Everything Old is New Again: The Evolution of Library and Information Science Education from LIS to iField

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This article reports the results of research to determine whether the iSchools project, an undertaking of twenty-two institutional caucus members, represents a deliberate split from the discipline of LIS as previously constructed, a conflict in approach to traditional LIS education, or an ingestion of traditional disciplinary content into a new *iField*. A variety of data sources were analyzed employing the concepts from Abbott's (2001) *Chaos of Disciplines* for patterns of fractal distinction, fractal distinction in time, fractal differentiation and mechanism. A qualitative emergent research design employing inductive reasoning was used. As viewed through the theoretical lens of the *Chaos of Disciplines*, LIS has disciplinary breadth (interstitial), is self-replicating in method (fractally distinct), and has progressed through a method of rediscovery (fractal distinction in time). The majority of the schools that have embraced the iSchool movement exhibit the fractal cycle mechanism in their philosophical stance, but the mechanism of progression from LIS to iField is an inverted fractal cycle, moving from specific to broad over time.

Keywords: iSchools, disciplinary identity, LIS education, emergent research design

The disciplinary identity of LIS has been contested since its origins in 19th century librarianship training programs (Burnett & Bonnici, 2006). Inter-professional and interdepartmental competition, jurisdictional disputes—first between library science and information science, and more recently between LIS and computer science over the emergence of information technology as a discipline—have problematized the establishment of a lasting disciplinary identity.

Over the past few decades, shifts in the professional marketplace, globalization, and a rapidly changing technological landscape have further complicated the disciplinary identity formation process. A caucus of 22 iSchools, 14 of which are also members of the ALISE and offer master's degree programs accredited by the ALA has held conferences annually since September 2005 (see *ASIS&T Bulletin*, April/May 2006 for reports on this conference). The caucus announced the intention to establish a new iField (iSchools Caucus, n.d.), with the explicit goal of coming to grips with the "elusive

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identity [that] poses a challenge for the I-School movement" (King, 2006). The iSchools Caucus created the term *iField* to capture this elusive identity, and defined it as:

> an academic field of study and a professional career field that deals with all the issues, opportunities, and challenges we face in our emerging Information Age. . . . The iField addresses this fundamental issue: how do we harness that incredible flow of information for the betterment of society, rather than get swamped by it? (iSchools Caucus, n.d.)

The iField is characterized on the iSchools Caucus' website as "unique," "at the heart of everything," and society's "key to success" (iSchools Caucus, n.d.). These claims make it clear that the caucus perceives the iField as distinct from the contemporary construction of the discipline of LIS. Will the caucus split from LIS entirely to create a new field? Will it attempt to convince the majority group to recognize its minority position as a viable subfield within LIS? Or, will the caucus ingest the prevailing majority position within the new iField? To answer these questions, the researchers adopted the theoretical framework developed by Abbott (2001) and applied in *The Chaos of Disciplines* to the analysis of the discipline of sociology during a similar period of change. Course names and descriptions, new faculty position announcements, postings to the Jesse listserv, content from iSchools website, and abstracts and papers from the 2006 and 2008 annual iSchools conferences were analyzed for patterns of interstitial character, fractal distinctions, and fractal distinctions over time. The results were compared to Abbott's analysis of the field of sociology.

We began this investigation because as informed observers of LIS, we noticed that the patterns Abbott observed in sociology appeared—at least on the surface—to be present in our own discipline.

Theory

Central to Abbott's theory is the notion of microcosms. The idea is that a subset of a larger unit can contain micro-scale versions of structures and processes characteristic of the larger unit. The first concept of the theory addresses interstitial character. A discipline exhibiting interstitial character is one that is: not good at excluding, a discipline of many topics, and occurs in a space between things (Abbott, 2001). LIS, when viewed through the lens of interstitial character, appears to be an academic patchwork quilt of internal conflict. This begins at the fundamental level of labeling. In this article, we have referred to the field as *LIS*, but a smaller constituency within the field prefers, and often insists upon, *information studies* or *information science*, while another prefers, and often insists upon *library studies*, *library science*, or *librarianship*. These labels indicate either a split or duplicative identity within the microcosm itself. Deviations in school names including *information systems* and *information technology* only further complicate this reading of the interstitial character of the discipline. The broader label of *information* is no more satisfactory, because it makes unsupported claims for many topics for which disciplines such as computer science, medicine, law, and business have also established authority claims. The extension of the reach of library science during World War II to the solution of problems in information retrieval and automation had the unexpected consequence of dividing the information professions into qualitative (librarianship) and quantitative (accounting, etc.) information practices (Abbott, 1988). This division contributed to the push by library science for recognition as a social science discipline, because this provided a comfortable position between the scientific (quantitative) and humanistic (qualitative) disciplinary poles represented in its own practices.

The second concept in Abbott's theory addresses fractal distinctions. Fractals are dichotomies exhibiting segmental kinships between groups (Abbott, 2001). LIS education and practice present themselves as fractals with reflective dichotomies. Both groups employ qualitative and quantitative methods. Further subdivision would reveal similar dichotomies between the groups. Practitioners may be grouped by type (e.g. experts, generalists, technicians), as may users (e.g. adult, young adult, children).

The third concept Abbott introduces is fractal distinctions in time. Abbott describes this as successive generations triumphing over the previous. Once triumphant, the new generation resurrects the ideas of the previous under the guise of advancing new knowledge. This concept recognizes that a good idea resurfaces over time cloaked in new terminology. The new context makes the old idea appear to be different as it is repackaged in new language (Abbott, 2001).

It is clear that in establishing its claim to authority information science did not create a new conceptualization, but rather reconceptualized or expanded the definition of indexing and other terms specific to library science into the more generalized concepts of *information organization* and *information storage* and applied them to digital Information Age technologies.

Mechanism, the fourth concept, indicates the specific patterns of split, conflict, and then ingestion. Abbott presents three methods of movement: traditional differentiation, fractal differentiation, and fractal cycles. In traditional differentiation there is a lineage split at each generation level. Each split results in subordinate parts characterized by increasing specificity (Abbott, 2001).

Fractal differentiation is a simplified version of the major idea presented in the theory. At each subordinate level, the fractal distinction repeats itself (Abbott, 2001).

The fractal cycle pattern is a result of one line dividing per generation due to conflict and resultant extermination of the other lineage. In this case, concerns or ideas of the abolished lineage are reconceptualized into the new lineage (Abbott, 2001).

Research Design

To ensure that the research accurately and rigorously reflected the phenomenon being studied, we utilized data from a variety of sources including institutional websites (course descriptions, mission statements, and about the school pages), the iSchools website (abstracts and papers from the 2006 and 2008 annual iSchools conferences), and postings to the Jesse listserv, which was the primary Internet mechanism for informal communication about LIS education during the period under examination. Our analysis of Jesse postings was limited to two types to limit the potential for bias inherent in editorial and opinion postings by a small group of active individuals: (1) Faculty position announcements and job advertisements posted on behalf of programs; and (2) Institutional announcements of program or school name changes and messages reacting or responding to these announcements. We used suitable data sources for the analysis of each pattern Abbott identified to ensure rigor and richness of the data. The research was conducted based on the principles of qualitative emergent research design and depended primarily upon inductive reasoning.

To examine the occurrence of interstitial character in LIS education, we began by looking at the messages posted on the Jesse listserv. We selected the time period from 1995-2005, since several schools changed their names at the beginning of this period, and searched for messages using the following key phrases: *faculty position*, *school name* and *name change*. We examined three types of mes-

sage content: job descriptions, doctoral degree requirements for a faculty position, and discussions of changes in the program/school names. Results are reported in the section titled *Interstitial Character*.

To examine the existence of fractal distinction in LIS education, we analyzed course descriptions of both iSchools with ALA accredited programs and other schools or departments with ALA accredited programs; and abstracts and papers from the 2006 and 2008 annual iSchools conferences. The abstracts and papers from the iSchools conferences were obtained from the iConference websites (iConference, 2006; iConference, 2008).

To ensure consistency, we examined course descriptions from schools that have ALA accredited master's programs. To determine which iSchools to include, we compared the list of ALA accredited master's programs (American Library Association, n.d.) with the list of schools that are members of the iSchool Caucus (iSchools Caucus, n.d.). Fourteen schools fulfilled both criteria (hereafter, iSchools). To determine the schools and departments other than iSchools (hereafter, other schools) to include, we randomly selected fourteen ALA accredited programs that were not members of the iSchools Caucus from the list of schools and departments with ALA accredited master's programs (American Library Association, n.d.). For each of the 28 schools, we retrieved the descriptions of all courses offered in each master's degree program from the program's website and organized the data using NVivo, a qualitative data analysis software. We edited the resulting lists, discarding terms that referred to the mechanics of course offerings (e.g., credit, hours, pre-requisites). We analyzed these course descriptions for word frequencies and ranked the ten most frequently used words in each type of school. We followed the same procedures to analyze the abstracts and papers from the iConference websites. The results are reported in the section titled *Fractal Distinction*.

To observe fractal distinction in time, we examined course titles and descriptions for 24 of the 28 schools selected above. We retrieved course titles and descriptions that were in use in 1999 using the Wayback Machine at archive.org. The year 1999 was selected to allow sufficient time for fractal distinction to develop in time. Four schools were excluded from this data collection, including one iSchool and three other schools. One was excluded because it was not in existence in 1999. Course descriptions could not be retrieved using the Wayback Machine for the remaining three. We used the same procedures to analyze the 1999 course descriptions as described for the 2008 course descriptions. The rank order lists of the ten most frequent words for each type of school were compared. We then compared the word frequency rankings over time by type of school. The results are reported in the section title *Fractal Distinction in Time*.

To determine which of the mechanisms: traditional differentiation, fractal differentiation, or fractal cycle is operating in the evolution from LIS to iField, we retrieved the *About the school*, *Welcome*, *Mission and vision*, and/or *History* sections from the websites of the fourteen iSchools and performed content analysis using the technique of meaning condensation. We looked for statements that would confirm or disconfirm the operation of each type of mechanism (see Table 1). The results of this analysis are reported in the section titled *Mechanism*.

Results and Interpretation

Interstitial Character

As mentioned previously, our informed observations led us to believe that

Table 1: Statements Used to Confirm Mechanisms.

Statement	Mechanism
Library referred to a distinct and separate from *information science*	Traditional differentiation
Library AND *information science* as a combined phrase (not separate departments or units)	Fractal differentiation
No mention of *library* or reference to *library* only in the past tense (historical roots of program)	Fractal cycle

LIS is not good at excluding things (Abbott, 2001, p. 5) and is a discipline of many topics (Abbott, 2001, p. 6). The rhetoric surrounding the iField is so inclusive that it appears that nothing is "alien" (Abbott, 2001, p. 6) to it.

We began to look for evidence of interstitial character through examination of messages posted on the Jesse listserv that announced new positions, hiring of new faculty, and any discussion of changes of names of LIS schools. Two types of evidence were identified. The first type is expressed through the use of general terms. A strong call to broaden the field is clearly reflected in the job descriptions, which call for tenure-track faculty candidates who are interested or involved in *new dimensions of the information science and technology fields*, a *broad perspective in information field* and *interdisciplinary* scholarship. The second type of evidence is expressed through the use of more specific terms. Calls for candidates from three disciplines predominated, including: *communications*, *sociology* and *computer science*, with computer science being the most sorted specialization. Table 2 summarizes the phrases used to label the specializations listed in the announcements.

We next analyzed the doctoral degree requirements mentioned in these job descriptions. We examined messages that reported the successful hiring of new tenure track faculty members. We found evidence of interstitial character in the disciplinary history of the applicants who were hired or were most likely to be hired by LIS schools. General terms were used to indicate openness to and inclusion of graduates from other fields. Qualifications such as from *other appropriate fields*, *related fields*, *allied disciplines*, or having a *multidisciplinary doctoral degree* or an *interdisciplinary PhD* were included. Specific terms covered an even wider range of disciplines than found in

Table 2: Phrases Used to Label Specializations in Tenure Track Faculty Announcements.

Specialization	Phrases
Communications	Journalism, New media, Media studies.
Sociology	Technoculture, Sociology of cyberspace.
Computer science	Bioinformatics, Information visualization, Computer supported collaborative work, Distributed systems, Embedded systems, Human computer interaction, Markup languages, Natural language processing, Ubiquitous computing, Systems design, Scalable information infrastructures.
Others	Genomics, Cognitive Psychology, Telecommunications.

Table 3: Doctoral Degrees in Tenure Track Faculty Position Announcements.

Domain of Knowledge	Discipline
Humanities	Linguistics, American Studies*, Comparative literature*, History*, English*, Philosophy*, Second language acquisition.
Sciences	Computer science*, Nutritional sciences*, Physics*, Biology*, Public health sciences*.
Social sciences	Communication*, Anthropology*, Cognitive science*, Sociology*, Management.
Others	Law*, Business, Educational technology*, Experimental psychology*.

*Applicants hired by LIS programs

the job descriptions. Table 3 summarizes the doctoral degrees mentioned in announcements for tenure track faculty positions.

The interstitial character reflected in the job descriptions and disciplinary history of hires is also prominently reflected in the discussion of the school name changes, which were discussed on the Jesse listserv beginning in 1995. Some schools dropped the *L* word (library and its permutations) and replaced it with a phrase that has some affiliation to *i* (information and its permutations), such as *information management*, *information studies*, or simply *information*. Some schools kept the *L* word, and added the *i*.

As we analyzed the messages, we identified those that discussed school name changes. There were discussions that articulated the depth of the meaning of information, which covers a wide range of research questions in information professions. There were discussions that highlighted the interdisciplinary nature of the field. There were calls for a broad based view of the roles that LIS schools or colleges play, ranging from the deployment of basic knowledge about information to complex application of information structures. These arguments depict a discipline that envisions itself covering both ends of the continuum from knowledge to action (Abbott, 2001) and contends that it makes most sense to have *information* in the name of the school because of the breadth of coverage and inclusiveness of the concept. Strong arguments that *library* should be dropped completely also appeared. However, some camps of schools or faculty indicated very strongly that the *L* should be an emphasis, and should balance the delivery of instruction on the *i* side. Within each camp, an argument was made for a focus on the less favored concept (*L* or *i*) in respect to both teaching and research. In addition to interstitial character, this tendency of a "distinction [that] repeats a pattern within itself" (Abbott, 2001, p. 9) is indicative of fractal distinctions, which are discussed in more detail in the following section.

Fractal Distinction

As discussed in the previous section, the discussion of changes in school names in the Jesse postings included evidence of two camps of schools or faculty (*split*), who expressed opposing views regarding the relative value of retaining the *L* in school names (*conflict*). In the discussion of the i camp, the retention of an *L* focus within the renamed schools was generally supported (*ingestion*). To probe this pattern of fractal distinction and further confirm its presence, we analyzed two additional types of data: (1) Course titles and descriptions, and (2)

Abstracts of papers presented at the 2006 and 2008 iConferences.

The course titles and course descriptions for master's level courses listed on the websites of the 14 iSchools in 2008, and those for the 14 randomly selected other schools were analyzed for word frequency and the rank order of the ten most frequent words in each list were compared as shown in Table 4.

Variation occurs at the third, fifth, seventh, ninth, and tenth positions. Eight of the words appear on both lists: *information*, *library*, *systems*, *services*, *management*, *resources*, *research* and *issues*. The iSchools list includes two words that do not appear on the other schools list: *design* (7th position) and *development* (10th position). The other schools list also includes two words that do not appear on the iSchools list: *materials* and *media*. The reversed order of the words *systems* (associated with information systems and technology) and *services* (associated with libraries) lends further credence to this interpretation of evidence of conflict.

Word frequency analysis was also conducted on the abstracts of the papers presented at the 2006 and 2008 iConferences (see right column of Table 4). Only three words appear on all three lists: *information*, *systems*, and *research*. The iConferences and iSchools lists have one additional point of agreement: *design*. There are no additional points of agreement between the iConferences and other schools lists. Six words appear only on the iConferences list: *technology*, *field*, *community*, *discipline*, *students* and *social*.

In these data sets a pattern of split, conflict and ingestion is evident. As noted above, the two lists derived from the course titles and descriptions include four words that do not appear on both lists (*split*): *design* and *development* (iSchools only) and *materials* and *media* (other schools only). The first pair is generally associated with information systems and technology, while the second pair is more often associated with print materials and libraries (*conflict*). Of the eight words that appear in both course title and descriptions lists, five—*library*, *systems*, *services*, *management* and *resources* appear to be concrete and provide evidence of interstitial character and ingestion of the weaker line (other schools) by the better resourced line (iSchools). Two are abstract concepts that signify the ingestion of the traditional professional discourse into the rhetoric of the new iField: *issues* (traditional/professional) and *research* (new/disciplinary). The persistent fre-

Table 4: Current Word Frequency Rankings.

Word Frequency Ranking	iSchools	Other Schools/Departments	iConference Abstracts
1	information	information	information
2	library	library	research
3	systems	services	technology
4	management	management	systems
5	services	systems	field
6	resources	resources	community
7	design	research	discipline
8	issues	issues	design
9	research	materials	students
10	development	media	social

quency of the word *information* is a clear example of what Abbott (2001, p. 27) describes as

> the general power of the concept of fractal distinctions. . . . It explains the persistence of terms that appear to be undefinable despite their central importance to our disciplines. They survive because they are indexical terms that facilitate our discourse by their very indexicality.

Which raises the question, what about *library*? Is it significant that the second most frequent word on both course titles and descriptions lists is not among the ten most frequent words in the abstracts for the iConference papers? To answer this question, we examined the characteristics of the three words that appear on all three lists. *Information*, as discussed above, is an indexical term that names the undefinable essence of the discipline across the continuum of its existence. *Systems*, while apparently concrete and most often associated with technology, and therefore the *i* side of the continuum, is also used to describe organizations of libraries (*library systems*) and a methodological approach to libraries as organizations (*systems analysis*). Likewise, *research* is concept that spans the *i* to *L* continuum. Research is conducted at both ends of the continuum, with shared methodological applications. *Library* may share some of these indexical characteristics as well. For example, a major area of research at the end of the continuum is *digital libraries*. Librarians are active partners in the design, development and management of digital libraries. The absence of the word *library* in the iConference abstracts list of the ten most frequent words may provide evidence of a deepening irreconcilable split between the iSchools and other schools with ALA accredited master's programs, or it may be that the conflict between the two ends of the continuum is still unresolved, resulting in avoidance of the term. Should the resolution include ingestion of the *L* into the *i*, we would expect to see *library* reemerge in the list of the ten most frequent words, although probably at a lower rank.

Fractal Distinction in Time

Abbott (2001, p. 22) notes that fractal "differentiation survives within a fractal lineage only when increasing size and resources permit it." He distinguishes three mechanisms of fractal distinction: *traditional fractal differentiation*, *fractal differentiation*, and *fractal cycles*. All three types exhibit patterns of split, conflict and ingestion. In traditional fractal differentiation, "at each generation, a lineage splits into subordinate parts of increasing specificity" (Abbott, 2001, p. 22). In fractal differentiation "the fractal distinction repeats itself at each succeeding generation *within all lineages*" (Abbott, 2001, 22). "The fractal cycles pattern is thus a subset of the fractal differentiation one" (Abbott, 2001, p. 22). In this pattern "only one line divides per generation, because intense conflict exterminates all but a particular hegemonic view. . . . The concerns of the 'sterile' line are 'remapped' onto a version of the fertile one" (Abbott, 2001, p. 22).

To determine which mechanism is operating in LIS, we examined course titles and descriptions for 24 of the 28 schools examined above. The course titles and course descriptions for master's level courses listed on the websites of 13 iSchools, and those for 11 other schools were analyzed for word frequency and the rank order of the ten most frequent words in each list were compared as shown in Table 5.

Unlike the word frequency rankings for 2008, no word was ranked in the same position for the iSchools and the other schools in 1999, indicating a much stronger split in the *i* to *L* contin-

Table 5: 1999 Word Frequency Rankings.

Word Frequency Ranking	iSchools	Other Schools/Departments
1	information	library
2	library	information
3	services	services
4	management	systems
5	services	materials
6	resources	management
7	materials	evaluation
8	research	issues
9	design	sources
10	development	special

uum. In 1999, *library* rivaled *information* as an indexical term, with each group having its own preference, thus supporting our interpretation of eventual ingestion of the topics of the *L* side of the continuum into the *i* side discussed above.

By contrast, there is considerable homogeneity in the word frequency rankings when comparing the iSchools 1999 course titles and course descriptions with those for 2008 (see Table 6). The first six positions and the tenth position are consistent over time. *Research,* ranked eighth in 1999 moved to ninth in 2008, with the emergence of the word issues in the eighth position. *Materials,* ranked seventh in 1999, has dropped from the list of ten most frequent words in 2008. *Design,* ranked ninth in 1999, climbed to seventh in 2008.

As compared to the iSchools word frequency rankings over time, the rankings for other schools exhibit far more change (see Table 7). Only one word, *services*, appears in the same position (third) in 2008 as in 1999. This word also appears in both the 1999 and 2008 iSchools word frequency rankings, and clearly represents a value shared across the *L* to *i* continuum. If *library* is an indexical term, as discussed above, its importance to the other schools

Table 6: iSchools Word Frequency Rankings over Time.

Word Frequency Ranking	1999 iSchools	2008 iSchools
1	information	information
2	library	library
3	systems	systems
4	management	management
5	services	services
6	resources	resources
7	materials	design
8	research	issues
9	design	research
10	development	development

group was somewhat diminished over the decade, since it drops from first to second in rank. *Management* moved up from 6th in 1999 to 4th in 2008, to come in line with the consistent ranking of this word in the iSchools. This shift may have been influenced by growth in the area of knowledge management, which is a topic that has increased in popularity over the past decade. *Sources*, usually associated with print and ranked ninth in 1999, has been updated to resources, more often associated with information systems, but also used in conjunction with libraries (e.g., *library resources*). It has also increased in rank to sixth, perhaps in part due to its broader scope. *Evaluation* (seventh and not present on either iSchools list) and *special* (tenth and almost exclusively used in conjunction with *library*), dropped from the other schools list in 2008. *Special* is replaced in the tenth position by *media* in 2008, which may indicate more emphasis on the preparation of school media specialists. Also of interest is that *issues* appears in the eighth position in both years on the other schools list, but just emerges in 2008 on the iSchools list, also in the eighth position.

A more detailed analysis of the patterns of split, conflict and ingestion outlined here and the mechanisms are discussed in the next section.

Mechanism

Lacking the strong jurisdictional lines evident in professional schools such as law and medicine, where there is a universal claim of human knowledge explicit to the discipline, the iField claims to be at the "heart of everything." Examination of the data through the lens of Abbott's theoretical framework indicates split, conflict, and ingestion within the iSchool population as it relates to inclusion of *L* in both the names and course descriptions. Yet the nature of the relationship of the *L* and *i* philosophies as espoused within the iField remains unresolved in this data analysis. The researchers sought indication of this relationship on the current websites of the 14 iSchools offering ALA accredited degree programs. More specifically, portions of the website that typically are labeled *About the school*, or sections that house the welcome message, the mission statement, and the history of the school were analyzed for evidence of the types of differentiation Abbott identified: traditional differentiation, fractal differentiation, or fractal cycle. Content analysis was conducted using the technique of meaning condensation. Instances mentioning library or library science/studies in relation to information science/studies as

Table 7: Other Schools/departments Word Frequency Rankings Over Time.

Word Frequency Ranking	1999 Other Schools/Departments	2008 Other Schools/Departments
1	library	information
2	information	library
3	services	services
4	systems	management
5	materials	systems
6	management	resources
7	evaluation	research
8	issues	issues
9	sources	materials
10	special	media

Table 8: Library and Information Word Occurrence and Relationships.

Part of Website	*L* and *i* Distinct/Equal	*L* and *i* Mixed	*i* Exclusive
About the *school*	0	12	2
Welcome	0	3	0
Mission	0	1	0
History	0	8	0

expressed through the philosophy of each of the fourteen schools were examined and the results reported in Table 8.

In no case was there evidence of traditional differentiation, which would require that library and information science be represented as definitively separate but equal to one another. Twelve of the fourteen iSchool websites mention the word *library* within the pages analyzed. Five of the schools with prominent mention of the word *library* provide equal emphasis to the term *information science*, with one specifically stating that the school embodies both philosophical approaches, placing emphasis on the *and* that links the two camps. This blending of the *L* and *i* philosophies indicates a pattern of fractal differentiation. The remaining nine iSchools, including the two that do use the word *library*, were identified by the researchers as representing a fractal cycle pattern, where the "concerns of the defeated" are taken up by the fertile line. The researchers assumed that since the two exclusively fertile schools were once schools of LIS in their past, the *L* concerns were not completely abandoned. This assumption is supported by the results of the course description analysis.

Conclusions

The extent to which LIS schools have engaged and embraced technological change, is reflected in the evolution of school names and course descriptions, signifying a paradigmatic shift in the educational and disciplinary philosophy of many schools that historically were the providers of library education.

This exploratory study found that the mechanism of change lies somewhere between the typical fractal differentiation and fractal cycle patterns. Currently, iSchools are organized as a faculty of one or are divided into two departments. Other departments may also be included, such as information systems or information technology. In no case is library science a department under information science. The iSchool leaders are clearly aware of the political expediency of including library science as a prominent player in the fractalization game. The apparent absence of library studies or library science departments within information studies or information science schools led us to the initial hypothesis that the mechanism of fractal cycles was at work, but a more thorough examination and application of the Chaos of Disciplines theory revealed that the majority of the schools that have embraced the iSchool movement exhibit the fractal cycle mechanism at work. The iField is not only at the "heart of everything," but has ingested the *L* into its heart.

While the fractal cycle mechanism is predominate, the direction of the pattern is different than that found by Abbott, who argued that most disciplines move from a broad approach to knowledge to narrow in specialization. In the evolution from LIS to iField, the concept of information has evolved from practice in specific locales (libraries) to practice in general (location independent). This in-

verted fractal cycle mechanism moves from specific to broad over time. LIS has increasingly engaged information technology, which has contributed to the chaos of development of a discipline in its infancy. That this arena is ripe with opportunity has not escaped the attention of academic and business organizations, so it should come as no surprise that jurisdiction is contested not only within LIS, but also beyond its disciplinary borders.

The methods selected were appropriate to the study's purpose, but do not account for external factors such as economic exigencies, institutional reorganization, or technology adoption. Further investigation is therefore required to determine the character and direction of the evolution from LIS to iField. To better understand this evolution, the research team plans to conduct further content analysis (including phrase as well as individual word analysis), citation analyses and social network analyses. Future analyses will include all schools or departments with ALA accredited programs, rather than the random sample of fourteen used in this study. It will also include the iSchools with no ALA accredited programs, because their participation in the iSchools movement may be important to understanding the development of the iField. We also plan to investigate the relationship of the iSchool movement to the IT Deans Group, the Association of Computing Machinery (ACM) Special Interest Group on Information Technology Education (SIGITE), and the information technology programs accredited by the Accreditation Board for Engineering and Technology (ABET), inc.

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