

Diffusion theory

Rogers and Shoemaker found that diffusion of innovation starts slowly, accelerates, then levels off - like the left half of the normal curve. With individuals exposed to so many more stimuli through the Internet, does a different pattern emerge or does it just develop faster? (Anne Johnston, Pamela J. Shoemaker and Gil Thelen)

Diffusion Theory

Anne Johnston

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I was first introduced to diffusion theory in the early 1980's when I took a communication and social change class as part of my Ph.D. coursework. Following that course, I thought of diffusion of innovations as a theory or model that applied to situations where developed countries attempted to enact social change in undeveloped countries. At least that was the perspective that I had after my initial exposure to this theory. But being asked to comment on this theory (thanks to Phil Meyer!) and to raise questions about the future of this approach, made me wonder about the individual, cultural and societal needs and circumstances that influence how and why diffusion of innovations occurs. I don't think the advent of the Internet has changed those influences, but I do think the development of the Internet and other communication technology has modified the way in which diffusion occurs and why it occurs.

One aspect of diffusion that I find most interesting and ripe for much more research and theorizing is research on the characteristics of adopters that persuade other adopters to begin using an innovation. Frequently in diffusion research we think about how early adopters serve as opinion leaders for later adopters, and there has been some interesting studies identifying the characteristics of early adopters. But how do individual, societal and cultural influences interact with personality characteristics to determine how and why someone will decide to use an innovation? What allows the diffusion to occur and spread? And are certain influences much stronger for particular adopters?

My personal experience with being an adopter in a diffusion of innovation model has mainly been driven by individual influences. I had never text messaged anyone until my son went away to college. And as many parents of college students know, emails and phone calls are not always returned. But the best way to communicate with or ask a question of my son is to text him. I receive an immediate response to any text message I send to him. I don't use text messaging for any other purpose except my individual desire to stay in touch with my son. The content of my text messages has varied widely: I have texted my son to make sure his flight arrived safely at its destination; I texted my son following the Virginia Tech tragedy to tell him that I was thinking about him; and (my most unusual text to date) I texted him my Thanksgiving stuffing recipe.

Societal, cultural and individual influences are often tied together when diffusion of innovation occurs. My individual needs were the ones that persuaded me to adopt text messaging as an innovation. But knowing that my son belonged to a culture of college students for whom this was a popular way to communicate also influenced my use of the innovation. But individual needs and influences may sometimes

be secondary to cultural and societal considerations. For example, there is research that indicates that text messaging has been used in Turkey to send political party slogans and messages to voters. I've also read reports that text messaging is being used to alert people about protests or political events. And a graduate student who has studied in the Middle East told me that because text messaging can circumvent censorship in some countries, it becomes the preferred method for groups hoping to organize political events.

I have also marveled at the rapid diffusion of new technologies for political communication in our own country. The July/August 2007 issue of *Mother Jones* was devoted to open source politics describing some of the new ways that technology will "revolutionize our ability to follow, support and influence political campaigns" (pg. 27.). Citizens can now ask questions of candidates during debates or produce and upload attack ads on YouTube, and they can hold mini political conventions in Second Life. Articles in newspapers and magazines not only talk about how the innovations might change politics, but they encourage people to use these techniques to participate more fully in politics. Readers of the Sunday, November 18, 2007 issue of *Parade* magazine were told that "You have the power" and that "every voter today can help set the political agenda." (p. 6). How should you get involved? Well, forget about writing a letter to the editor. Among the things you can do, you can make your own ad, email the candidates, and comment on blogs or start your own blog.

I also am very interested in understanding how diffusion might happen in very different ways for different sets of early adopters. We know that Facebook is the popular way for college-aged students to communicate with each other. They were certainly early adopters of this social networking innovation. And it is the only way that my college aged son communicates via email. But baby boomers have invaded Facebook and MySpace, much to the horror of some younger adopters. CNN.com had an article in January 2008 that reported that some young people are uncomfortable with older adults on social networking sites...and want older adults off of Facebook or MySpace. Can early adopters with very different reasons for adopting a technology exist side by side in a diffusion model? Were young people on Facebook the early adopters who influenced baby boomers to go on Facebook?

Beyond these questions, I also wonder what characteristics or qualities of adopters are most critical in persuading others to adopt a particular technology. Or what are the types of messages that are most persuasive in encouraging someone else to join the community of users? There's been some interesting research about how health professionals might be persuaded to adopt new technologies to improve health care record keeping. And some of that research indicates that certain types of appeals work better when you are trying to persuade them to adopt the technology. This seems to be a very interesting area for research in diffusion theory.

All of these areas: characteristics of adopters, persuasive appeals in messages, and a system of individual, societal and cultural influences are very interesting areas to think about as we apply diffusion theory to our understanding of social change in the 21st century.

Diffusion of News in the 21st Century

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Diffusion is the dispersion of information about innovations (or later, news) throughout a social system in a defined time period.

This has been a largely descriptive body of research, with its roots in agricultural studies. The idea was picked up by agricultural extension programs, which sent U.S. scholars overseas to study how quickly an innovation, for example, a new farming technique, diffused throughout a community. It was important whether information about the innovation was transmitted through interpersonal channels, in printed form, or by using radio. Thus diffusion became a standard approach for the study of mass communication and remains so today.

The definitive work has been Everett Rogers' book *Diffusion of Innovations*, first published in 1962 and now in its fifth edition. Rogers said that innovations diffuse in an *S-curve* pattern over time, which in statistical terms is the *standard ogive*, a visualization of the cumulative normal curve. Many diffusion scholars have shown that their data fit the S-curve, but whether this supports a hypothesis of causal effect is questionable. Steven Chaffee (personal communication, circa 1980) said that the familiar pattern may instead reveal that nothing influenced the diffusion process. Chaffee said that diffusion faster than the S curve may reveal an agent facilitating the process, whereas diffusion slower may indicate that something or someone is constraining the process.

The *J-curve* was discovered in studies of highly newsworthy events (Greenberg, 1964; Greenberg & Parker, 1965) and is also a well-known pattern in statistics – the *power curve*. The J curve describes the proportion of a population who learn about a highly newsworthy event across time. After a relatively short period in which few people know about a very newsworthy event, information diffuses throughout the population exponentially, through both mass media and interpersonal channels.

At roughly the same time agricultural researchers began studying the diffusion of corn seed in a field, social psychologist Kurt Lewin began studying how to change the eating habits of a population. His *gatekeeping theory* (1947a, 1947b, 1951) is based on the idea that food units flow through multiple *channels* (such as the garden or grocery store) on their way to the family's table. White (1950) applied the gatekeeping model to the movement of information about an event's occurrence to its appearance in a newspaper story. He studied an editor's decisions to publish or reject stories that traveled to him from three wire services (channels).

It is important to understand, however, that gatekeeping theory also addresses the diffusion process before the wire service stories reached Mr. Gates. Information about an event diffuses through many channels on its way to publication. In the case of an event such as an airplane crash, reporters not only get information from people who experienced or observed it first hand, but they also talk with people who have information about airplane crashes in general and from those who can be relied on to come up with a pithy quote on nearly any topic. In addition, the story the reporter writes can be changed by copy editors, managing editors, and other editors responsible for sending it from a local newspaper to any of three wire services, where more editors decided whether to diffuse it to subscribing newspapers. Units of information can be cast aside or accepted at any of these stages (*sections* in gatekeeping channels). When information units successfully pass through the channel, they are aggregated, shaped, and molded into news stories, but this is not the end of the gatekeeping process. Stories can be edited to change, add or remove

information at any point up to the time they go into production and are presented to the audience as a newspaper.

In the last ten or so years, as the internet has become a viable news medium, many people have told me that the internet represents the death of gatekeeping theory: *There is no gatekeeping on the internet.* Hogwash. These people apparently believe that information units are spontaneously and entirely created at the moment a blog entry is posted, and that the information is original and different from that in any other blog or news site. Information from blogs is highly redundant, and includes information that bloggers could not have experienced first hand. Information diffuses through mass media and interpersonal channels to the bloggers, and they combine it with their own understanding of the world. The result may be idiosyncratic, but it is based on information that has traveled through many gates.

Lewin said that *items* (in this case bits of information) move through *channels*, each of which is divided into *sections*. At the front of each section is a *gate*, and passage of the item through the gate is controlled by a *gatekeeper*, that can be a person or a set of rules, the most famous of which are Google's mysterious algorithms. These intricate sets of computer code determine which stories (from other news organizations) find a place on its news portal site. At the moment I am writing, the top news headlines are "Fear, emptiness after deadly US college shooting," from Reuters (47 minutes ago); "Clinton sharpens attack in presidential race," from Reuters (52 minutes ago); and "President Bush travels to Africa," from the *Washington Post* (34 minutes ago).

But gatekeepers do more than make in/out decisions. In the case of *Google News*, the algorithms also determine the order of stories, how quickly they appear, under which category (e.g., world news), links to other news organizations, and so on. The algorithms generate probabilities that measure how newsworthy news items are, and follow rules for manipulating them. Will a news item go to the world news channel? Or the science and technology channel? The way in which the news item will be treated is a function of these algorithms.

The sophistication of these gatekeeping rules is shown by the company's encouraging readers. These "more or less" rules and placement of categories on the page turn into algorithms created by individual readers and remembered by Google's servers, so that when the reader enters the site again, the *cookies* (audience-defined sets of information and rules) left behind by Google on the person's computer allow the server to recognize the person and his preferences.

The internet provides many opportunities for audience members to become gatekeepers. Readers may personalize *Google News'* front page by asking for more or less of a category and may re-order categories on the page, thus acting as their own gatekeepers. At *The New York Times* online, readers can as easily email an article to many people as to one. The *Times* own algorithms continuously gather this information and present it on the newspaper's front page as the rank-ordered "most e-mailed articles." In contrast to the *Google* top stories, the *Times'* most e-mailed stories are at this moment "Dumb and dumber: Are Americans hostile to knowledge?" "Well: Reinventing date night for long-married couples," and "Black leader, a Clinton ally, tilts to Obama."

Audience members have become active in a secondary gatekeeping process, one that begins when the usual mass media process stops. Just as Mr. Gates showed a personal preference for one topic over another, so do readers. And now the *Times* staff can "look over the reader's shoulder" at what she is reading and thinks others also want or should read. It must be a marketing department's dream: Hard data about what sorts of articles are most popular, no longer relying on unreliable self-report from surveys and incomplete participation in focus groups.

As for the editorial departments, hard data about what readers want to read butts up against the social responsibility canon to give readers what they need to read. I don't know whether journalists pay any attention to the most e-mailed list or use it to make gatekeeping decisions. But I do know that the dotted line representing a weak audience feedback loop in mass communication models can now be made solid. And I know that neither the diffusion nor gatekeeping processes end with the mass media. The audience is a force to be recognized when we study the flow of information.

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Diffusion Theory

Gil Thelen

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Accepted diffusion theory emphasizes the vital and activist role practitioner-adopters play in the implementation of innovative ideas. Dearing and Meyer, for instance, assert that “every practitioner is unique.” They argue further that when “practitioners exert creativity in implementation, the meaning they hold of the adapted programs will be closer to sacred and less likely ordinary.” In other words, more local control means more success in adopting desired reforms.

Translated into the workaday world of traditional news organizations, the theory in practice goes like this: non-local agents, such as professional organizations, activist foundations, financial stakeholders and corporate officials, initiate and transmit to the news organizations ideas that they believe will enhance service to customers or improve business results. Enhanced service might be qualitative, such as ease of use or relevance of content. Improved business results would be greater operating efficiency, profitability, market share, or all three in the ideal case.

Practitioners (editors, publishers, TV station managers, news directors) are charged with creatively shaping innovative ideas to local circumstances and implementing them as the practitioners consider best for their particular organization. Practitioners, in this paradigm, have considerable autonomy in shaping the adopted innovation. To do this, they “borrow” capacity from routine operations to implement the desired change and involve their staffs in shaping the local initiative.

The ubiquity of the internet, in my semi-informed view, accelerates this “sacred” model of innovation adoption for new media enterprises. It does not change it qualitatively. New media operators, from what I can observe, remain in control of the local adoption of innovations and have the capacity to experiment.

My short paper addresses what has changed in the past two-to-five years for traditional media houses that want to innovate using the diffusion model of local adaptation and adoption.

My thesis is this: there are profound disconnections among outside initiators, field practitioners and customers. Those disconnections threaten to paralyze news organizations that face hyper change in technology, business models and customer demand. Customers are looking for different information forms and delivery mechanisms. The disconnections short circuit the diffusion model for the organizations.

The first disconnection is between the idea generators and field operatives. Outside initiators have lost patience with, or faith in, the ability of practitioners to implement change ideas in timely and effective ways. Foundations are increasingly prescribing the manner in which grantees will adopt the foundation’s change formulas. Corporate officers are more activist in controlling field operations. (Micromanagement is the pejorative term.) Financial stakeholders are bolder in telling corporate officers how their field operators should manage resources.

The second disconnection is over budgets and takes field executives beyond their problems with operating autonomy. They are increasingly stripped of professional resources. That diminishes their capacity to perform accustomed and expected day-to-day operations and removes the elbow room required for

innovation. The recent upheavals and firing of once-valued editors and publishers at Tribune, McClatchy, Morris and MediaNews are indicative of this trend. The struggles were mostly about newsroom budgets.

The American Press Institute's go-for-broke Newspaper Next project has yielded minimal change at papers chosen as demonstration sites. The ostensible reasons relate to internal competition for scarce resources and the diminished capacity of the newsrooms to execute the demonstration programs.

A third disconnection is with customers. They are fleeing by the thousands each month. Content cuts and section consolidations are alienating the most loyal readers, viewers and users. At a time when market research is most needed to stay abreast of changing customer tastes, that research capacity is being stripped from news organizations. (Media General, for example.)

A fourth disconnection involves the innovations themselves. Innovations that were meant to do one thing are being hijacked for other purposes. Multimedia pioneers worry that their efforts to build cross-platform convergence are being used to cut newsroom headcount, the charge made initially by opponents of convergence in 2000.

A fifth disconnection is occurring within news organizations. Alliances among operating departments that were once carefully nurtured are breaking down. Editors who shift resources from traditional areas (features, entertainment, business news) to new ones like continuous news desks are criticized by ad and circulation directors for the innovations. Those directors say the jettisoned content is necessary for their operating success. Business managers resist editors who desire to grow readership and revenue with new section offerings. And the accountants appear to be winning most of the battles.

Research implications of my thesis are several. 1. Document the breakdown of diffusion within traditional news organizations and suggest alternative paths to innovation, if that is possible. 2. Explore further the apparent success of idea diffusion in new media and determine how, if at all, it varies from theory.