



# From “Library Science” to “Library Design”: Recasting the Narrative of Academic Librarianship

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## Introduction

For thousands of years, libraries and librarians have made artifacts to enable access to and use of information resources. Tools and services like cataloging rules, classification schemes, cooperative programs, and readers’ advisory were the expert purview of libraries around the world for centuries, enabling and assisting users with access to information. Academic librarians are steeped in tool and service creation, with products ranging from new physical spaces to institutional policies.

But despite this focus on creation, American librarianship has positioned itself as mainly a social science discipline. Although various specific scientific approaches have been harnessed throughout the 20<sup>th</sup> century, all fundamentally rest in the realm of science. Scholars often argue about the nature and underlying philosophical and epistemological assumptions of library science, yet few since the beginnings of the 20<sup>th</sup> century have approached librarianship as if it was not a science at all.

However, scientific paradigms may not be the only nor the most relevant paradigms for librarianship. In recent years, a well-established record of research has demonstrated design as an alternative approach to science. In this paper, I propose to recast the narrative of academic librarianship in the realm of design. First, I briefly identify and describe key elements of design epistemology, contrasting them with traditional scientific approaches. I then illustrate how academic librarianship is aligned with design and discuss ways that explicitly embracing a design epistemology can help academic libraries and librarians create better tools and services and advocate for library values and social justice. Finally, the paper concludes with actionable recommendations for fostering this new narrative in academic library organizations, including changes to LIS education, professional development, job descriptions, and research communications.

## What is Design Epistemology?

In the twentieth century, design epistemology emerged as a legitimate alternative to traditional scientific epistemologies. The major epistemological division between traditional science and design stems from the idea that science concerns itself with observing and describing the existing natural world with the goal of replicability and prediction, while design centers on the artificial world: objects created by humans to institute change and solve problems, and, ultimately, change the world from its existing state to a preferred state.<sup>1</sup> The objectives of design are to “create things people want”<sup>2</sup> by “addressing problems or ideas in a situated context”.<sup>3</sup> Thus design epistemology is one based in the creation of things that solve problems. Such an inherently different purpose calls for different methodologies and techniques of practice, and therefore requires

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a fundamentally different way of viewing and evaluating knowledge creation: what Cross calls a “designerly way of knowing”.<sup>4</sup>

What are these ways of knowing? Although various approaches to design exist, reviews across various fields and domains (everything from architectural design to user interface design) show that many of these fields share epistemological commonalities, revealing a common set of fundamental principles that underlie what constitutes knowledge in design epistemology.<sup>5</sup> This differs from the popular concept of “design thinking” in that the contemporary design thinking model offers one specific interpretation of design epistemology and attempts to distill it into an easily accessible and actionable process model for those new to design to follow. While interest in and applications of design thinking is on the rise in academic libraries, these applications are still centered in ways for *working*, not ways of *thinking and knowing*, and thus lack the underlying epistemological shift required to fully harness the power of design.

Scholars from the 1960s, when the first formal investigations of design began, to the present day, have identified consistent factors and fundamental principles that underlie what constitutes knowledge in design epistemology. Table 1 synthesizes the underlying principles common across design that comprise a unique way of knowing.

<b>TABLE 1</b> <b>Synthesized elements of design epistemology*</b>		
Creation of problem solutions	Artifacts	All products—tangible or intangible—made by humans that do not naturally occur on earth.
	Wicked problems	Unique, interconnected, and ill-defined problems that cannot be definitively described or solved via traditional scientific approaches
	Problem finding and framing	The imposition or use of a “generating concept” or a set of objectives from one particular perspective in order to find a “way in” or to frame the problem a certain way, from a different angle, or a specific point of view
	Service orientation	Intentional focus on the needs of others; this specific intention separates it from other forms of inquiry
Generation of knowledge through making	Iteration	Moving quickly back and forth between explorations of the problem and ideas for solutions and honing definitions of problems by making attempts at solutions
	Repertoire	Drawing on previous experiences and bodies of knowledge to guide current choices and to evaluate decisions and artifacts
	Abductive reasoning	Reasoning based in synthesis, or the suggestion that something <i>may</i> be possible
Design evaluation methods	Reflection	Looking at work—both previous and current—with serious thought and consideration
	Rationale	The reasons and justifications for designing an artifact, the notation or documentation of justifications and reasons, and explanations of why an artifact is the way it is.
	Critique	Evaluative insight, where designers with large, well-developed repertoires are able to discern complex and subtle qualities and characteristics of a design and make fine-grained discriminations that others may not be able to express

\*Note that while they may appear here to be very carefully categorized, many of these elements overlap and serve multiple purposes. For instance, reflection is a form of knowledge generation in design that may also serve as an evaluative method. Articulating these elements is inherently complex, and they are grouped this way purely for purposes of presenting an organized analysis. See Clarke (2016) for more details.

These elements appear in in all design disciplines and constitute design as a way of knowing, rather than an applied process or a specific topical or contextual application. Previous research shows that these elements appear throughout the discipline of librarianship.<sup>6</sup> In the following section, I demonstrate how these elements are especially pertinent to academic librarianship.

## Design Epistemology and Academic Librarianship

In the early 20<sup>th</sup> century, American librarianship became increasingly situated in academia, moving away from its roots as a vocational profession. Situating librarianship in the academy helped legitimize librarianship as a profession, but it also emphasized scientific research and publication over practice, thus shaping the conceptualization of the field as a scientific one.<sup>7</sup> Although many library practitioners resisted the conceptualization of librarianship as a science and actively advocated for other conceptualizations (see for example Thompson, who suggested librarianship might be better considered as a fine art form<sup>8</sup>), librarians were increasingly educated in an environment steeped in science, research, and the academy, and in turn took those epistemological understandings with them as they moved into practice. Scholars and researchers in library science emphasized the need for scientific evidence to justify libraries' social and educational value, rather than reliance on experience-based assumptions and conclusions.<sup>9</sup> Such influences in the early part of the twentieth century influenced the evolution of the profession toward a positivistic epistemology of science. As scientific approaches developed throughout the 20<sup>th</sup> century, they evolved beyond positivism. Epistemic approaches in librarianship grew to include approaches like social epistemology,<sup>10</sup> qualitative inquiry,<sup>11</sup> hermeneutics,<sup>12</sup> and evidence-based librarianship.<sup>13</sup> Scholars often argue about the nature and underlying philosophical and epistemological assumptions of library science, but few since the beginnings of the 20<sup>th</sup> century have approached librarianship as if it was not a science at all.

Yet what are the fundamental goals of academic librarianship? Is the ultimate purpose to explain and predict the information behaviors of students, faculty, staff, and other library stakeholders? Although such information is unarguably relevant to academic library services, this is not the ultimate goal of academic librarianship. Rather, the goals of academic librarianship are to educate patrons and help them achieve academic success.<sup>14</sup> To achieve this overarching goal, academic librarians participate in a variety of tasks, such including, but not limited to the following:

- showing students how to use computers and find information for their class assignments
- helping faculty and staff find information and materials to help teach classes or to complete research
- creating campus-wide literacy programs
- delivering classroom instruction to teach information literacy skills
- curating collections suited to the institution's learning and research needs<sup>15</sup>

### *Creation of Problem Solutions*

All of the aspects of academic library practice listed above are fundamentally creative tasks, rather than scientific ones. Each of these activities requires librarians to create some sort of artifact or product that facilitates patrons' academic success. And creation is the realm of design, not science.

While creation is often considered in terms of physical products, like library architecture, remodeling, or space planning, creation of design products is not limited to physical artifacts. Digital tools and services, such as websites, databases, online collections, institutional repositories, and finding aids such as LibGuides and other similar tools are also created by academic librarians in service of patron success. But perhaps most significantly, academic librarians create many intangible products, including but certainly not limited to information literacy

and library instruction curricula, data management plans, access policies, research projects, and reference service models. Instructional design—a key component of academic librarianship—hinges on the creation of instructional products and experiences across a variety of physical and digital environments.

Creation in design serves a very specific purpose: to solve problems. What problems is academic librarianship aiming to solve? Given the overarching goals of academic librarianship, all of these products, be they physical, digital, or conceptual, are created to help students and faculty achieve academic success. This is a prime example of a wicked problem, as it is ill-defined (what is meant by academic success?), involves multiple sets of interconnected stakeholders (students, faculty, staff, etc.), and has no stopping rule (even if a patron achieves one form of success, they can continue to move on to other forms). Because wicked problems cannot be solved through traditional scientific means, and may only have better or worse resolutions rather than a single “correct” answer, creative approaches like design are necessary.<sup>16</sup> Design is often relied upon to tackle wicked problems that have failed to be solved via more traditional research approaches.<sup>17</sup>

Design approaches let us tackle these wicked problems through the imposition of frames and constraints. The idea of framing and reframing—looking at the problem from different angles or points of view—recurs throughout the literature on design and across fields like industrial product design, software and technology development, and architecture.<sup>18</sup> Imposing constraints relevant to specific settings and institutions, such as resource availability, also helps frame a wicked problem in a way that helps generate solutions. Kolko details how designers use frames and constraints to shape synthesis and solutions.<sup>19</sup>

Creating artifacts that solve problems also reflects the service orientation of design that clearly aligns with the service focus of academic librarianship. The service orientation of design is intentional compared to other traditional approaches from science and art, where service is a secondary by-product.<sup>20</sup> Nelson and Stolterman argue that to truly offer intentional service, design does not just offer people what they want, but *more* than what they want, a “surprise of self-recognition.”<sup>21</sup> In other words, design is not necessarily about solving a problem as stated, but empathetically understanding the situation and context so that underlying and potentially unknown problems can be solved, thus demonstrating a dedication to service by going beyond a surface level. We see this time and again in librarianship, which also explicitly calls out service as a core value of the profession.<sup>22</sup> One illustrative example is the reference interview, where librarians are trained to delve, explore, and determine a patron’s true underlying information need, because it is not necessarily directly stated.<sup>23</sup> It is the explicit job of the librarian to give the patron more than what they have expressed as their need, to solve the problem beyond its presentation, even to use the reference interview as an opportunity to teach a patron search strategies and skills that can help them become more information literate and gain independent research skills.<sup>24</sup>

### *Generation of Knowledge Through Making*

Given the fundamental role of creation in design, much of the knowledge generation in design epistemology comes from the process and act of creation; that is, the actual making of a product. Knowledge emerges from the nature of the processes and principles carried out during creation. For instance, the iterative process used in design means that designers move quickly back and forth between explorations of the problem and ideas for solutions<sup>25</sup> and hone definitions of problems by making attempts at solutions,<sup>26</sup> or drawing on a repertoire of previous experiences and bodies of knowledge<sup>27</sup> to guide current choices and to evaluate decisions and artifacts. Many academic librarians have made iterative changes to improve services and drawn on what they learned from previous creations to inform new ones.

However, these elements are often implicit or overlooked as valid aspects of knowledge generation in applications of design in academic librarianship. For instance, although there is a clearly established connection

between academic librarianship and instructional design. Bell and Shank were some of the first to explicitly discuss of applying design approaches to librarianship, specifically in the context of instructional design, or the broad process of determining the state and needs of the learner, defining the end goal of instruction, and creating some “intervention” to assist in the transition. While much of the literature on instructional design portrays it as a kind of science,<sup>28</sup> Bell and Shank discuss the ADDIE model of instructional design and how its five phases—analysis, design, development, implementation, and evaluation—reflect a design approach. However, while the ADDIE model seems to reflect design at first glance, its focus on measureable outcomes still reflects a scientific epistemology. For the ADDIE model to truly reflect a design epistemology, knowledge would be gleaned through the use of elements like iteration, abductive reasoning and repertoire during the process of creating the intervention.

In addition to creating their own instructional design products, academic libraries and librarians are tasked with helping library users create tools and services to help themselves. This can clearly be seen in the increasing prevalence of support for making within libraries. The rise of library makerspaces in academic libraries—areas and programs that allow patrons the opportunity to create intellectual and physical materials—is a prime example of this. Library makerspaces stem from an ethos of “learning by doing” and hands-on experience in creation, and makerspaces in the educational community at large have been explicitly recognized as a means to teach design thinking.<sup>29</sup> The increasing presence of makerspaces and similar programs and services in academic libraries acknowledges the designs’ epistemic position of generating knowledge through making.

### *Design Evaluation Methods*

There can be no doubt about the recent rise of interest in assessment in academic librarianship. Popular assessment methods are based in scientific norms, which aim for predictable, consistent results, whereas design specifically aims for deviations and variations.<sup>30</sup> Such alternative approaches to knowledge generation naturally will not hold up to scrutiny and critical evaluation based in scientific epistemologies. Because what counts as legitimate knowledge in design is different, evaluation methods must also be different. While science relies on specific constructs of evidence, design considers interpretation as a valid form of epistemological evidence.<sup>31</sup> Scientific evidence may be of assistance to designers by describing existing situations so as to inform decisions. But unlike science, the purpose of design is not to describe the existing world in a factual or objective manner; rather it seeks to change situations and add meaning to them. Therefore, subjective interpretation is a valid form of evidence in design, manifesting through evaluative elements like reflection, critique, and rationale.

The value of reflective practice is not foreign to academic librarianship, especially given its connections with education. Literature shows the value of reflection in instruction<sup>32</sup> as well as situations like peer mentoring.<sup>33</sup> While these works focus on reflection as a type of assessment strategy, Graf and Harris specifically advocate for reflection to evaluate other assessment techniques.<sup>34</sup> They note that librarians may be reluctant to adopt more explicit reflection practices due to time constraints and an unclear perception of the potential benefits. Although they propose strategies for practitioners, these specific applications do not inherently address the barriers to adoption. Instead, if academic librarianship was reframed as a design practice, of which reflection is an explicit and invaluable element, reflective work could be legitimized within institutions thus supporting dedicated time for reflective exercises

Critique is another form of interpretive design evaluation. While critique may seem like arbitrary subjectivity to outsiders, it is actually evaluation based on an extensive repertoire of personal knowledge.<sup>35</sup> While critique from experts is the norm, at minimum design evaluation should consist of a reflective critique by the design’s creators.<sup>36</sup> While informal feedback sessions may occur in academic librarianship, formal critique sessions—

where design work is evaluated by others to provide direct feedback, construct frameworks for evaluation, and assess how well or poorly any given design may address a given problem<sup>37</sup>—are lacking in the field. However, parallel fields, such as museums, do offer such opportunities, such as the annual video and website critique sessions offered at conferences like Museums and the Web.<sup>38</sup>

Like critique, rationale as an explicit assessment method is absent in academic librarianship due to a differing epistemological position. Because design (unlike science) does not have any one “right” answer, only better or worse answers,<sup>39</sup> design relies on the reasoning and rationale behind the choices to understand what led to or what makes a result “better” or “worse.” Rationale-based assessment is gleaned through an examination of the design process: how a design was made, including choices faced, decisions made, and justifications for those decisions.<sup>40</sup> For instance, a paper I was once assigned to review discussed a library’s creation of a new database of mural art. Yet the paper was not published, one of the reasons being that the authors did not include a section on assessment, like a patron use survey, to demonstrate some sort of improvement effect. However, it did discuss reasons for decisions made throughout the creation process, such as enabling users to search for works by both artist and geographic location to offer multiple access points for connecting with works, and to let users both identify locations where art might exist as well as learn more about a work they had encountered in the city. The rationale for selecting location as an access point was to help users identify and learn more about a work encountered while out in the city—without location metadata as an access point, a user who encounters a mural at 123 Main Street would not be able to find information about it in the database. The assessment in this case stems not from the inclusion of location metadata in and of itself, but the explication of the reasons and rationale for its inclusion, and the connection of that rationale to the project’s stated goals. A patron use survey, while helpful, would not have provided the same type of assessment, and arguably less useful findings.

## Implications of Recasting the Narrative

Given the prevalence of creation in librarianship and especially academic libraries, it stands to reason that academic librarianship reflects the characteristics of a design field rather than a scientific one. But why is this reconceptualization so important?

First, pivoting the narrative of academic librarianship from science to design offers opportunities to improve the creation of library products. Reframing librarianship as a design field means that all of the resources, tools, and approaches that emerge from design epistemology can be learned and harnessed by librarians when creating library products. Just as knowing more about science (such as techniques to improve reliability and validity) can help us improve scientific research findings, knowing more about design can help us create better tools and services. People unfamiliar with design often assume that it is a simple process, stemming from internal genius or intuition. Although such a magical-seeming design process may be a black box to outsiders, what appears easy to outsiders What may seem like arbitrary subjectivity to outsiders is actually evaluation based on an extensive repertoire of personal knowledge.<sup>41</sup> Explicitly harnessing the elements of design epistemology in academic library work can help librarians build the design expertise necessary to create better products and services.

Second, reconceptualizing librarianship as a design field allows libraries and librarians to more explicitly incorporate the values of librarianship in library work. Unlike science, with its emphasis on striving for objectivity and neutrality, design’s problem-solving roots mean it is an activist epistemology. Liedka notes that design is not just about what *could* be, but arguably what *should* be.<sup>42</sup> The former merely identifies options while the latter makes a judgement about the world—and strives to change the world to achieve a state that reflects that judgment. Libraries are not and never have been neutral.<sup>43</sup> Explicitly articulating a set of values clearly indicates non-neutral positioning. Taking positions to support values like access, literacy, diversity, and intellectual free-

dom cannot be a neutral or objective standpoint. Librarianship takes the position not just that people *could* have access to resources, but that they *should*; not just that intellectual freedom is possible, but that it is beneficial, both to individuals and to society at large.

Considering values is critical because all design products incorporate the values of their creators, whether intentional or not.<sup>44</sup> Academic librarians focused on instruction are increasingly concerned with how underlying values inherent in various power structures shape instructional design.<sup>45</sup> While critical theoretic approaches offer various lenses through which to analyze the design products of librarianship. But if values like lifelong learning and social justice are important to academic librarianship, it is not enough to uncover them in a post-hoc analysis—they need to be explicitly considered when creating new library products, and arguably explicitly *furthered* by new library products. It is only once librarians understand how values and perspectives are embedded in their creations that they can purposefully start designing with an eye toward these values, such as Ringling, Carlisle and Waugh’s use of design approaches to explicitly consider the value of open access and develop a more proactive position on the issue.<sup>46</sup>

Ultimately, if librarians do want to further values such as equity and diversity, lifelong literacy, and other social justice concepts, then librarians need to take a more proactive role in the design of library tools and services. Case studies of design in librarianship show that design is commonly externalized, considered to be something that other fields and other professions do.<sup>47</sup> Interviews with user experience (UX) librarians revealed that most of these professionals conceptualized their role specifically as a research role rather than a design one, de-emphasizing design-related tasks and relegating them to other staff and departments.<sup>48</sup> Over time, other non-librarian people and fields have taken up the design work needed by and for libraries, resulting in a power shift that has left libraries and librarians dependent on other sources, like vendors, to provide design work. And it is the designers that create these artifacts who make the ultimate decisions about how things can, will and should be. If librarians do not take a proactive stance on incorporating design into the underlying epistemology of librarianship, these power imbalances will continue.

## Forward for the Future

The need to shift the narrative from “library science” to “library design” is clear. But such major epistemological shifts do not happen organically or overnight. How can we foster and support this new narrative in academic library organizations? We need support and buy-in from the entire professional library community.

First, we need to incorporate design epistemology into library education, both in graduate level library degree programs as well as ongoing professional development. While design may appear magical and easy to outsiders, that ease stems from years of education and practice. Incorporating design into academic and professional LIS education can give librarians the foundational underpinnings of design as well as concrete methods and tools to apply in their everyday library work. The more design training and education librarians have, the better they can be at creating tools and services for our users, especially tools and services that advocate for library values.

Second, we need institutional support that acknowledges the legitimacy of design epistemology in librarianship. This could range from time explicitly carved out for reflective work as a legitimate form of assessment to rewriting job descriptions to accurately reflect the design work that librarians do. Much of the literature discussing design in librarianship is limited to specific contexts like architecture, technology, and instruction.<sup>49</sup> Harnessing the language and vocabulary of design will make the connection between design and librarianship more explicit and potentially represent the work of librarians more accurately. Other organizational acknowledgement of legitimacy could include the consideration of design research in tenure and promotion cases. Many research

projects conducted by academic librarians as part of their job requirements are legitimate forms of research in the design paradigm.<sup>50</sup> To support local institutional acknowledgement, profession-wide research communication venues like conferences and journals that acknowledge and lend legitimacy to the research inherent in design projects are necessary.

And finally, above all else, recasting the narrative of library science to library design allows librarians to explicitly start thinking of themselves as designers, rather than externalizing design to others. This new explicit acknowledgement of identity offers librarians the potential to harness the creative power inherent in design. Such power affords librarians the advocacy and activism necessary to ensure that the values articulated in librarianship are actually instantiated in library work.

## Endnotes

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