engage attention or to persuade to the extremity of an argument, it may

well have been an incidental use of a colorful metaphor that resulted in an observed effect. As a methodologist, her recommended resolution to the problem is straightforward: treat any selected message that appears to have an attribute as a single sample from the universe of messages that appear to have that attribute and before drawing any conclusions replicate the study design with other sampled messages—the more sampled messages with similar results, the stronger the evidence. If exceptions are found, the puzzle to be addressed is what attribute of the complex polysemic message is actually generating or suppressing the behavioral or attitudinal result of interest to the researchers. Professor Jackson and colleagues have published by my count eight articles and a full-length methodology text on this topic over two decades and provoked at least four sets of respondents who have published commentaries and critiques (Bradac 1983; Jackson and Jacobs 1983; Jackson, O’Keefe, and Jacobs 1988; Morley 1988a, 1988b; O’Keefe, Jackson, and Jacobs 1988; Hunter, Hamilton, and Allen 1989; Jackson et al. 1989; Jackson 1991; Slater 1991; Jackson 1992; Jackson, O’Keefe, and Brashers 1994; Brashers and Jackson 1999). One pauses to ponder how influential this carefully argued and illustrated methodological campaign has been in the field. Unfortunately, the answer appears to be not very influential. The seminal 1983 article by Jackson and Jacobs has been cited more than seventy times, but the citations have been declining from four citations per year in the 1980s to two per year in the 2000s. One critical reviewer characterized “each new missive” in her campaign as “falling on deaf ears” and “the pummeling of a point most methodologists consider obvious” (Harris 1994, 474).

I label this strong argument and the tepid reaction to it “Jackson’s Conundrum.” The argument she and her colleagues make is critically important. And the fact that the argument appears to have largely fallen on deaf ears may be even more important. In this case her methodological framing of the question appears to have led to a series of persnickety technical debates over fixed versus random effects and crossed versus nested experimental designs in the analysis of variance (see Gelman 2005). The fact of the matter is that different members of an audience may be reacting to entirely different components of a complex message, and, further, that different members of an audience may react to the same component of a message in profoundly different ways. Jackson’s recommendation for extensive replication is understandably burdensome, and that may con-

tribute to its limited popularity and infrequent execution. She argues that to better understand these complexities researchers need to replicate the same basic research design multiple times with systematic variation of sampled messages to make sure any single result is not a fluke. Such a practice would contribute powerfully to the accumulative character of the collective research enterprise. And when puzzling anomalies arise, even further replications may be required to tease out what may be causing what. Unfortunately such disciplined comparability of research has not yet become characteristic of the communication field and appears to be surprisingly rare in many fields of science (Zimmer 2011). Editors are reluctant to publish replications, and researchers apparently feel their work would be seen as derivative rather than original. Replication is not a statistical nuance akin to selecting a single- or double-tailed test of significance. The systematic practice of replication is fundamental to better understanding the structure of human communication. The good news is that this issue is getting increased attention across the social sciences (King 2004; Benoit and Holbert 2008; Gerber and Green 2012).

**Measurement Error in Media Research.** There are many engaging examples of the perils of survey research as it must rely on the faulty memories, partial attentiveness, and biased self-perceptions of respondents. One of my favorites was a surprising finding of a particularly strong interest in “foreign affairs” in the rural American south in election surveys conducted by the University of Michigan during the 1950s. These were, of course, face-to-face in-home interviews conducted by local interviewers who read out the questions and made note of the answers on a clipboard. A little probing revealed that in the characteristic drawl of the American south, the word *foreign* sounds a lot like *farm*, and the respondents were actually expressing a concern about “farm affairs.” It is an amusing and possibly apocryphal anecdote, but it speaks to a critically important issue in research design and that is the fact the research process itself engages the polysemy and ambiguity human communication and thus complicates our ability to draw reliable conclusions from our observations.

The most dramatic evidence of systematic error in self-reports comes from contrasting individuals’ reports of particular behaviors with actual recorded evidence of those behaviors. One component of this literature has tracked self-reports of recent communication with friends or coworkers

with actual evidence of calls and e-mails. In one study of teletype exchanges within a deaf community, log records revealed that the person most often communicated with was listed among the self-reported top four communication partners only 52 percent of the time (Bernard et al. 1984). Further research indicated that many respondents interpret the question “who did you communicate with” as “who do you like” and that either question elicited basically the same answers (Bernard et al. 1984). As a result of their review of a large number of similar cases where there was often no meaningful association between reported behavior and measured behavior these analysts reluctantly conclude in a companion paper: “We must therefore recommend unreservedly that any conclusion drawn from the data gathered by the question ‘who do you talk to’ are of no use in understanding the social structure of communication” (cited in Romney and Weller 1984, 60). Similar conclusions were drawn from analyses in the areas of child care behavior and health-care-seeking behavior where independent records were available. It is not just a matter of faulty recall. Evidence revealed patterns of systematic overreporting and underreporting in different conditions (Bernard et al. 1984).

Survey researchers and experimentalists are well aware of the delicacies of designing items and scales to assess attitudes and behaviors. This literature is also rich and extensive (a small sampling might include Achen 1975; Schuman and Presser 1981; Turner and Martin 1984; Zaller 1991; Zaller and Feldman 1992; Nunnally and Bernstein 1994; Krosnick 1999; Hansen 2009; Alwin 2010; Babbie 2010; Marsden and Wright 2010; Bucy and Holbert 2014). Three phenomena that have attracted particular attention in this domain of research are (1) the dramatic variation in opinion responses to modest variations in question wordings, (2) the variation in answers respondents provide to opinion items when asked again after a short time interval, and (3) the fact that individuals trying to be helpful sometimes invent “opinions” on the spot in response to vague or unfamiliar policy questions.

A classic example of the first phenomenon is survey measurement of attitudes toward abortion. Depending on how the question is framed, the number of those responding to a survey favoring the legal exercise of abortion can move from a substantial majority to a tiny minority (Westoff, Moore, and Ryder 1969; Cook, Jelen, and Wilcox 1992). Another study revealed that the order in which two abortion questions were

asked generated a 20 percent difference in levels of approval (Schuman, Presser, and Ludwig 1981). This is not an indication that individuals are careless or arbitrary about their responses, quite the contrary. The context of an abortion is critically important in how people think about it. When the health of the mother is at risk large majorities favor the possibility of abortion. When abortion is simply a matter of parental preference, large majorities oppose. The abortion issue is not unique; most policy issues are subject to framing or interpretive effects of various types, which is, of course, a central topic of communication structure addressed elsewhere in this chapter.

### **Methodological Fragmentation**

Two widely circulated anecdotes characterize the difficult state of the search for precision and validity in the systematic study of the structure of human communication—the stories of the drunkard and of the hammer. In the first oft-told tale there is the drunkard who has lost his keys and is searching without success under the lamppost. In response to the query if had in fact lost his keys there, he replies without missing a beat, that no, he lost them way over there but this is where the light is better. In the second narrative there is a ten-year-old (a boy rather than a girl, as the story is usually told) in possession of his first hammer. The boy looks up smiling from his shiny new possession with the realization that just about everything within sight in the environment around him suddenly needs hammering.

A short survey or experiment, especially utilizing the handy captive audience of college sophomores, is hard to resist. This is where the light is better. But the external validity and even the internal validity of our capacity to measure attitudes and behaviors and responses to complex messages with precision is highly constrained for the many reasons outlined in the course of this chapter. The academic incentive structure, however, and the capacity to successfully publish in a field's prestigious journals is likely to pull us back again and again to the familiar lamppost. This is, as Kuhn has pointed out with powerful effect, what should be termed *normal science*—the routine application of established methods to well-accepted puzzles in each field of specialization. Furthermore, as graduate students, most young scholars work effectively as apprentices with

senior faculty who have likely perfected a particular variant of an experiment or survey or content analysis that will become the shiny hammer for the newly minted researcher. Such patterns of professionalization are common enough in most fields of endeavor and there is certainly no intention here to derogate the professionals or the practice of professional training. But it represents a particularly troubling problem for progress and accumulation of findings in the study of human communication. Debates in the literatures tend to proceed within methodological “stovepipes” or “silos” and only seldom across them. It is a problem of methodological fragmentation. Findings derived from variant methodologies are simply judged to be incommensurate and are routinely ignored. It is not always the case but it is much too frequently the case.

My primary evidence for this observation is the collection of textbooks that are designed to address the issue of communication research methodology. I may have missed a few, but I have reviewed two dozen commonly cited communication research methods texts and roughly half of them simply devote separate chapters or book sections in turn to individual methodological approaches, typically surveys, experiments, content analysis, and sometimes textual analysis and depth interviewing or participant observation (Stempel and Westley 1989; Berger 2000; Bertrand and Hughes 2005; Weerakkody 2008; Priest 2009; Sparks 2010; Anderson 2011; Zhou and Sloan 2011; Bucy and Holbert 2014). Some texts focus on undergraduate students collecting research information from journals and libraries (Berger 2000; Rubin, Rubin, and Haridakis 2009). Some are straightforwardly edited collections of research reports and reviews (Singletary 1994; Hansen 2009; Bucy and Holbert 2014). Others focus on statistics or specialized qualitative methodologies (Monge and Cappella 1980; Hayes, Slater, and Snyder 2008; Lindlof and Taylor 2010). There is an occasional chapter attempting to draw the research output from these diverse perspectives into an integrated whole, but such efforts are rare. On the whole the message is to each his own hammer, and each methodological/epistemological specialty should, as it is said on Broadway, “stick to its own kind.”

### **Rethinking the Fundamental Paradigm of Media Effects Research**

This chapter has thus far followed the classic structure of a narrative arc. The protagonist was introduced—in this case not the noble warrior of

humble birth but a hopeful idea—the prospect that through thoughtful and structured measurement of collective human communication behavior we could better understand its structure and character and protect ourselves from its potential pathologies. Born of an urgent concern in the mid-twentieth century to defend otherwise stable democracies from the distortions of high-powered electronic propaganda, social scientists forged a new field of inquiry through the use of surveys, experiments, and content analyses of the mass media. The fundamental paradigm of analysis was simple—study the variation in exposure to the mass media messages and its potential correlation with the corresponding attitudes and behaviors these messages promote. Then the plot thickens. It turns out there are a series of methodological challenges that make what at first seems a simple task a nearly impossible one. Our review of these villainous obstacles to our protagonist's quest has been organized under the working concepts of profusion and polysemy to emphasize the unique difficulties of working with the elusive phenomena of collective human communication processes:

1. Profusion

- Communication at the margin
- Systematic inattention and forgetting
- Reinforcement
- Opinion change versus opinion creation
- Cultivation analysis: a small step
- The measurement of media exposure
- Content differences across media
- Hovland's paradox: experiments versus surveys

2. Polysemy

- The complexity of selective exposure and selective interpretation
- Selective exposure and spiral mechanisms
- The puzzle of selective interpretation
- Agenda setting, framing, and priming
- The distribution of responses to media messages
- Measurement error in media research

The very phenomenon that attracts our attention to media effects in the first place and resonates so strongly with our intuition—the tidal volumes of professionally crafted messages in which we are immersed as citizens of the modern world turn out to constitute a critical impediment

to systematic analysis. Only an isolated and incomparable sliver of the population is not heavily exposed. Furthermore, because audiences are selective in their exposure to media and even more selective and differentiated in how they react to the complex and polysemic messages that swirl about, the notion of a singular persuasive “effect” represents a strikingly simplistic model. And further still, when we ask people to recall their media behaviors and interests, these very attitudes we wish to assess as “dependent variables” may bias their self-reports of what they like to watch and read and provide us only spurious indicators. One step in the right direction is the extended analysis of interaction, contextual, or moderation effects in addition to possible direct effects (McGuire 1968; McLeod et al. 2001; Preacher and Hayes 2008). But the fundamental problems of measurement and inference persist.

This is a precarious position in this narrative arc. A hero is needed, perhaps an entire heroic army to ride to the rescue. And as some readers just may suspect, given at least a dozen not-so-subtle clues along the way, I have just such a *deus ex machina* in mind. The Latin phrase, literally “God from the machine,” is derived from the tradition of contrived plot resolution in ancient tragedy and comedy when an actor or puppet representing a God was lowered onto the stage by a crane to resolve the otherwise irresolvable. And the machine I have in mind is the very digital technology that has been contributing to the most recent profusion—the ubiquitous Internet.

Let us return to the fundamental communication research paradigm introduced at the beginning of the chapter. Figure 2.4 replicates the original model and includes notations of how errors or biases or interpretations of survey questions in self-reported exposure measures may result in spurious conclusions about media effects. There is every reason to believe that the error introduced is systematic error because attitudes and social position affect how people describe both their media behavior and their political behavior. To date researchers have been forced to rely almost exclusively on these survey-based self-reports they have been unable to separate possible measurement error from actual behavior and actual attitudes. Further because of the characteristic reliance on one-shot single survey measures researchers are unable to parse self-selection of exposure from possible effects of exposure—that requires over-time measurement (as depicted in Figure 2.2). Comparisons using the broad media labels of

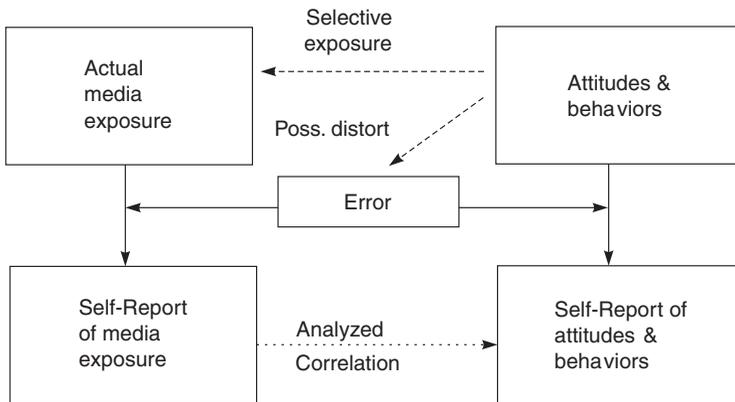


Figure 2.4. Fundamental Analytic Model of Media Effects Revised

television versus newspapers versus cinema, and so on, made it difficult to get a finer-grain picture of the messages involved since there is such dramatic diversity within each traditional broadcast/publishing medium.

This highly constrained and error-filled research paradigm, however, is no longer necessary in the new media environment. The flow of mass communication—virtually all of what is now associated with television, radio, books, movies, magazines, recordings, and newsletters—will ultimately be delivered electronically. This is already largely true for younger audience members. Technology is moving from newsprint and rabbit ears to laptops, e-book readers, iPads, iPods, smartphones, and Internet-enabled video screens. This digital flow leaves detailed digital footprints, so called big data. *The future of communication research will be compelled by analysis of big data* (Chang, Kaufmann, and Kown 2014; Shah, Cappella, and Neuman 2015). Some prefer the term *computational social science* rather than big data, but the reference is the same. Our emphasis here is not on the size of the data set but rather on the fact that the data are naturally occurring rather than artificially situated or self-reported. This turns out to be critically important in the domain of research on human communication.

### The Promise and Perils of Big Data

At the beginning of the digital era many (usually somewhat older) critics muttered that they would never trade in their treasured ink-on-paper

medium to sit in front of an uncomfortable flickering screen. But the distinctions between traditional and digital media are declining, and many of the remaining distinctions favor the ease of use and flexible interactivity of digital storage and display. The era of e-mail, texting, tweeting, posting, on-demand online video, on-demand streaming audio, and on-demand e-books provides a treasure trove of opportunity for the communication scholar. One can imagine that in the near future the overwhelming preponderance of human mass and interpersonal communication will be digitally mediated. Skeptical? When was the last time someone took pen to paper to write you a letter?

The following list presents several of the top-level attributes of conducting media research online making use of the same technologies the audience members would normally use to read an editorial, to Google a question of interest, to write a blog essay, to share a favorite news clipping or to watch a movie:

1. Actual fine-grained media exposure and selectivity can be assessed directly.
2. Measurement is possible continuously over time and for extended periods.
3. Many “real-world” behaviors online can also be assessed directly.
4. Individual perceptions and interpretations can be unobtrusively assessed in context and in real time.

All of these measurement techniques, of course, need to be undertaken with the fully informed consent of the participants, with their right to withdraw as they wish made clear and with careful attention to the protection of personal privacy. All of these elements of privacy and personal control of personal information are routinely addressed in present-day experiments, surveys, and observational studies and enforced by independent institutional review boards federally required of academic and federally funded research institutions in the American context since the passage of the National Research Act of 1974.

Early research on “new media” typically contrasted those who reported using the Internet frequently with those who did not as researchers examined possible differences in knowledge, attitudes, and behavior, and experimentalists contrasted paired comparisons of online and traditional media representations of content (DiMaggio et al. 2001). The research

question was McLuhanesque in its focus on the medium of transmission. Such research designs were arguably appropriate, because in the earlier days of Internet diffusion, now dubbed Web 1.0, online newspapers and other media were essentially a re-creation of their original content and format on a video screen. Two things about the relationship between the medium and the audience member, however, have changed. First, increasingly large majorities are online and ubiquitously so, and as a result the online-offline contrast makes less sense as an analytic approach. Second, the nature of how individuals retrieve information and entertainment has changed, as noted above, characterized as a shift from push to pull as daily headlines and scheduled prime-time television offerings are replaced by an unadorned search box under the control of the individual audience member (Doyle 2013). This prompts a third development: the content audience members seek out and how they react to it is now increasingly digitally accessible to communication researchers. Some, especially more youthful audience members, may get their news about the world around them from social media as often, or even more often, than from traditional media. Two-step and multistep flows of communication have always been with us (Katz and Lazarsfeld 1955), but the velocity, intensity, diversity, and complexity of socially mediated flows of information is growing (Pew Project for Excellence in Journalism 2010) and, importantly, it is increasingly accessible to direct analysis.

I argue this development can be understood to represent significantly more than just a shift in strategy of data collection; it may represent a theoretical shift in how we understand media effects themselves (Neuman et al. 2014). In experimental research researchers assess the potential effect of randomized message exposure contrasted with its absence. In survey studies, researchers typically assess the correlation of self-reported message or medium exposure with attitudes, knowledge or behavior. When statistically significant differences are found, they are understood to be potential “effects” with appropriate caveats about confounds and problems of spuriousness. These designs have the distinct advantage of permitting the study of individual differences among audience members and of the conditions of exposure and systematic factors of mediation (Shah, Cappella, and Neuman 2015).

Real-world data collected from extant digital social and traditional media draw the analyst’s attention to a more holistic media ecology as

various media and messages rise and fall, representing continuous variation of public attention over time. The diversity and complexity of messages in social context leads the analyst to shift from message “x” potentially affecting attitude “y,” to a question of which of the multitude of messages appear to resonate with public consciousness, which attract attention or comment, which are passed on, and which are sustained over time? It complements rather than replaces models of traditional media effects. Real-world big data are particularly well attuned to analyzing agenda dynamics, self-reinforcing mechanisms, damping effects, thresholds, and spiral phenomena in historical context (McCombs and Shaw 1972; Noelle-Neumann 1974; Neuman 1990; Page and Shapiro 1991; Erikson, MacKuen, and Stimson 2002; Slater 2007). Importantly, however, it lends itself to only a modest capacity for researchers studying individual differences and fine-grained contextual moderators.

The emphasis on exposure/persuasion effects may have made historical sense in the early days of communication research in the mid-twentieth century in part because of the limited number of published and broadcast sources of information for the average audience member. But in an age for which each broadband connection to the web is equally technically empowered to speak as well as to listen, our theoretical lens shifts from the dynamics of attitude change to the dynamics of attention—of the many voices in the digital cacophony, what attracts attention and which framings of public issues seem to resonate most strongly in the ongoing public discussion?

Because much early big data research was commercial, attention has been given to social media reputation and brand monitoring rather than building an abstract theory of public attention. One recent review analyzed the social media monitoring services of eighty companies competing for commercial business in this space (Moffitt 2011). As a result of this commercial activity there are ongoing advancements in analytics and data processing of which academics can take advantage. The commercial folks, of course, are primarily only interested in what happened this week concerning their brand or brand category. But the aggregated data are available to academics who are more likely to be assessing trends over months or years. Entering the search phrase “Obama,” for example, for mentions in the last year in the popular Sysomos Map analysis system reveals more than ninety-three million hits in the social media, blogs, online discussion fora, and in the online versions of the traditional broad-

cast and print media. One can trace the ups and downs of traditional media commentary on Obama and, for example, the specific issue of Obamacare tracking official news and public commentary over time. It is an amazingly rich and as yet hardly tapped resource for social scientists interested in opinion dynamics.

Using social media big data as an indicator of public sentiment upsets some survey research public opinion traditionalists (cited in Hargittai 2015). Big data is not a representative sample of the public who have been asked to address an issue of potential public concern. Indeed, it is something quite different—a sample of those who were moved to comment on a public issue without being asked. It is arguably as reasonable an indicator as a survey especially now when percentage response rates to traditional mail and telephone surveys has fallen to the low twenties and teens (Ansolabehere and Schaffner 2014).

The terminology of “big data” may strike some as a bit self-aggrandizing, but it seems to be catching on as a generic label for data and analyses of this general type (boyd and Crawford 2012). Early promoters of these new directions, although full of enthusiasm and perhaps a bit of missionary zeal, are generally well aware of the many limitations and biases of these methodologies and acknowledge that these new research opportunities will complement and expand, rather than replace, more traditional methods (Bollier 2010). One notable problem in this domain is that big data systems effortlessly generate large numbers of colorful visualizations of text patterns and over-time trend graphs so as a result analysts may be inadvertently seduced into a reliance on description rather than theory testing (Borrero and Gualda 2013).

Imagine the following scenarios. Immediately following the downloading of a provocative news story, a citizen fires off an e-mail to their congressional representative and immediately thereafter makes a financial contribution to the representative’s rival in an upcoming election. Or: following exposure to an online ad for a new beauty product, the viewer orders the product online. Or: over a two-year period an individual becomes increasingly dependent on Fox News, drops subscriptions to less conservative news sources, and reports increasingly conservative views and voting intentions. Or: in a researcher-managed ongoing online political discussion group, it is demonstrated that the injection of verifiable factual information leads to more moderate views and deliberative discussion while parallel untreated control groups tend to spiral toward

polarization. Or: it is demonstrated that after adventuring into heavily liberal or conservative news/talk environments for an extended periods, certain types of citizens tire of the advocacy and emotionality and find themselves returning to familiar mainstream media for the bulk of their media diet.

The use of online survey panels and online behavioral assessment do not proceed without serious difficulties of inference, representativeness, panel wear out, and, whenever self-reports are involved, difficulties of recall and interpretation and occasional intentional misrepresentation. But because the medium of research is the same as the basic medium of communication in natural environments, the benefits are significant. Manipulation of exposure in the experimental tradition is still possible. With the consent of the subjects involved, numerous techniques are possible to systematically steer and filter the flow of information they are exposed to over time. For obvious reasons, most volunteers would not want to have what they see and hear in the media manipulated for decades, but it may well be possible for weeks and months, and that is a significant step ahead of the standard thirty- or forty-minute experimental lab study—the cornerstone, indeed, the gold standard of the experimental tradition.

It may be noted that the humanistic and critical traditions of communication scholarship have occasionally ventured out in the field to assess how typical viewers or readers were making sense of the mainstream media fare available to them. One of the most prominent and widely cited of these exercises was the *Nationwide* study series conducted by David Morley and Charlotte Brunson in the late 1970s. *Nationwide* was a popular current affairs magazine program broadcast weekdays from 6:00 to 7:00 p.m. on BBC1, and the research team managed to arrange showings of two broadcasts in mostly adult educational settings with twenty-nine small viewing groups (three to thirteen participants) in London and the midlands who would discuss the program in an unstructured format following the viewing (Morley and Brunson 1978, 1999; Morley 1992). Because of the costs and difficulty of the enterprise such empirical explorations of what viewers are thinking as they are viewing are extremely rare (see also Neuman 1982). Nowadays, however, most popular programming has multiple naturally occurring online discussion groups full of speculation about plot twists, character motives, and, of course, “what it all means” (Wohn and Na 2011). Such a rich source of audience reaction can be sup-

plemented with researcher-driven and more representative samples of viewers (rather than the high-energy fan base that dominates the discussion boards) and include specific queries on how individuals are reacting to the complex flow of narrative twists and turns as well as the framing of news and public affairs (Jenkins 1992).

For the past fifty years researchers have been watching TV and reading newspapers and magazines with a clipboard in hand and a detailed codebook for a rigorous content analysis of media messages for the purposes of description and of characterizing the themes of the dominant media fare. Analyzing text quantitatively and qualitatively with an interpretive flair has been an area where humanistic and social scientific traditions have overlapped somewhat. It is not yet clear, but at some point sophisticated automated content analysis may approach human-coded analysis in its richness, reliability, and validity. One group that systematically codes the flow of news around the world ([mediatenor.com](http://mediatenor.com)) continues to rely exclusively on a small army of extensively trained human coders rather than computer-based coding, so this automation may take some time yet. This research group has every incentive to automate the process. But since their financial bottom line depends in large measure on the accuracy of the subtle evaluative story framing over time, they have not yet abandoned their human coders with clipboards. In any case, with the extensive archiving of online content underway, it is increasingly practical to review and rereview content for a mix of automated and human-based exercises in tracking message trends and the linkages of those trends to attitudinal and behavioral responses among those actually exposed (Tufekci and Wilson 2012).

Clearly a great deal remains to be done. But the prospects for a fundamentally fresh approach to the systematic measurement of the flows and structure of electronically mediated communication are clearly promising. If Thomas Kuhn's skeptical views about the inertia of scientific research practices among older researchers is sound, it may be up to a new generation of researchers to fully explore these options, hopefully with the encouragement and hard-earned experience of their elders. So we cannot conclude our narrative arc with our protagonist, sword raised triumphantly and standing astride the vanquished evildoer. This is a book on evolving research in practice. Our narrative is perhaps more akin to structure of episodic television. The conclusion is simply stay tuned.