Elfreda Chatman, Theorist and Teacher: Reflections on Her Lessons on Theory Development in Information Science

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Dr. Elfreda Chatman was a professor of library and information science at the University of North Carolina and Florida State University in the 1990s and early 2000s until her passing in 2002. Her research incorporated the disciplines of education, sociology, and LIS, covering topics at the nexus of these fields, from which she worked to develop a unified theoretical framework for scientific inquiry. Chatman's work and teachings are as useful today as they were 20 years ago. Her approach to teaching theory development is explored by examining her course syllabi, her extensive course reading list, and students' lecture notes. Chatman improved library and information science by encouraging scholars to combine theory with practice in their study of the interaction between people and information.

Keywords: Elfreda Chatman, LIS doctoral education, LIS theory, theory and research, theory development

By the time Elfreda Chatman accepted a faculty position at Florida State University in 1998, she had been teaching her theory development course for at least 12 years, having developed it while at University of North Carolina Chapel Hill. In addition to her background and work in library and information science and education, she was particularly influenced by sociological theory, as is reflected through her use of readings by Robert Merton, Helmut Wagner, and Jack Gibbs, among others, in both her dissertation and other published works. Short of trying to pull her college transcripts, I can only speculate that she took courses in sociology or at least was inspired to read deeply in the field. Her curriculum vitae lists a Bachelor of Science in education from Youngstown State University and Master of Science in library science from Case Western Reserve University with a concentration in public library administration. Her doctorate from Berkeley was in library and information studies, with majors in social studies of information, library organization and management, and an advanced certificate in library administration.

In several of her published works she mentions sociological studies such as Donovan's *The Saleslady* (1929), Cressy's 1932 study of a Chicago taxi dance hall, Douglas's 1970 work on understanding everyday life, as well as articles from *Rural Sociology*, *American Sociological Review*, *Social Science Review*, and *Sociological Analysis*. Famed sociologist Erving Goffman's work is cited extensively in her papers on the theory of information poverty, as is Howard S. Becker and his study of outsiders, and W.F. Whyte's *Street Corner Society*. She often cited Brenda Dervin's studies and Patrick Wilson, who was her mentor while at Berkeley. In her career she had practiced librarianship, but she was a true social scientist and her work was firmly rooted in the social science traditions and methodologies, especially ethnography. She remarked in her paper on alienation theory that "ethnography permits an expansion of the lived experiences of people . . . . integral aspects of this world, such as subjective meanings, emotions, and vocabularies that

KEY POINTS:

- Professor Elfreda Chatman was one of the few theorists in LIS. She practiced librarianship, but her work was firmly rooted in the social science traditions and methods, especially ethnography. Her doctoral course *Theory Development* introduced students to many different theories (e.g., sociology, nursing, etc.) with the intent of showing what was possible in LIS.
- A theory's structure—how it is presented, the particular wording chosen to convey meaning, as well as the completeness of the theory—was very important to Chatman. It formed the core of how she taught theory construction to her students.
- Theories need to explain what fits but also what does not. If something has fallen from the central issue (from the research questions that hold a theory together), then it cannot be ignored. This is an anomaly, and anomalies must not be ignored. It falls outside of the predictive powers of the theory. Thus, the theory needs to be evolved to account for or to explain the anomaly.

defined social reality, were only obtainable with the ethnographic research method" (Chatman, 1990, pp. 357–358.) In her class lectures she made ready reference to many studies and theories (e.g., social network theory, alienation theory, chaos theory, etc.) and many of the studies mentioned above.

In her 1992 book on retired women, she discusses in some detail her method of doing the study, especially in terms of reliability and validity in qualitative research. In one section she discusses theory building and writing:

> An additional merit to employing a theoretical foundation is that it provides a logical way in which to set parameters around phenomena in order to categorize observations and to report them with reasonable explanations. The process I have just described is a standard form of theory development in field research. By using the theory as the underpinnings of the study, a researcher can either support or refute constructs, suggest ways in which to modify the theory, or present ways in which to apply the theory in response to situations that have not been previously addressed. (Chatman, 1992, p.15)

For that study she relied on the model and techniques described in Schatzman and Strauss's (1973) book on field research, specifically using observational notes, method notes, and theory notes, the latter for "testing of construct validity and the generation of propositional statements to explain phenomenon" (Schatzman & Strauss, 1973, p. 15). In a keynote speech from 2000, Chatman recounted how her study of aging women in the retirement home represented her first attempt at developing a theory. She spoke of how it

> put closure to my initial question regarding information poverty. It was this theory that produced my first critical anomaly regarding information and public behaviours. Simply put, the anomaly challenged a central proposition of the theory: that networks exist to facilitate resource exchange. This is also the beginning of my own attempts at theory construction. (Chatman, 2000, p. 6)

In her article "A Theory of Life in the Round" (Chatman, 1999) and her co-authored article on the theory of normative behavior (Burnett, Besant, & Chatman, 2001), Chatman presents the bones of her theories via a thesis statement, concepts, and propositional statements. She describes the "components" of a theory of normative behavior, which are used to

"operationalize its concepts" (Burnett et al., 2001, p. 538). Typically, a theory might be talked about in terms of the type of theory it is (grand, middle-range or micro, macro, etc.) or the phenomenon that it is trying to explain. The theory's *structure*—how it is presented, the particular wording chosen to convey meaning, as well as the completeness of the theory—was very important to Chatman. The structure was very deliberate. It formed the core of how she taught theory construction to her students.

Chatman immersed herself among the people she studied. She deliberately set herself down in the crowd, so to speak; she did not observe from afar. Putting herself into the middle of things enabled her to see information behavior up close, and in some cases to experience it herself from the perspectives of the people she studied. Her theories have persisted among information scientists, although, if she were still with us today she probably would have re-tested and refined all of them. As it stands, we see her work as a moment in time—the work of a truly unique person, a pioneer of theory in information science in the 1980s and 1990s. What I recount here is my own recollection of studying with her, my own struggle to understand what she communicated to us in class, and, in general, what it was like to sit at her feet and learn.

Theory construction, or development, is a necessary part of science that perplexes many, terrifies some, and completely alienates a few. When we took Chatman's theory development course over 20 years ago as new LIS doctoral students, my classmates and I immediately felt the weight of her scholarship and her expectations of the level of work we were to produce. Her lectures were nothing short of intense, often delivered in a trance-inducing monotone voice. They were also profound. She taught us how to read and write more deeply, to search the literature and make connections between topics that might first seem disparate but were in fact intimately tied together at the conceptual level.

What is a theory? What does it mean to develop a theory in library and information sciences? How should a theory be structured? What should it do? I kept Chatman's syllabus from the course, kept all the readings, kept the 60 or so pages of scribbled lecture notes, kept the papers I wrote for her with her handwritten comments. From time to time, I would take out the materials and look at them, still marveling at her insights. A few years ago, I decided to teach a theory development doctoral course on my own. I based it on Chatman's syllabus, using many of the same readings. I discovered that what was once so startlingly bright and frightening had become eminently more readable and understandable. The subject matter was cast in a more natural light, most likely the result of my own time spent maturing as a scholar, teacher, and writer.

Methodology

The methodology for this article is best described as a retrospective content analysis. My copy of Chatman's course syllabus from the fall of 1998 is my main source of information, but I also include syllabi that I collected from 1999, 2000, and 2001. There are some variations between the syllabi in terms of readings, but the structure remains the same. I will simply refer to it as the *syllabus* throughout this article.

The design of the course and some of her theory development exercises are presented. I examined her dissertation and earlier publications and compared their references with the

course readings in the syllabus to see where there was overlap. The 40 or so readings she listed in the syllabus are listed in the Appendix. Readings I felt were particularly pertinent are discussed according to specific topics around which Chatman structured her course. Readings that demonstrated most clearly the lessons she tried to impart to her students are discussed in more detail.

This is not a study of Chatman's theories per se, nor is this a critical analysis of how Chatman's work has been used. It is simply an examination of how she taught theory development. For a critical analysis of her work, I would direct readers to Thompson's (2009) excellent analysis of her theoretical work. My recollection comes directly from the lecture notes I kept, often rough, sometimes written in incomplete sentences, at times supplemented by lecture notes from a few of my classmates, but complete in the sense that they capture the spirit of the class and what she had to tell us. They are referred to simply as *Author's notes* in this article. I make no claim that these lecture notes "speak for" Chatman; however, they do reflect, at times verbatim, statements she made during her weekly lectures.[1] They are important because we may learn how Chatman approached developing her own theories, but also how she taught theory construction at the doctoral level.

Chatman's syllabus and course structure

The course was officially listed as *Issues in Theory Development*, but to students it was simply known as *theory development*. The course description alone was intimidating:

> Students will discuss and critique the structural components and research processes related to the origination and construction of theory. The seminar will provide students with an awareness of the historical and social conditions that influence a tradition of ideas. This course will also explore the nature of theory from a philosophical and analytical perspective. Students will become acquainted with the relationship between creative discovery and the nature of epistemological knowledge.

Chatman's objectives were to give students an understanding of scholarly approaches to the development of knowledge by:

- analyzing historical and social factors associated with theory construction;
- exposing students to research and writings in the area of theory development;
- providing conceptual tools to develop theories;
- increasing understanding of ways to critique theories;
- analyzing the progression of ideas through the accomplishments of a prominent theorist; and
- giving an opportunity to engage in the exploration of epistemological issues through the creation of a theory of the student's choice.

There were no textbooks assigned, but the syllabus did suggest that a "primer on theory building should provide useful background information." However, after I approached Chatman with several books on theory building in the hopes they would serve the purpose, she immediately vetoed them as not being good enough. For example, Reynolds's (1971) book was offered and dismissed with a quick "*No!*" and a curt wave of the hand. If Chatman had a particular book in mind, she did not name it.

Chatman did incorporate chapters from a range of books, in particular sociology and philosophy of science, such as Merton's *On Theoretical Sociology* (1967), *Theories and Paradigms in Contemporary Sociology* (1974), Jack Gibbs's *Sociological Theory Construction* (1972), Cohen and Nagel's *Introduction to Logic* (1962), and *The Game of Science* (1969) by Erwin Segal and Garvin McCain. She included chapters from books that at first glance may not seem at all relevant but upon reading offered poignant reflections or strategies on theory building from other disciplines. These included Afaf Meleis's *Theoretical Nursing* (1985), Holland and Eisenhard's *Educated in Romance: Women, Achievement, and College Culture* (1990), and Linda Alcoff's *Real Knowing: New Versions of the Coherence Theory* (1996), among others.

Chatman's teaching strategy was simply seminar and written assignments. Course requirements included the expectation that all students would be fully prepared to participate in each class with references, questions, and responses to seminar lectures and exercises. Each week we were to submit one abstract of a reading related to the seminar topic. Two papers were also required: first, a biographical and intellectual history of a prominent theorist, and second, the creation and development of a theory or conceptual framework relevant to our area of interest. This paper was to describe the process, structure, and function of the theory in question. The topic was left up to the student but had to be a theoretical description of a phenomenon of interest to library and information science. The outline was to be strictly followed: Abstract, Introduction, History of the Theory, Relevant Concepts, Propositions, Supporting Empirical Research, Criticisms, Limitations, and so on, and application to the problem identified by the student. The most important function of this paper was deconstructing a theory in order to see how it was developed by the theorist.

To that end, the course structure was heavily influenced by her own studies of theorists and theory development in sociology. She provided examples in the form of table of contents from previous students' papers but did not share the actual completed papers. She also provided a list of prominent theorists from both sociology (e.g., Robert Merton, George Herbert Mead, Max Weber, and George Homans) and library and information science (e.g., Nick Belkin, S. E. Robertson, Brenda Dervin, and Tefko Saracevic) from which we could choose.

Chatman's introduction to her course

Chatman started the course with a conversation about dissertations, what each chapter represented (e.g., conceptual chapter, contextual chapter, methods chapter, etc.), which is always a very useful conversation to have with doctoral students in their first semester. However, it quickly moved into what would be covered and the work we were to do. The readings, as listed in the Appendix, were plenty, and while we were expected to read each one, we would not discuss each one in class. Rather, the readings would inform our weekly discussions. We were to perform literature searches for papers using *theory* or *philosophy* as keywords and submit abstracts detailing our understanding of the issues, problems, or theory being developed, the approach the researchers took, whether the argument was sound, or whether it stimulated our curiosity.

Chatman began her lectures by outlining and defining critical definitions and components of theoretical work, citing her own theories or others' to illustrate what she was talking about. Many of these definitions we would discover in the assigned readings, in particular Gibbs's and Meleis's work, and later in the readings by Robert Merton. She taught us to differentiate constructs, concepts, propositions, postulates, notions, ideas, operational definitions, axioms, theorems, and hypotheses, as well as inductive and deductive reasoning, and conceptual models. In deductive reasoning we can create a coded set of propositions; we have the *recipe* or the *map* and we know where we going. With inductive reasoning we reduce and then build a theory up with incremental steps. There is no map, no route to follow, but there are little signs along the way, and we induce from those recordings and observations to come up with a theory. Chatman used the analogies of "eating the ice cream" (deductive reasoning) and "putting in sugar, ice, and flavor to make ice cream" (inductive reasoning) (Author's notes, 1998, p. 7).

Knowing ourselves as scholars

One essential skill a scholar must possess is knowledge of the environment of scholarship in which they work and the type of questions one is permitted to ask, or perhaps even when it is time to push the parameters of the field and ask the questions no one else does. Chatman was always introspective of how she went about her work, including asking the right question about the subject under observation. In class and in her published works, she would often discuss the process of gathering data, obstacles she faced, and her own inclusion as a member of the social group she was studying in terms of the social views and belief systems of that group. In that respect it is necessary for us to understand the landscape in which a study is to be conducted and where we, as the researchers, are placed within it.

The very first papers we were assigned to read were C. Wright Mills's (1959) work on intellectual craftsmanship, Thomas Kuhn's 1959 essay on scientific research, and a chapter on theoretical frameworks from a 1992 book, *Viewing the World Ecologically*, by Olsen, Lodwick, and Dunlap. I still use Mills's paper in my doctoral courses today. It is written partly as a letter to a young scholar in which Mills describes his process of setting up and keeping a *file*, taking notes, making observations, and so on: what he terms the *craftsmanship* of the title. Developing a command of what research has been done and published is key, as well as recognizing that "in joining scholarly community you must have realized that the most admirable thinkers within it do not split their work from their lives" (Mills, 1959, p. 195). Living and working are intertwined; you never *start* working on a project because you are in actuality *already* working on it. He outlines how to stimulate a *sociological imagination*, and how "thinking is of course a struggle for order and at the same time for comprehensiveness. You must not close it up too soon, or you will fail to see all that you should, you cannot leave it open forever, or you yourself will burst" (p. 223).

Similarly, Thomas Kuhn's (1959) advice centered on the researcher having an understanding of the consensus in their field or discipline, and the fact that successful scientists must understand the role of both convergent and divergent thinking. The ability to break tradition (i.e., the scientific consensus), to replace it, and to tolerate a crisis is necessary for scientific progress: "Creative scientists must occasionally be able to live in a world

out-of-joint," what Kuhn (1970) describes as the *essential tension* (p. 79). The idea of scientists dealing with a "world out-of-joint" is what drives changes in fields and thus brings out paradigm shifts, according to Kuhn. Changes in consensus can rock an entire field and move scientists to reject accepted scientific exemplars and replace them with new ones. Olson et al. (1992) also stress this consensus in science. Worldviews are an essential part of scientific communication because they encompass our beliefs, belief systems, and social values. Worldviews are not, however, comparable to paradigms, according to the authors. Instead, worldviews are mental lenses used "to find our way through the social landscape surrounding us" (p. 13).

Chatman wasn't just trying to teach us how to develop a theory; she was trying to teach us how to be researchers, scientists, and thinkers in a scientific community. Within that community, we need to recognize problems or phenomena and to understand how our work would be affected based on many components such as "normal science" or accepted paradigms, and how changes in those paradigms reconfigure everything held in consensus—as if to say, certainty and consistency can be sought but are in no way guaranteed. Being aware of that, especially at the doctoral stage, is a crucial part of the education of a graduate student. In particular, she spoke of how, at the time, there was no convergent thinking in our field, that LIS was a "divergent thinking profession" (Author's notes, 1998, p. 11–12). Divergent thinking indicates a pre-paradigmatic state, one in which theories are emerging. Chatman was echoing what Meleis (1991) stated in her chapter on strategies for theory development:

> the progress of any discipline is measured by the scope and quality of its theories and the extent to which its community of scholars is engaged in theory development. Completing isolated research projects that are not cumulative or that do not lead to development or corroboration of theories has limited usefulness. (p. 182)

As we researched and read for our weekly abstracts, Chatman asked us to think about how we could put the ideas we came across into a testable shape. For instance, could we use any of the ideas as a center from which to elaborate, or as a perspective from which descriptive details will become relevant? She wanted us to learn directly by restating systematically what the authors were saying on given points or as a whole. Would we accept or refute their arguments? In doing so, we needed to provide reasons and our own arguments for doing so.

What is a theory?

Chatman stressed that theories must be named. They must include very cogent, vivid descriptions in their thesis statements, and the concepts must appear in propositional statements. These statements cannot be separated, and they can include two or more of the concepts. Conditional propositional statements are easiest to challenge, which can indicate a weakness in a theory (Author's notes, 1998, p. 51).

Chatman illustrated this weakness by providing an outline of her theory of "life in the round," in which the thesis statement, concepts, and propositional statements were presented (Figure 1). The sixth propositional statement read,

> Individuals will cross information boundaries only to the extent that the following conditions are met: the information is perceived as critical; there is a collective expectation

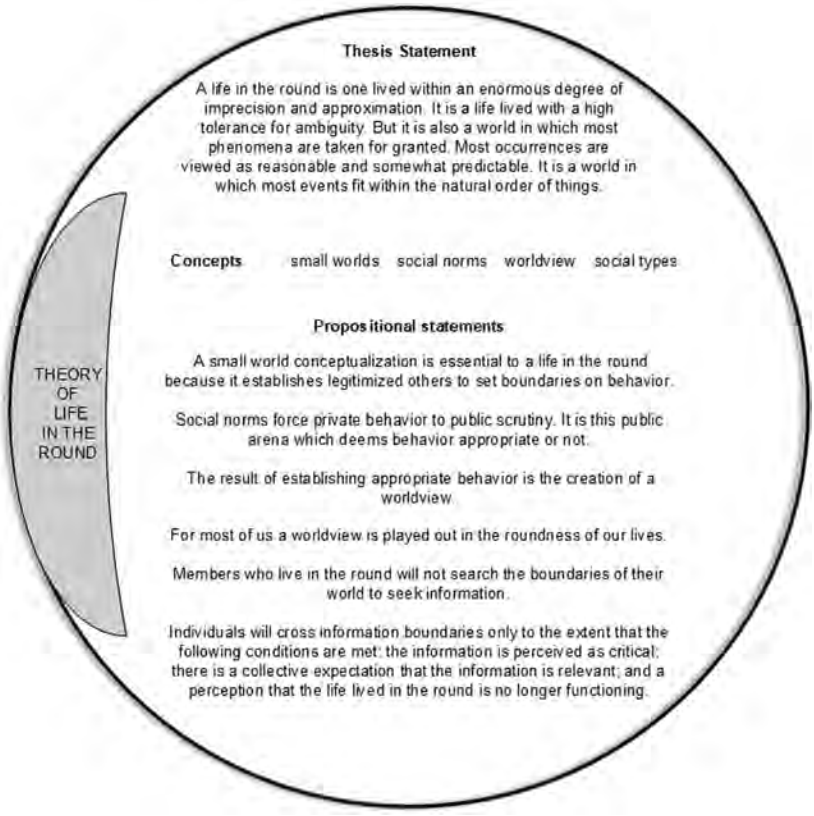

Figure 1: An outline of Chatman's theory of life in the round

> that the information is relevant; and a perception that life lived in the round is no longer functioning. (Chatman, 1999, p. 214)

In discussing the propositional statements, she felt this sixth statement was the weakest one. She remarked that she could have made another theory out of it, saying it was *out of the round* and that people will live in a world of *business as usual* until they are forced out of it (Author's notes, 1998, p. 51).

When making observations and constructing theories, we should be aware of prediction dilemmas, which "can arise as a consequence of the obtrusive nature of social science predictions. The social world, that about which the social scientists predict, is quite capable of altering as a consequence of the prediction itself" (Wexler, 1984, p. 20). Wexler (1984) offers as examples interaction effects, self-fulfilling prophecies, the Hawthorne effect, the Pygmalion effect, labeling perspectives, and placebo effects, among others. He writes of four interrelated elements at the core of prediction dilemmas: the existence of a prediction(s); the

implicit or explicit communication of the prediction message from predictors to others; the prediction concerning itself with events which are reasonably and humanly alterable; and lastly, "to achieve the status of a dilemma, prediction dilemmas must prove irksome—frustrating if you will" (pp. 31–32). Wexler continues: "Thus the prediction that creates its own truth is ironical; the prediction that generates its own falsehood is paradoxical. This issue is vital here and points toward the kind of epistemological quagmire implicit in the discussion of prediction dilemmas" (p. 32). Chatman stressed that we can let them be a problem, but also an opportunity, depending on how we look at them.

In addition to prediction dilemmas, Chatman also talked of how we should be aware of conflicts in our reasoning or when making claims. Here she had us contemplate the role of logic as presented by Stewart Richards, in his book *Philosophy and Sociology of Science*, and a rather dizzying chapter on the subject matter of logic from Cohen's and Nagel's 1934 book *An Introduction to Logic*. Richards (1987) states,

> If logic is to have any role in resolving arguments, such claims generally have to take the form of statements or propositions supported by evidence. They would then be seen as conclusions, and it is the purpose of logic to determine, not the quality of the evidence (this is typically a matter of "fact"), nor indeed the quality of the conclusion, but rather the quality of the relation that exists between a conclusion and its evidence. By this we mean that logic evaluates arguments, and it is because arguments are an indispensable ingredient of science that scientists cannot do without logic. (p. 14)

As a class exercise, we practiced analyzing syllogisms to determine if they represent what they claim to represent. Syllogisms involve deductive reasoning and include a major premise, a minor premise, and a conclusion. For instance, the syllogism below is true because the first two propositions provide the evidence and the third draws a logical conclusion based on that evidence:

> All controlled vocabulary systems used for information retrieval are designed to link search terms to their broader, narrower, related, and synonymous terms or phrases.
>
> By linking terms or phrases, all information retrieval systems can enhance the efficiency of search-term selections.
>
> Therefore, controlled vocabularies systems enhance the efficiency of search-term selections. (Author's notes, 1998, p. 50)

We can ask if the premise or premises lead to a valid conclusion. If our syllogism is not true, then it suggests an anomaly, which in turn suggests a weak theory. If the premises are true but the conclusion is false, then the argument is also false. Thus, the argument is also invalid. A true premise and a true conclusion will lead to a true and valid argument: "The validity of our reasoning depends on the consistency with which we use whatever language we have, and such consistency means that our words must faithfully follow the order and connection of the items denoted by them" (Cohen & Nagel, 1943, p. 17).

As noted earlier, Meleis's (1991) chapters on development strategies and theory evaluation and Gibbs's (1972) chapter on the terms of theory construction were particularly relevant in this section of Chatman's course. Over the years I have read and re-read each one and used them in my own doctoral seminar on theory development. Regarding Meleis,

the fact that there was such a tome devoted to nursing theory was surprising to as me a new doctoral student, but I quickly realized how relevant Meleis's work was to librarianship in that nurses and librarians are both practitioners and scholars in their particular sciences. Meleis writes that "the nature of nursing science requires a close relationship between theory, practice, and research" (p.181). We can easily say the same of library and information science. She details the process involved in theorizing and offers four strategies for theory development: theory-practice-theory, practice-theory, research-theory, and theory-research-theory (p. 185). Her seven stages and processes of theorizing include taking in or sizing things up—in other words, what attracted our attention? Describing the phenomena: What is it? When does it occur? What are its boundaries? How does it vary? Meleis writes,

> A phenomenon is not a thing in itself; it is not what exists, but rather it is organized around perceptions. When experience and sensory and intuitive data become coherent as a whole, and prior to attachment of any meaning, we have a phenomenon. (p. 201)

How do we label the phenomenon in order to communicate it, to delineate it, to relate it to the literature, to reduce it to a concept or statement, and so on? This is a very individualized process that involves interpretation by the theorist. Concept development involves defining, differentiating, delineating antecedents and consequences, modeling, analyzing, synthesizing—"concepts are a mental image of reality tinted with the theorist's perception, experience and philosophical bent" (Meleis, 1991, p. 203).

Within the statement development stage, the theorist creates explanations related to the phenomenon and seeks to link the concepts, antecedents, consequences, and assumptions. Statements are developed to describe, to explain, to proscribe, or to predict, to make propositions about the reality and its nature. At the point of explicating assumptions, the theorist can pause and reflect and question both the implicit and explicit assumptions in order to help delineate assumptions of the developing theory. Finally, the theorist must share and communicate the theory beyond just the writing and publishing. Meleis (1991) states, "No theorization process is complete without opportunity to share and communicate it with colleagues. Theorizing may happen in isolation, but it does not grow in isolation" (p. 206). Here Chatman spent some time discussing how, as doctoral students, we needed to learn how to engage with the scientific community because knowledge must come under scrutiny (Author's notes, 1998, p. 13g). The value of presenting our work includes making a claim to the discovery and demonstrating our objectivity in data analysis and thought. It helps us to locate ourselves in the community of scholars. It allows new theories, new voices or new applications to existing theories to find a place in the literature. It allows a professional community to find its domain in a body of knowledge.

Constructing theories

We were to use Meleis's (1991) notion regarding "proper areas of theory development" to identify areas in library and information studies as appropriate for theory development (p. 206). In our discussion we were to apply appropriate, theoretical terminology, concepts, propositions, postulates, theorems, and so forth. Chatman wanted us to think about what was important to our field—to recognize the relevant problems and build theories to explain

those phenomena. This included understanding the terminology, using constructs and concepts, formulating postulates and propositions, and knowing when and how to borrow theory from other disciplines.

Terminology

Gibbs's (1972) chapter on the terms of theory construction was integral in that it served to drive home some of the terminology that Chatman had relayed to us at the beginning of the course—the ideas of constructs, concepts, postulates, and propositions. Gibbs writes, "Terminology is the problem in theory construction . . . to think of conventional definitions of major sociological terms as either complete or empirically applicable, and therein lies a dilemma" (p. 126). A theory, to Gibbs, has two major divisions—intrinsic and extrinsic statements. The former are empirical assertions, while the latter is what defines the terms of the former (i.e., a hypothesis and the dictionary accompanying it). It is beyond the scope of this article to discuss Gibbs's chapter completely, but suffice it to say that it raises issues I use to challenge my own students. For example, "unit terms" play a central role in intrinsic statements. If intrinsic statements refer to properties, and properties implies a class of events or things, then all "intrinsic statements should include a term that designates a class of events or things as units . . . . when a theory does make assertions about differences among units, it is questionable from the outset" (Gibbs, 1972, p. 114). I asked my students to think about unit terms in library and information science. What are our socially recognizable categories? Do we have agreements on the definitions of unit terms and, if not, does that not result in questionable data? This is particularly relevant to information behavior studies. Additionally, a theorist's judgment can be subject to being questioned. Gibbs contends that "only a theorist can decide to use a particular unit term, and they are free to define it as he sees fit . . . . however, when investigators report that they are unable to apply the theorist's definitions . . . then the theorist has failed" (p. 118). Thus, I would ask my students if the non-consensus of a definition of information in library and information science is a problem in the development of a theory with *information* as a unit term. Alternatively, does it even matter because *information* isn't a population, act, event, or condition? Can *information* as a unit term be empirically applicable? This topic makes for interesting conversations each time I ask a class to contemplate the question.

Constructs and concepts

Throughout the course, Chatman continued to detail her definitions for terms in theory development. All concepts are constructs that have been developed out of experience. She had earlier defined constructs as the broadest possible ways in which you are permitted to describe reality, the broadest notion to articulate an idea (Author's notes, 1998, pp. 4–5). Concepts flow from constructs, they have been developed out of experience, and they establish the building blocks of a theory. They become *variables* when they are put into operational definitions (i.e., measurements that can be taken.) Furthermore:

> To conceptualize means to reduce the number of objects by conceiving some of them as being identical. All concepts are generalizations, all generalizations imply abstractions, by

> definition. There is abstraction of common qualities from the differing particulars. Pine, fur, palm, apple—they differ but they are all trees. Tree is the conceptual unity by means of which we grasp multiple sets of identity of the unique aspects of a tree. The concept is the abstraction in the sense that specific differences among concepts is lost in the abstraction process. There is abstraction in the form of selection based upon the particular theoretical interest of the scholar. The scholar is presented with a group of associated identifications from which they select to apply to a particular problem (i.e., the research question). Those qualities that are extracted from the total complex become part of the selection process of the content [while some are excluded or neglected]. In this process of trying to identify the concept, it has again become artificial because of proposed exclusions, concessions, or limitations. It is the aspect of abstractions (the selecting, deciding) that enables the scholar to distinguish between essential and nonessential attributes with respect to a problem. (Author's notes, 1998, pp. 42–43)[2]

Chatman used the example of women; women as a social totality (entity) embodies such concepts as political, reasonable, fallen or fallen woman, scientific, foolish, hussy, even "poor dears," as she discovered in her study of women in the retirement home. For example, she wanted to know how these women created a new social world and new standards to gauge normality, such as labeling each other as "fallen women" and "poor dears."

Concepts, Chatman stated, must be given precision so as to avoid vagueness, and that precision can be given in negative fashion only by setting up boundaries beyond which the concept has no meaning (i.e., it does not go, does not make sense). Thus, no concept is ever a perfect symbol of that which it symbolizes; its content (attributes) will always be less. Concepts define what is to be observed; when this occurs, there are variables between which empirical relationships are to be resolved (Author's notes, 1998, p. 44). A construct

> is to move one step further into abstraction. Constructs are given precision thru selection, limitations, and combinations of concepts. Constructs organize experience in a somewhat different fashion. The function of the construct is to order data so that they may be described in terms that make them comparable so that they may be made to reveal with some degree of plausibility. Construct is a special kind of concept developed for description, comparative and predictive behavior. Is it determined to a greater degree by the scholar. Its value as a component of knowledge is in terms of its capacity to explain. (Author's notes, 1998, p. 44)

Postulates and propositions

Chatman stated that conceptual models were broad umbrellas of propositions from a variety of theories—abstractions—while a theory is a systematic, coded, formalized set of propositions that can't be taken apart. In other words, a conceptual model (or framework) can be broken apart, while a theory is impossible to break apart (Author's notes, 1998, p. 7).

A postulate is an assumption or a single proposition. When grouped together they are proposition statements. It gives you "a notion that you are working with a theory or that one exists or is emerging" (Author's notes, 1998, p. 5). These propositions, which can be verbal or mathematical statements, are in turn made up of concepts, as defined above. These sentences have certain characteristics and they never work alone. When taken together they explain reality or phenomena; when operationalized they become hypotheses. Operational definitions occur when a concept or proposition is applied or linked to the real world.

Chatman also discussed axioms, or laws, which are often self-evident but certainly proven. She stated that we don't have axioms in library and information science.[3]

As noted earlier, the concepts we use in the construction of a theory must appear in our propositional statements. In middle-range theories, which are mature theories, it is hard to unearth the weaknesses in the propositional statements; the concepts are firmly together. Middle-range theories are very testable and can be applied to a variety of disciplines. Diffusion theory is a good example of a middle-range theory. It has been used extensively across many disciplines, including by Chatman herself in her study of the diffusion of information among the working poor. Likewise, in her 1991 study on information seeking of lower-class people, she used gratification theory:

> What importance is gratification theory to a study of information seeking behavior? For one, the theory provides a means by which researchers are able to explore a minimally understood area in information studies. That is, the theory allows for questions pertaining to such notions as, how to define problematic situations for poor people and how conceptual factors influence their choice of a strategy. More importantly, it attempts to address a central issue in studies of information use among poor people. (Chatman, 1991, p. 442)

The purpose of the propositional statements, as she consistently demonstrated in her published theories, is to allow prediction to occupy a central role, to allow the theory to predict the outcome in all situations. (Conceptual frameworks may have propositions from various theories, but they must fit together.) Propositions are truth statements of a special kind, but only as they relate to the theory. In order for the propositions to be true, the theory must also be true.

A true theory is

1. fully specific in its concepts;
2. [has] laws of interaction; consistent interaction between concepts and proposition (concepts to concepts, propositions to proposition);
3. is boundary limited (has a limited scope); and
4. is system specific; it only relates to system of propositions that is bound and embedded in theory; bound to the system of ideas embedded in it. (Author's notes, 1998, p. 16)

The only problem of consistency that propositions in a theory need to meet is the criterion that they are logical within the theory. The propositions need to be consistently and logically bound to the system. Propositions do not need to add up to, or support, one another; theories can overlap enough to form a conceptual framework. As to being system-specific, concepts need to be clustered/grouped around similar characteristics (i.e., they have to be just oranges, not a mix of apples and oranges) (Author's notes, 1998, pp. 16–17).

The boundary allows some concepts to be included while others are excluded. Only those that are similar are included. Chatman stressed that we should not mix elements of different sets and then measure as if they were elements of the same set. This requires the appropriate location of propositions in relation to the thesis statement. In terms of propositions and predictions, Chatman remarked,

> all predictions contained in a theory take the form of propositional statements and the notion of a law of interaction exists between two or more concepts. This means there is a law-like linkage between two concepts; there is a relationship. There can be a "contingency condition" relationship—an "If . . . then" statement (e.g., if a person is angry then they become aggressive). This type of statement is limited to a small range of situations. Linking to this is what constitutes a theory in that theory is a limited system of logic. Statements using "If . . . either . . . or . . . then" somewhat destroy the predictability of the outcome and we should try to avoid using them. The statements need to be airtight. Avoid describing the concepts in the propositions. If you can find other examples immediately then it is no good. (Author's notes, 1998, pp. 17–18)

For a more extensive discussion of laws of interaction and boundaries, Dubin's (1978) book on theories is useful. Dubin writes, "the law of interaction tells what the relationship is, and the proposition states what the predicted values of the units will be" (p. 170). Dubin's book was not part of our assigned readings, but it certainly could have been something Chatman came across in her reading of Gibbs, who cites Dubin often.

Lastly, Chatman spoke of the arrangement or ordering of propositional statements. This can be done in several ways. They can be arranged around the central concepts (proposition) or by degree of discovery. They can be ordered in light of the ease of empirical testing or simply arranged at the discretion of the theorists. Here again, Chatman is echoing Meleis (1991), who writes,

> Propositions may be arranged to represent process of concept discovery and process of formation of a proposition. In this case, a chronological organization is achieved. A second way is to organize propositions around the central concept in the theory. A third method is to organize propositions in terms of significance for testing, beginning with those whose test represents the central questions of the theory. (pp. 205–206)

Borrowing theory

Chatman also cautioned us about borrowing theories from other disciplines. She stressed in her theory of "life in the round" the value of recognizing the insufficiency of borrowing theories:

> Early in my research career, I chose to apply conceptual frameworks or theories to studies of information poverty. The decision to apply theories to the everyday needs of people became a standard process. As a result, I have examined several theories in my research. But in light of the work I wanted to explore, these borrowed theories began to show signs of serious weakness. Particularly noticeable to me, if not to my audiences, were the limited advances they made regarding the information needs of people who live precariously within the brutal, marginalized world I was observing. (Chatman, 1999, p. 207)

So while she did introduce us to many different theories, especially those from sociology, nursing, and the like, she did so with an eye toward showing us what was possible in our own field. We could learn the theoretical construction techniques from other disciplines and apply them to library and information science, as she had learned herself through trial and error.

Characteristics of significant theories

The characteristics of significant theories include the scope and complexity of the theory, its testability, usefulness, and implicit value. Scope relates to the number of smaller generalizations that provide the framework for ordering the theorist's observations about reality. The theory's complexity is revealed by how it treats a number of relationships, or even the complexity of a single concept. Chatman remarked, "Simple postulates are not particularly useful if they only express ideas readily apparent" (Author's notes, 1998, p. 13h). A theory's implicit value relies on its implementation of the normative, its simplicity or parsimony (in that it only says what it is supposed to say), its logic, its consistency, and its predictive power (pp. 13i–13j).

Theories need to explain what fits but also what does not. They need to point out the anomalies. Anomalies must not be ignored. Chatman instructed that as a rule of thumb, if something has fallen from the central issue (from the research questions that hold your theory together), then it cannot be ignored. This is an anomaly. It falls outside of the predictive powers of what you want to do (Author's notes, 1998, p. 13k). The theory needs to be evolved to account for or to explain the anomaly. As she described in her study on the impoverished life-world of outsiders,

> The anomaly is like the grain of sand that gets into the system and causes such irritation and refocusing of energy that something new gets produced. This is what happened in my work, and I will use my experience to show how anomalies lead to development of my four concepts. (Chatman, 1996, p. 194)

The anomalies that she discovered led her to develop the concepts of secrecy, deception, risk-taking, and relevance (p. 198).

Theory and scientific work

A curious little book that Chatman used for several readings was McCain and Segal's (1988) *The Game of Science*. It is deceptively light-hearted but quite profound in its discussions on what science is, who scientists are, and what they do. We were assigned to read several chapters about the development of ideas and scientific inquiries. For any doctoral program this is standard fare, of course, and must always be addressed in some fashion.

At the beginning of the course, Chatman had addressed scientific paradigms, revolutions, the essential tension, and so on, and she continually stressed it throughout the course by assigning readings such as those by McCain and Segal (1988), who wrote, "Knowing a scientific paradigm is in a large sense like knowing a language" (p. 86). Furthermore, "ideas do not stand in isolation . . . are not held by individuals. It is the way that individuals interpret ideas and the events associated with them that constitute a paradigm" (p. 92). As scientists, as researchers, and especially as doctoral students, we need to understand this language, understand the domain in which we work, and how the phenomena in our disciplines are talked about. McCain and Segal write, "Theories are at the level at which scientists consciously explain the phenomena of their domain" (p. 94). We observe, we experiment, we take into account, or account for, what we see and then construct our theories so that we may predict some event or some behaviors. As I had noted earlier, we need to recognize

problems or phenomena, to understand how our work is situated within "normal science" or accepted paradigms, and to anticipate how changes in those paradigms reconfigure that which is held in consensus.

In developing theory, we are taking part in scientific work. Chatman offered her view on this type of work, being the "production of new knowledge . . . new knowledge defined by the discipline, codified by that discipline so making the researcher a professional in that discipline" (Author's notes, 1998, p. 35). Anyone can be an independent scholar, but their work is recognized only by the codification of their discipline. Scientists exist in well-defined domains, work groups, and processes, where the "work is an extension of pre-existing intellectual giants" (p. 35). The papers we wrote for the course centered on learning about these intellectual giants—first, we wrote about the theorist (i.e., an intellectual biography), and then we explored a theory by that person, investigating its intellectual roots, its development, its use in the field, and even criticism of the theory. Most importantly, we had to clearly define the concepts of the theory and its propositional statements, even if the theorist had not done so themselves. In some papers, students discovered that what was thought to be a theory was in fact only partially developed, or not a theory at all, according to the theoretical structure Chatman had taught us.

Through our deep reading and then struggling to explain in our own words, Chatman wanted us to experience, or least to recognize, what is called the *hermeneutical circle*—the circle of understanding—of which Alcoff (1996) writes,

> the infamous hermeneutical circle—which involves two horizons, a text and a reader, and presupposes that the past horizon overlaps into the reader's present horizon without benefit of methodological explanation, is both explained and absolved from epistemological sin via an ontological argument about the structure of understanding. (p. 41).

We start with an awareness, insight, an event that links with other things, that increases appreciation, and only later do we understand, *Oh, this is what I meant!* A problem is an intellectual puzzle that fits within the domain of an intellectual knowledge playground with many possibilities, but also with parameters. We move with the intent of formulating research questions—and when we do, we are completing the circle (Author's notes, 1998, p. 35). Chatman stressed that as doctoral students we form our research within a well-defined group such as our committee members or cohort. We then move to the proposal stage and finally, when we discover new knowledge, we present it to the world. She was very keen on making us aware of what we could expect in terms of entering this domain of scholarly work. She would instruct us on publishing, when and how, places or formats of publishing to avoid, and so forth. She advocated publishing three articles from our dissertations—"state of the art about an issue, a theory article, and findings" (p. 35). Again, quoting her verbatim,

> Competition—at the frontier of a domain, where no one has gone before, it will be harder to publish. Don't be discouraged. All articles come back with revisions. You must understand that serious honest recommendations can only make you stronger. You must present your work! Your dissertation defense is a true rite of passage. Your peers seek to penetrate secret pockets of phenomena. Undiscovered events are sought because we are told they are important. Avoid the trivial! Immerse yourself into literature. If it gives you excitement, A-Ha

> [if we have an a-ha moment], then it is important. Then you are in the HC [hermeneutical circle]. If other people use your work then it is important. Right now you have the greatest degree of freedom—you decide who will be your academic chair, formulate your program committee and dissertation committee. You won't have this amount of freedom until you are tenured. Need to know everything? You only need to know what you ought to know . . . know those things that will lead to solving your research questions. Play around with the research question—that is critical. Don't get caught up in the procedure. (Author's notes, 1998, pp. 36–37)

Chatman talked about the utility of logic, the beauty of logic, which comes with internal, external, and historic criticism. If our discoveries are consistent with other claims/pre-existing discoveries, then it has external and internal validity. If not, then in her words it is trivial:

> Any new claim must meet any walls, barriers, claims of resistance. We need to struggle to comprehend enormous problems in our field. Recognize the important ones for yourself, claim exclusive rights. What is important to our field? What are the important problems? (Author's notes, 1998, p. 38)

Emphasizing all this was a reading assignment from Laudan's (1977) chapter on the role of empirical problems. Laudan offers two theses: (1) that the essential acid test for any theory is whether is provides acceptable answers, and (2) it is more important to ask whether they "constitute adequate solutions to significant problems than it is to ask whether they are 'true' 'corroborated' 'well-confirmed' or otherwise justifiable" (pp. 13–14). Chatman wanted us to understand the part we were to play in scientific progress, as she undoubtedly felt herself. Her work was grounded, truthful—she had her own pace and wanted us, too, to find our own rhythm, but to do so in an earnest manner, to understand the implications of whatever phenomena and theories we might find and develop within LIS. For Chatman, constructing theories for the betterment of practice within LIS was inevitably the end goal. As Thompson (2009) notes in her study of Chatman's work,

> one can see the process of LIS theory construction as she used extant theory to examine social information behaviors, paying special attention to the customs and trends that create information barriers . . . . Chatman frequently ended her articles with exhortations to libraries to be more aware of the social barriers that impede the access to information underserved patrons might be facing . . . . thus drawing a connection between theory and practice. (p. 120)

Final thoughts

During the course, I often felt I was walking through many rooms, each one devoted to several different conversations. It was my task to take note of each conversation, the vocabulary used by a group of people talking and the knowledge being divulged, with the caveat that I would be in the room for only a few minutes. I know that most doctoral students feel like this, especially when first starting their program. Chatman introduced us to many conversations, and I am still exploring many of them today, long after having taken her course.

Still, 20 years on, I feel keenly her absence in the field. What would she be writing now, and would she still be teaching theory development in the same way, or at all? In 2016 the book *Theory Development in the Information Sciences*, edited by Diane Sonnenwald, was published. The book contains the reflections of many well-known information scientists, and it is overall a very interesting read. I expected some mention of Chatman's work, but I found none. Her absence, again, is felt, especially in this book and what it has to offer to doctoral students who probably never had a course on theory development. This is one of the main motivations for writing this recollection of Chatman's course—to relate the profoundly impactful experience of learning from someone such as Chatman, who had in many ways profoundly impacted, in such a short time, our small field.

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Acknowledgments

I would like to thank Dr. Laurie Bonnici and Dr. Kim Thompson for their valuable feedback on this paper. I must also thank Professors Wayne Wiegand and W. Boyd Rayward for their advice on the use of my lecture notes as a valid resource for a paper of this kind. I must especially thank my sister, Dr. Elizabeth Miksa, for her fierce reading and editing of this paper.

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Notes

1. No lecture notes are included in Chatman's remaining papers. I consulted Professors Wayne Wiegand and W. Boyd Rayward, both noted LIS historians, on the validity of using my own lecture notes. Professor Wiegand advised, "The lecture notes you took in Elfreda's classes are every bit as valuable as research data as are statistics. Historians rely on notes of all kinds to develop their narratives" (personal correspondence, June 28, 2020). Professor Rayward advised, "it is important that the document you are using as evidence, the Notes, be cited in such a way as to suggest that it is evidence available to be checked by anyone who would wish to do so . . . and of course part of their relevance and value is that they relate directly to a contemporary public document, the syllabus" (personal correspondence, June 29, 2020).
2. Here I am taking her words verbatim from my lecture notes.
3. Whether Chatman meant all of LIS is open to interpretation. In my notes she defined axioms as "laws, often self-evident but certainly proven. We don't have axioms" (Author's notes, 1998, p. 6).

Appendix: Themes and readings from Elfreda Chatman's *Theory Development* course syllabus, 1999

Scholarliness and scholarship

Kuhn, T. S. (1959). The essential tension: Tradition and innovation in scientific research. In C. W. Taylor (Ed.) *The third University of Utah research on the identification of scientific talent* (pp. 21–31). Salt Lake City, UT: University of Utah Press.
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Setting the stage: The structure of science and the role of logic

Becker, H. S. (1998). Concepts. In *Tricks of the trade: how to think about your research while you're doing it* (pp. 109–145). Chicago, IL: University of Chicago Press.
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Theory, science, and epistemology

Holland, D. C., & Eisenhart, M. A. (1990). Why study women's responses to schooling? In *Educated in romance: Women, achievement, and college culture* (pp. 3–9). Chicago, IL: University of Chicago Press.
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Problems and constraints in theory building

Alcoff, L. M. (1996). "Allowing what is to be…. Gadamer's philosophical hermeneutics. In *Real knowing: New versions of the coherence theory* (pp. 18–43). Ithaca, NY: Cornell University Press.
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Nature and types of theory

Blumer, H. (1954). What is wrong with social theory? *American Sociological Review*, *19*(1), 3–10. https://doi.org/10.2307/2088165
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Theory and science

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Theory in information sciences

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