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TIPPING TOWARD THE INTERNET: GLOBAL CHANGES IN POLITICAL SCIENCE RESEARCH

Richard W. Wilson
Department of Political Science
Rutgers University
New Brunswick, NJ
U.S.A.

ABSTRACT

Memetic theory provides a partial explanation for why research patterns in political science have changed throughout the world. Scholars everywhere have rapidly acquired a set of ideas, codes and instructions on how to do Internet based research. The Chinese, who until recently were comparatively isolated and forbidden access to broad areas of knowledge, are now through the Internet able to access information from many diverse sources. While this varies among age groups and degree candidacy levels, it is clear that Internet use has changed the entire research environment in China. Understanding the rapidity with which new research patterns can spread is thus a pre-condition for formulating policy guidelines and training standards for information specialists.

INTRODUCTION

Research techniques have changed greatly over the last quarter century. Twenty-five years ago studies in political science were largely a personal, hands-on activity conducted in libraries or by patient and time consuming observation. Obtaining data was highly labor-intensive. With some exceptions this research model conformed to a pattern that was decades, if not centuries old.

Methodologies were equally constrained by time-worn patterns. Empirical techniques from related disciplines were only slowly beginning to percolate into political science, indeed, throughout the social sciences in general. Instead, the great majority of work was highly subjective and interpretive. Although this pattern remains to this day, its relative importance has shrunk, replaced by increasingly sophisticated mathematical modes of analysis structured by abstract causal theory.

These changes were largely the consequence of two factors. First, the more sophisticated models now currently in use, while still imprecise by the canons of natural science, proved better able to describe and predict complex social events. Second, the advent of the Internet and the use of computers in general provided virtually instantaneous access to treasure troves of data, allowed for the electronic manipulation of that data in ways that reduced the man-hours required for analysis to a mere fraction of what had heretofore been required, and permitted dissemination of research results in essentially real time. All of this fundamentally transformed the research environment of political scientists in both qualitative and quantitative terms.

This revolution, for that is what it surely was, has spread rapidly throughout the world with enormous consequences for the role of libraries and librarians alike. It is not too much to say that these changes have been the cause for much soul-searching, even hand wringing, on the part of professional librarians as they search to understand the new parameters of their professional life. No small amount of print has been devoted to the search for answers. Yet that search depends on a more complete understanding of the changes that have taken place in the academic world and the impact of these changes on the creation of the new research environment. This paper sets forth some tentative conjectures with reference to memetic theory regarding the reasons for the rapid changes that have taken place. It also provides a small -- and admittedly incomplete -- picture from China, a place that is only now coming to grips with the transformations that have taken place. While the findings are based on too small a sample from which to draw firm conclusions, they nevertheless corroborate inferences drawn from memetic theory that explain why the research culture of political scientists is being rapidly altered worldwide.

MEMETIC THEORY AND THE EVOLUTION OF RESEARCH CULTURES

If we wish to understand why research patterns change we need to move beyond conjecture, persuasive though it may be as a first level approximation. Ease of access to information and access to more abundant sources of information do not in themselves explain why research cultures change. What is needed is a theory of change that can account for the flow of ideas across time and space, a theoretical formulation that embeds research culture in a broader framework and that explains why people come to accept new ideas generally and reject older ways of thinking. One such formulation is memetic theory, a still highly controversial set of ideas that attempts to explain idea propagation in Darwinian terms. Since these ideas are tentative, however, readers should view the following explanation very much as an exercise in theory construction.

Memes are bits of information that are capable of being transmitted from one brain to another with a high degree of copying-fidelity. In the same way that genes are instructions encoded in DNA, a meme is said to be an instruction for behavior that is embedded in human brains or in the products of brains such as films or books. (Blackmore, 1999:17,240) Memes share with genes the crucial, basic characteristics of fidelity, fecundity, and longevity. Similarly, they possess attributes that are essential for a true evolutionary process: (1) heredity (the form and details of memes are copied); (2) variation (they are copied with errors or other variations); and (3) selection (only some memes are successfully copied). (Blackmore, 1999:51,100)

Like genes memes are unconscious, blind replicators. Unlike genes, however, which propagate through sexual reproduction, memes propagate from brain to brain by a process of imitation. It is the singular capability of humans to imitate, to acquire beliefs, values and behavior patterns from others, that sustains memetic reproduction. Meme propagation occurs from social interaction that varies from face-to-face encounters to viewing films, video, the Internet and even artifacts. Successful memes are those whose effects are observed, especially those that are related to behavior that is easily remembered. (Blackmore, 1999:41,103,211) In that sense memes have a reality, albeit abstract, for although they cannot be physically isolated, they are measurable as ideas,

What can be said with some certainty is that memes and memeplexes (defined as two or more memes that are co-adapted to exploiting the environment to their own advantage) exist as part of the dynamic structure of the brain. They develop in the mind from which they emerge as speech, writing, music, etc. to take root in other minds. Their essential attribute is that they are contagious. Ideas that do not spontaneously migrate (e.g., ideas gleaned from the symbols and rituals of "dead" civilizations) are not properly memes or memeplexes for they form no part of the codes, instructions, etc. of an ongoing or emergent cultural repertoire. In short, no brains, no memes; no migration, no cultural change.

Still, a nagging question remains. What is it that a memetic formulation adds that cannot be captured by other theories that deal with one or more aspects of the origination, transfer, acceptance and spread of ideas and values (e.g., cultural diffusion theory)? The answer lies in the nature of replicators and in the power that reductionism affords. Theories based on the human genome, for example, provide a deeper understanding of disease pathologies than theories based on symptomatic observation alone. In like manner memetic theory builds on theories of information flow, discourse, socialization, etc., to provide a more inclusive explanation for cultural change than theories that are idiographic. Although still in a formative stage, memetic theory is thus a step toward a more integrated conception of change.

CHANGING PATTERNS OF RESEARCH IN CHINA

Memetic theory suggests that a research culture will be transformed to the degree that new techniques, embedded in ideas and operating instructions, are propagated, accepted and, finally, established as an integral part of a new research regimen. One way to test whether this process has occurred is to note the acceptance of new research

patterns in areas where they did not previously exist. Observing the degree to which the Internet is accessed is one way to determine whether memetic transference has taken place.

In the Fall of 2002 the author, a political scientist, and his wife, an academic librarian, were invited to lecture and consult for a three week period at Jilin University, China's largest university, located in what the Chinese refer to as the Northeast (Manchuria) in the city of Changchun. A series of lectures were given to a political science audience and to librarians with ample opportunity to observe library functions including the library's technical infrastructure. While librarians clearly do not enjoy the same high professional status as their colleagues in the West, they nonetheless are eager to bring the library's holdings up to a world standard, and to utilize some of the surprisingly advanced equipment that is available. Some political limitations on access to data exist but overall the climate seems relatively free from overt restraint, in stark contrast to what was observed by the author twenty-five years ago.

During one of the lecture periods a very brief questionnaire (see appendix) was administered on a Sunday morning to 44 individuals who managed to be in attendance. Of these 60% were women and 40% men, 35% were between the ages of 18 and 22, 27% were between 23 and 25 and 39% were above 25 years of age. Twenty-five percent were candidates for the B.A. degree, 52% for the M.A. and 23% for the Ph.D. This small number of respondents made statistical tests for significance impossible; the findings reported here, therefore, are frequency distributions only, rounded off for the sake of simplicity. No detailed analysis will be provided in terms of each question (8 in number). Rather, the findings will be selectively highlighted in order to provide a small window on the changes that are taking place in China today. One other point should be noted. As far as could be ascertained, all of the respondents were working toward degrees in political science.

In terms of gross overall responses the findings were illustrative. Although approximately 68% claimed that the Internet is of some importance for research (only 2% stated that it is not important), 53% said that they primarily use books and printed materials and, moreover, need these print materials most. Seventy-four percent noted that in doing their research they go first to libraries to seek information (versus going to fellow students, professors, the Internet and other) but only 14% state that they frequently ask librarians for help while 52% say that librarians are queried occasionally. Clearly the library appears to be the most popular venue for research but this does not include any significant resort to assistance from librarians. Why this should be so is unclear given that books and printed materials are still the most commonly sought after sources for data. Perhaps librarians are inaccessible (this was not observed) or perhaps they are viewed as largely irrelevant. One thing is clear, however. Librarians as a whole do not have a strong command of foreign languages, especially English, which was spoken fluently by the political science audience to a degree where translators were not required. Unlike the librarians some 80% of the respondents stated that they use foreign language material from the Internet “at least occasionally.” This disparity in language proficiency may be one major explanation for the relative failure to ask librarians for help.

One finding is of interest in revealing freedom of access to information. During the period of the author's stay in China, legislation was being drafted by the State Council that would allow ordinary people free access to government information. Unlike societies in the West where access to government information is largely (although not completely) unrestricted, comparable information in China has often been treated as a State secret. Much of this data is of special interest to political scientists; lack of access constitutes a serious impediment to research and, in general, casts a pall over the whole process of data acquisition and dissemination. Not surprisingly, therefore, 66% of the respondents report that free access would be very important (30% declare it of little importance). Only a scant 4% state that it is not important at all.

Men and women appear to use foreign language material roughly equally (88% and 80% respectively) and believe that the Internet is of some importance for research (70% and 69%). Most other differences between the sexes were minimal. The major area of disagreement concerned what the respondents felt they needed most for their research. Seventy-one percent of the men say they want more books and journals (versus 43% of the women) while 30% of the women (versus 12% of the men) want greater Internet access. While the differences are extremely small, women apparently are in the lead in demanding access to Internet materials.

There was little consistent difference among the age groups except for two interesting findings that stand out in terms of age trends. When it comes to frequency of usage of foreign language material from the Internet, 20% of the youngest respondents (18 to 22 years) claim that such materials are never used. This drops to 8% for those 23 to 25 years old and to 6% for those above 25. If we assume that older students are those most likely to be doing advanced research (a not unreasonable assumption), then it is clear that use of foreign language materials increases concomitant with age. For older students the Internet is apparently a major means of access to the international marketplace of ideas.

Paradoxically, the need for the Internet in general seems to decline with age, perhaps as a consequence of more selective use. In response to the question about what is needed most for research it is the youngest respondents (18 to 22 years old) who wish greater Internet access and who come in highest at 60%, perhaps because they are the least privileged in terms of access. This declines to 33% among those 23 to 25 years old and to 12% among those over 25. In contradistinction, 65% of the oldest respondents feel they need more books and journals for their research versus 44% of those 23 to 25 years old and only 10% of those who are between 18 and 22.

As in most universities there is a generally well-defined pecking order among degree candidates with Ph.D. students standing highest followed by M.A. and then B.A. candidates. Reflecting their greater commitment to research, Ph.D. candidates often have special borrowing privileges, preferential access to special collections and a privileged status regarding Internet use. Although the Ph.D. candidates more frequently state a need for books and printed materials in doing research (at 60% versus 50% for M.A. candidates and 45% for B.A. candidates), they go first to the Internet to seek research

information (at 75% versus 24% for M.A. candidates and 0% for B.A. students). They are also the least likely to seek information from libraries. Only 25% of Ph.D. candidates state that they go to libraries first. This increases to 62% for M.A. candidates and a solid 100% for B.A. candidates.

Ph.D. students seek information from a wide variety of sources and have access to those sources to a greater degree than others. Thus, while they are more likely than others to seek information first from the Internet, they are less likely (9%) than others (29% of M.A. candidates and 30% of B.A. candidates) to state that greater Internet access is what is needed most for their research. Rather, while libraries as such are not the place where they go first to seek information, it is more contact with professors or information specialists (such as librarians) that is most desired for their research (36% versus 24% of M.A. candidates and 10% of B.A. candidates). They are also the ones who most desire unimpeded access to government information. In terms of the importance assigned to the legislation being drafted by the State Council allowing ordinary people free access to government information, 80% of Ph.D. candidates claim such legislation is very important versus 65% of M.A. candidates and 55% of B.A. candidates.

CONCLUSION

Changes in research environments involve the displacement of one prevailing set of values and beliefs by another. Implicit in this process is a shift in the relative importance of the memeplexes that govern behavior and feeling. Explicating change requires, first, an understanding of memetic transference and, second, the implications of this for cultural values. An understanding of human agency and of the factors that retard change is also necessary.

Memetic transference is a two stage process requiring, first, an awareness of an innovation and, second, an acceptance of it. (Cavalli-Sforza and Feldman, 1981:34, 62) Transference occurs by observation of, or contact with, people who have already adopted the innovation; individuals observe others (or films, books, etc.) and then incorporate the instructions (i.e., memes) for new beliefs and behavior into their own repertoires. (Cavalli-Sforza and Feldman, 1981:36, 66; Boyd and Richerson, 1985:79)

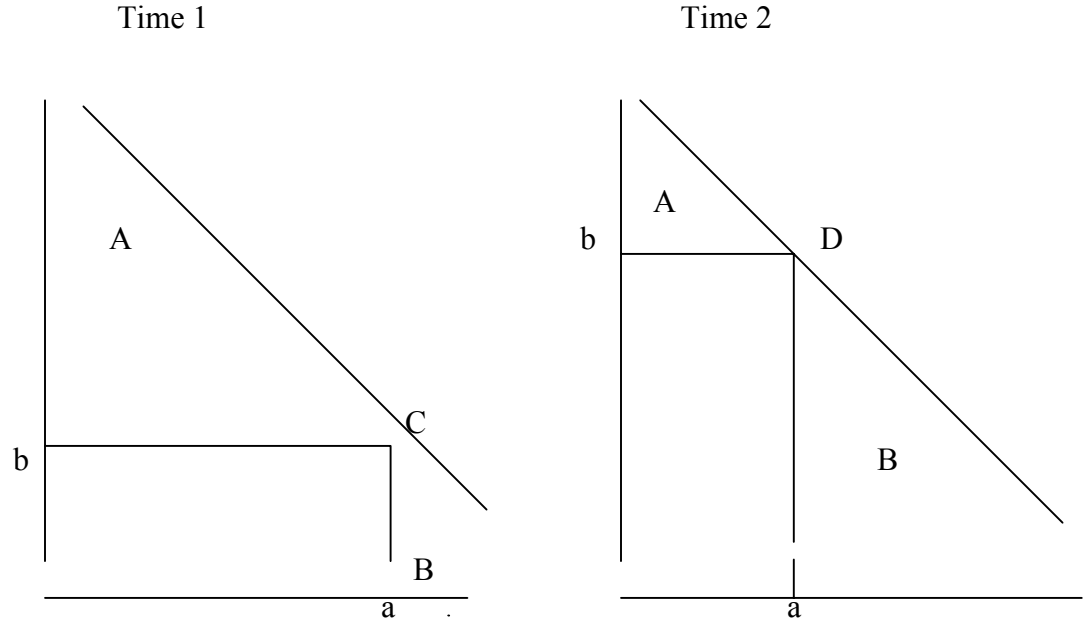
In general the results of the study in China support several conclusions regarding memetic transference. The Chinese, who until recently were relatively isolated and forbidden access to broad areas of knowledge, are now through the Internet able to access information on a world-wide basis. While this varies among age groups and degree candidacy levels (e.g., older students use more foreign language materials; younger students desire use of the Internet more than their elders; advanced degree candidates, more frequently than others, go first to the Internet to seek research information, etc.) it is clear that Internet use has changed the entire research climate in China. Indeed, if there is one conclusion that is unequivocal, it is that resort to the Internet is now an integral part of Chinese research behavior.

Previous generations of Chinese scholars were highly book oriented and their research was characterized by a marked didactic style. In the heyday of Maoism there was also a heavy veneer of ideology that skewed interpretation along lines that met with Party approval. These influences have by no means completely disappeared yet there is now a vibrant counter current based on Internet use and access to greater sources of knowledge.

Perceptions of the importance of the Internet now approximate those found elsewhere. Internet use, in fact, has enabled scholars in China to operate much as their counterparts do in other areas of the world. Moreover, the trend is intensifying. Although there are still significant restrictions, the data make clear that there is widespread support for legislation that will allow greater access to information. There is one final conclusion that should be stressed. Modern governments and people need sophisticated analyses of social problems to meet societal needs. Once scholars have been exposed to Internet based investigation, the potential for high quality research becomes readily apparent. Although the path is not a straight one, the process has an inexorable quality.

One relatively simple way to hypothesize how one pattern of research behavior may displace another, often dramatically, is by reference to Figure 1 (about here).

Figure 1
The Inverse Relationship Between Research Patterns
Associated with Memeplex a and Memeplex b



Measurements are indeterminate. Values are thus also indeterminate and are meant to be descriptive only.

The straight-line curves of Figure 1 represent the inverse relationship between two memeplexes ("a," representing a predominantly print based research pattern and "b," representing a mixed print and Internet research culture) that are competing for dominance in a particular brain. Each memeplex, as an ideational unit, is assumed to be antithetical to the other. As preferences shift along the curve (as, for example, from C to D) areas A and B beneath the curve vary inversely. These areas, it is hypothesized, correspond to the justifications for the use of a print based research pattern associated with memeplex a (area A) or with a mixed print and Internet based strategy associated with memeplex b (area B). However, since the formula for area A is $a^2/2$ while that for area B is $(a^2-2a+1)/2$ (when the limits of a and b are 1), the inverse relationship between them is not directly proportional; rather, as memeplex a decreases, the area of A relative to "a" decreases as the square. Therefore, the more that a mixed print and Internet based research strategy (memeplex b) becomes a significant ideational unit, the more disproportionate will be the emphasis on the patterns associated with memeplex b (area B) and, in like manner, the smaller will be the area that represents the print based research pattern associated with memeplex a (area A).

Memetic theory thus provides an interesting although hardly definitive explanation for why research patterns have tipped with such rapidity in China. A set of ideas, codes and instructions on how to do Internet based research has been acquired with breathtaking speed by Chinese researchers. The acquisition pattern followed a theoretically postulated route in which older conceptions co-exist with newer ones but are ultimately displaced. While alternate theories of explanation can be employed, none is as effective as memetic theory in providing an answer for why behavior changed so rapidly.

Clearly modern research techniques have high appeal. Their use lends precision and speed to practitioners in ways that require others, such as librarians, to pay close attention, both to the content and also to the speed of change. Understanding the rapidity with which tipping toward the Internet can take place, even if imprecise, is thus a necessary condition for formulating new policy guidelines and training standards for information specialists throughout the world.

BIBLIOGRAPHY.

Blackmore, Susan. (1999). The Meme Machine. New York: Oxford University Press.

Boyd, Robert and Peter J. Richerson. (1985). Culture and the Evolutionary Process. Chicago: The University of Chicago Press.

Cavalli-Sforza, L.L. and M.W. Feldman. (1981). Cultural Transmission and Evolution: A Quantitative Approach. Princeton: Princeton University Press.

APPENDIX

QUESTIONNAIRE

PLEASE CIRCLE YOUR ANSWER

I. BACKGROUND INFORMATION

1. Male? Female?

2. Age
   a. Below 18
   b. 18 – 22
   c. 23 – 25
   d. Above 25

3. What degree are you a candidate for?
   a. B.A.
   b. M.A.
   c. Ph.D.

II. QUESTIONS

1. In doing research do you primarily use:
   a. The Internet
   b. Books and printed articles
   c. A combination

2. In your research how important is the Internet?
   a. Very important
   b. Somewhat important
   c. Not important

3. In your research do you use foreign language material from the Internet?
   a. Frequently
   b. Occasionally
   c. Never

4. How do you determine the reliability of information from the Internet?
   a. By additional searching
   b. Check further in books and articles
   c. Discussion with professors, librarians and fellow students
   d. All of the above

5. Do you ever ask librarians for help in your research?
   a. Frequently

b. Occasionally
c. Never

6. In seeking information for your research where do you go first?
   a. Fellow students
   b. Professors
   c. The Internet
   d. Libraries
   e. Other

7. Is it important to you that the State Council of China is now drafting legislation to give ordinary people free access to government information (as reported on September 25 in China Daily: "Rule to Disclose Information," p. 4)?
   a. Very important
   b. A little important
   c. Not important
   d. Not relevant

8. What do you need most for your research?
   a. More books and journals
   b. Greater Internet access
   c. More contact with professors or information specialists (such as librarians)

THANK YOU!