

## The Serial Transmission Effect: Implications for Academe

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Most scholars are well aware of the alterations a message often goes through as it is relayed. Details tend to be omitted, and the information transmitted may be distorted for a better fit with the message's central theme than actually exists. This phenomenon, known as the "serial transmission effect," is perhaps most easily recognized in the simple children's game called "Gossip." A message is whispered from child to child until the last child announces what he or she has been told. The final version, invariably a caricature of the original, is often hilarious.

Acknowledging less serious occurrences of the serial transmission effect, communication theorists recognize that the phenomenon is an inherent problem in complex organizations.<sup>1</sup> Research shows that the greater the number of managerial levels a message passes through, the less likely it is to be accurate.<sup>2</sup> In effect, successive levels of management act as a filter that distorts the transmission of information.

What is often not recognized is that the dissemination of information through academic channels is subject to the same serial transmission effect. Evaluations of research reviews in textbooks and journals, for example, have revealed widespread inaccuracies in the recounting of even so-called classic experiments.<sup>3</sup> The impact of these errors is felt as they are transmitted from generation to generation of scholars and ultimately accepted as fact.

With few exceptions, studies on the serial transmission effect have been conducted either over a few hours in a behavioral laboratory or across a few days in a field setting. The consequences of the serial transmission effect over an extended period (for example, several years) is a consideration that awaits investigation. Reported studies have principally focused on verbal transmissions, but the impact of the serial transmission effect on written transmissions is also a largely unexplored consideration. Both considerations are relevant for scholars, particularly those who rely on secondary sources. The case study reported in this note addresses these considerations by examining the consequences of the serial transmission of a published document over a seven- to ten-year period. Important implications for the dissemination of information through academic channels are presented.

### A CASE STUDY

In February, 1963, the filler item contained in Table 1 appeared in *Army* magazine. It reports a classic example

of the serial transmission effect. Like other complex organizations, armies are composed of various managerial levels. These levels represent what is termed a scalar chain of authority or, more frequently, a chain of command, a hierarchical ordering of positions and duties that directly influences superior-subordinate communication.

### ECLIPSE OF THE SUN THE OPERATION OF THE CHAIN OF COMMAND THE COLONEL TO THE EXECUTIVE

At nine o'clock tomorrow there will be an eclipse of the sun, something which does not occur every day. Get the men to fall out in the company street in their fatigues so that they will see this rare phenomenon, and I will explain it to them. In case of rain, we will not be able to see anything so take the men to the gym.

### THE EXECUTIVE TO THE CAPTAIN

By order of the Colonel, tomorrow at nine o'clock there will be an eclipse of the sun; if it rains you will not be able to see it from the company street so then, in fatigues, the eclipse of the sun will take place in the gym, something that does not occur every day.

### THE CAPTAIN TO THE LIEUTENANT

By order of the Colonel in fatigues tomorrow at nine o'clock in the morning the inauguration of the eclipse of the sun will take place in the gym. The Colonel will give the order if it should rain, something which occurs every day.

### THE LIEUTENANT TO THE SERGEANT

Tomorrow at nine the Colonel in fatigues will eclipse the sun in the gym, as it occurs every day if it is a nice day; if it rains, then in the company street.

### THE SERGEANT TO THE CORPORAL

Tomorrow at nine the eclipse of the Colonel in fatigues will take place by cause of the sun. If it rains in the gym, something which does not take place every day, you will fall out in the company street.

### COMMENTS AMONG THE PRIVATES

Tomorrow, if it rains, it looks as if the sun will eclipse the Colonel in the gym. It is a shame that this does not occur every day.

—Contributed by Capt. Robert H. Howe

Source: Anonymous (1963). "Eclipse of the Sun," *Army*, 13 (7), p. 31.

Table 1  
An Illustration of the Serial  
Transmission Effect: Time-1  
(Original Version)

An examination of the episode reported reveals the changes that messages often undergo as they are

successively communicated from person to person. A selective retention and exaggeration (sharpening) of certain details, as well as the selective omission (leveling) of others, clearly occurs. All are distortions that would be anticipated through experience and research. The prevalence of these changes was recognized when the item was published; to wit, it was reprinted two months later in the May 1963, *Reader's Digest*.

As events developed, however, the item was far from forgotten. Twenty years later, in February, 1983, the filler item contained in Table 2 likewise appeared in *Army* magazine. Unbeknown to the magazine's current editorial staff (personal communication, February 7, 1985), they had reprinted an account of the same chain of command episode. The accompanying preface indicated that the item had been received as an "official" memo issued by the European Command in Stuttgart, West Germany, sometime between 1969 and 1972. How often the item changed hands in the eight to ten years after its first *Army* magazine publication is, of course, unknown: differences between the two versions suggest many. The irony is that an episode illustrating the consequences of the serial transmission effect was itself serially transmitted and subject to the consequences it was intended to illustrate.

THAT'S NO ECLIPSE—IT'S A BLACKOUT  
CHAIN OF COMMAND, J5 DIRECTORATE,  
TO ALL OFFICERS, FROM J5

*Director:* Gentlemen, tomorrow at 1315 hours there will be a total eclipse of the sun. This is a rare phenomenon and I would like the officers of J5 to internalize this experience in order to broaden their cognitive awareness. All personnel will fall out on the parking area and I will explain the circumstances which cause eclipses of the sun and moon. Should there be inclement weather, we will not be able to see the eclipse, but I will speak to all personnel in the J5 conference room.

*Deputy Director:* Gentlemen, by order of the director, there will be an eclipse of the sun. If it rains, you won't be able to see it from the parking lot, so the eclipse will take place in the J5 conference room. This is a rare phenomenon which does much to enhance the individual officer's internalization of broad awareness.

*Executive Officer:* The deputy director has directed a rare phenomenon. An eclipse of the sun will be promulgated and internalized in the J5 conference room. It was planned for the parking lot, but inclement weather has been scheduled instead. All personnel should be exposed to this change in plan in order to enable them to plan for phenomenal contingencies.

*Ch. M. Sgt.:* Tomorrow, the director and the deputy director will eclipse the sun. If it rains or snows, this'll take place in the conference room. If not, it'll happen outside.

*Ch. P&S:* My officers don't need an eclipse of the sun.

*Ch. Plans:* Let's include this in our insurgency prevention plan.

*Ch. Weapons:* Can you eat an eclipse?

*Action Officer:* It looks as though the J5 Directorate will be eclipsed tomorrow. It is a shame that this doesn't occur every day.

—Contributed by Bernard A. Nash

Source: Anonymous (1983), "That's No Eclipse—It's a Blackout." *Army*, 33 (2), p. 13.

Table 2  
An Illustration of the Serial  
Transmission Effect: Time-2  
(Twenty-year Version)

SYSTEMATIC DISTORTIONS

Campbell has suggested that distortions resulting from the serial transmission of information result from several systematic processes.<sup>4</sup> Principal among these in the present case are condensation, closure, and expectations.

1. *Condensation.* The recipient of a message who, in turn, passes it on to another typically summarizes (condenses) its contents in a predictable way. That is, what he or she reports will be shorter, less detailed, and more easily grasped and repeated. In successive versions, fewer words are used and fewer details are mentioned. Often only those aspects of a message's central theme are forwarded in an abbreviated form; certain portions of the message are intensified, others ignored.

Comparing the two filler items provides ample evidence of the expected condensation both within and between versions. Within each version the beginning message is noticeably reduced at each transmission. As for between-version condensation, the second version modifies links in the transmission to include four section chiefs at a roughly equivalent command level, but it lacks the coherence and richness of detail found in the original. The changes apparently result from an attempt to maintain the central theme of the original and to recast the transmission to specifically apply to the J5 Directorate.

2. *Closure.* Relayers of ambiguous messages tend to fill in—that is, close gaps in the information they are transmitting to make it more plausible and coherent. Closure results from a low tolerance for ambiguity. Most people dislike high levels of uncertainty, and will make whatever inferences are appropriate to reduce prevailing uncertainty to an acceptable level. March and Simon have labeled this process "uncertainty absorption."<sup>5</sup>

Both items amply illustrate closure. In each version, information is transmitted in a form that is plausible and coherent to the relayers. The tailoring of the original

version to the circumstances of the J5 Directorate is specific evidence of uncertainty absorption between versions.

3. *Expectations*. Relayers of messages often attach meaning to information according to their expectations. As a message flows up or down hierarchical levels, it passes through various human links or way stations, each with unique expectations. Expectations differ because of variations in attitudes, interests, and values, as well as job requirements.

Both items clearly provide evidence of message transfer being influenced by expectations. At all levels, the relayers reveal either their own attitudes or the requirements of their specific jobs. The difference between versions largely reflects the uniqueness of the J5 Directorate.

#### IMPLICATIONS

That disparate versions of a filler item were unwittingly reprinted in the same source is an ironic illustration of the serial transmission effect being serially transmitted itself. But more interesting is how, in serial transmission, it is not repeated distortion, but repeated sense-making, that shapes a final message. Despite the systematic distortion that occurred within and between the serial transmission illustrations, the relayers in each version attempted to make sense of what they had heard or read. In each transmission, the relayers reconstructed the message conveyed so that it was more succinct, less ambiguous, and consistent with their expectations.

The managerial implications that follow from the two versions are generally acknowledged: Managers (a)

should be suspicious of secondhand information, (b) should cross-check information, and (c) should always expect differences between sent and received information.<sup>6</sup> Beyond this, however, are several less frequently acknowledged academic implications. These deal with the transmission of information in general and of research findings specifically.

As noted earlier, the inaccurate recounting of even well-known research studies is widespread in various academic literatures. This suggests that just as managers should not rely solely on secondhand information, scholars should not blindly rely on secondary sources such as research reviews for their knowledge. Such sources conveniently access the results of prior research and make it easier to transmit knowledge to students, clients, and colleagues. In turn, these recipients can then readily pass on this knowledge to their students, etc.

Despite these advantages, as scholars we risk the same serial transmission errors—condensation, closure, expectations—displayed in the chain of command episode. Such secondary sources as review articles, textbooks, and meta-analyses condense and abstract, selectively retaining certain details while omitting others. As a result, information necessary for the *complete* understanding of a particular phenomenon or study is inevitably lost.

In this respect, the lesson in our vulnerability to the serial transmission effect is not that secondary sources should be avoided. Rather, there is no substitute for reading the results of a study in the original. Only then can we be assured of recapturing information that is invariably lost as we ply our trade.

#### NOTES

1. L. Smeltzer, and S. Golen, "Transmission and Retrieval of Information: Statements and Hypotheses for Research," *The Journal of Business Communication*, Vol. 21, No. 1, Winter 1984, pp. 81-91.

2. See, for example, G. J. Laing, "Communication and Its Constraints on the Structure of Organizations," *Omega*, 8 (1980), pp. 287-301.

3. See, for example, L. Berkowitz, "Reporting an Experiment: A Case Study in Leveling, Sharpening, and Assimilation," *Journal of Experimental Social Psychology*, 7 (1971), pp. 237-243; P. F. Pethia, "Pseudo-history in Management Textbooks: Illustrations and Comments." Paper

presented at the National Academy of Management meeting, Dallas, TX, 1983; D. K. Zimmerman, "Participative Management: A Reexamination of the Classics," *Academy of Management Review*, 3 (1978), pp. 896-901.

4. D. T. Campbell, "Systematic Error on the Part of Human Links in Communication Systems," *Information and Control*, 1 (1958), pp. 334-369.

5. J. G. March and H. A. Simon, *Organizations*, New York: Wiley, 1958.

6. S. R. Axley, "Managerial and Organizational Communication in Terms of the Conduit Metaphor," *Academy of Management Review*, 9 (1984), pp. 428-437.