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Christie Kliewer

Duquesne University, kliewerc@duq.edu

Gesina A. Phillips

Duquesne University, phillipsg@duq.edu

Megan Massanelli

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Information & anxiety: The impossibility of 'literacy' and the necessity of agency
By Christie Kliever, Gesina Phillips, and Megan Massanelli

Our lives are continuously affected by the information that we encounter in ever-increasing volume. The growing awareness of the dangers of uncritical information consumption (e.g. “fake news”) heightens the relevancy of questions investigating the nature of truth and fact. This anxiety manifests on a more personal level in terms of our vulnerable digital selves—identities can be stolen, personal archives can be lost. Anxiety is deeply personal but can affect public lives, professional lives, teaching, and scholarship as it leads to a loss of nuance and an unwillingness to participate in information creation and exchange. Our personal lives suffer, and so too does public discourse.

Our goal is to give you a framework to understand the concepts in Information Science which deal directly with the issue of reliable information sources and trust in the age of the internet. We are a group of information professionals working in the library and archives fields. Our professional values are specifically codified in order to deal with information anxiety and promote critical thinking, and our daily work is to foster responsible interactions with information. We will draw upon these values as examples in order to find interdisciplinary points of similarity among our audience, and demonstrate strategies for approaching information anxiety across the professions represented.

Information Anxiety

Information anxiety, defined by Richard Saul Wurman, is a state “produced by the ever-widening gap between what we understand and what we think we should understand. It is the black hole between data and knowledge, and what happens when information doesn’t tell us what we want or need to know” (2001, p. 14).

Advances in mass communication have historically prompted anxiety in reaction to the increasing volume and breadth of information.

The sorrows of any part of the world, many times greater geographically than the old world as known to the ancients, through the medium of the press and the telegraph are made the sorrows of individuals everywhere. (Beard, 1881, p. 133-134)

Information anxiety is not new, but the scope of the information that we interact with regularly today is far larger. The printing press allowed for far greater distribution of information, but this distribution was limited to the production of more individual physical copies of documents. The internet (and increased consumer access to digital technologies) enables simultaneous distribution and ease of content creation. If the barrier to creation and distribution of materials is low, the traditional power structures of communication are changed and arguably reduced. If the archiving of information is no longer controlled exclusively by those with the means and access to an Archives, our collective memory of human experiences will contain greater diversity. But while the barriers to creating, distributing, and saving information are reduced, the anxiety of

differentiating between that which is created incidentally and that which is valuable becomes more intense.

Information Overload

The term Information Overload was popularized by Alvin Toffler in his 1970 book *Future Shock* but was defined through research collected by Speier et. al. in their 1999 article “The influence of task interruption on individual decision making: An information overload perspective”:
“Information overload occurs when the amount of input to a system exceeds its processing capacity. Decision makers have fairly limited cognitive processing capacity. Consequently, when information overload occurs, it is likely that a reduction in decision quality will occur.”

It is part of the responsibility of information professionals to give users the means to make informed decisions independently. Our Code of Professional Ethics as Librarians holds Service as the foremost principle: “We provide the highest level of service to all library users through appropriate and usefully organized resources; equitable service policies; equitable access; and accurate, unbiased, and courteous responses to all requests” (ALA Code of Ethics). Information Scientists are all concerned with the issues of organizing and providing access to information, but librarians consider the role we play as the mediator between the user and information--through one-on-one interactions as well as through our systems--to be as important as the information itself. We are deeply motivated by *how* patrons engage with information and do not see our role as a passive act. We engage with our patrons in order to provide them with not only the most applicable information, but also the tools to find more information on their own in the future.

This service orientation leads librarians to speak about information overload in terms of the effect it has on patrons who come to us for help. While new technologies have given us access to resources that enhance and expand our professional ability to disseminate information to a larger audience, it has also fundamentally changed how we provide information. Ascertaining the value of an information resource to a patron in a given context is foundational to the profession; as the volume of available information increases, teaching patrons the skills necessary to locate *valuable* information becomes more of a challenge.

Information

It becomes necessary at this point to define what we mean by “information.” Given the scope of this presentation, we use the term quite broadly. Michael Buckland (2017) offers the following definition of some of the manifestations of information:

Information as *knowledge*, meaning the knowledge imparted;
Information as *process*, the process of becoming informed; and
Information as *thing*, denoting bits, bytes, books and other physical media. (p. 22)

This discussion will consider information in all categories. For example, information may be a *thing* when it is used to refer to information sources located to fulfill a user's information need, or when it refers to digital objects that we have created. Information literacy instruction describes the *process* of information retrieval, evaluation, and synthesis, as well as the hopeful end result of having internalized information as *knowledge*.

Delving into this journey from information as *thing* to information as *knowledge* is particularly relevant with the ongoing consideration of "fake news." How can we be well-informed if the starting information is of questionable quality? This issue has been a major source of information anxiety both leading up to and in the wake of the 2016 US election. In particular, the question of authority or expertise--or the ability to speak in an informed manner--is challenged by "the new belief that everyone's opinion, on every subject, is equally valid -- whether that opinion is well informed or crassly ignorant" (Morrison, 2008). There is a valuable germ in this idea that deference to signifiers of authority should not be automatic. In fact, many strategies in information literacy instruction emphasize the importance of vetting a source's claim to authority rather than simply accepting it as a matter of faith. However, we have seen that the results of questioning authority based simply on personal opinions or feelings can be catastrophic (take, for example, objections to scientific climate change data that are based on anecdotal evidence). Information literacy asks learners and information seekers to embrace a grey area, a space where information must be honestly evaluated before it can be said to be trustworthy or untrustworthy.

Teaching and the ambiguous nature of "literacy"

In addition to traditional library instruction--catalog searches, call numbers, and so on--librarians are engaged in teaching information literacy skills. Information literacy instruction seeks to foster an ecosystem of thought which enables responsible, self-aware, and generative information use. Per the Association of College & Research Libraries' *Framework for Information Literacy for Higher Education*, this approach to knowledge values the "reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning" (2015). Information literacy supplements critical thinking skills with a push to understand the broader context for the information that is being sought, while also emphasizing the student's role as a creator of information.

One of the struggles in information literacy instruction, and perhaps in higher education in general, is teaching relative to the overwhelming amount of information available. Students conducting research need to be able to sift good results from bad; individuals reading online need to be able to tell the difference between sponsored results, propaganda, and well-reported content. This avalanche of information--in the sense of search results numbering in the tens of thousands--prompts the need for "an even deeper need for truly informing experiences--for insight, the most precious form of information" (Shedroff, 2001, p. 16).

Of course, striving to teach “insight” is a difficult proposition. The rhetoric of “becoming information literate” seems to gesture toward a future point at which the student has “achieved” literacy. In reality, information literacy is an unrelenting, ongoing process that must keep pace not only with the changing information needs of the user but also the evolution of the information landscape. Additionally, the concept of being information literate may presuppose the state of being information *illiterate* (Foster, 1993, p. 346). The term seems to imply a binary, while the reality lies somewhere in between--it is possible to demonstrate information literate behavior in one context, but fail to meet that standard in another.

Students in a recent study demonstrated this tension between hitting the mark and falling short in terms of information literate behavior. From 2015 into 2016, researchers at Stanford University’s Graduate School of Education studied what they called “civic online reasoning,” or “the ability to judge the credibility of information” found online (2016). Students were given a variety of tasks in order to test their aptitude in determining whether a given source was trustworthy or credible. Among undergraduate students tasked with evaluating the usefulness of a Tweet, more than half did not click the link in the Tweet before making their judgement. In both cases, the students appeared to rely exclusively on their prior knowledge and the impression that they gained from the content presented to them. These students may be modelling more or less typical information behaviors by privileging opinion and existing knowledge over investigation and the acquisition of new knowledge; this is the mindset that information literacy instruction seeks to shift. At the same time, many respondents referenced “the limitations of polling or the dangers of social media content,” both of which may also be true in this case (p. 23). Can we truly classify this as information illiterate behavior? Or is it instead more useful and honest to chart these responses on a continuum of information use that demonstrates some mastery, but also the potential to further develop critical thinking strategies?

Information literacy pedagogy is meant to equip the individual with the skills necessary to find reliable information appropriate to their information need, vet that information to a reasonable standard, and to then realize their agency to be information creators in turn. More than literacy, this speaks to a process of striving to create insightful users of information. The true value of information literacy instruction is its focus (emphasized within the *Framework* document) on teaching learners the skills they need to be adaptable and thoughtful about their information use. This is a moving target given the changing face of information formats and delivery mechanisms, but the underlying emphasis on being able to ascertain what is valuable is a powerful tool in the fight against information overload and its attendant anxiety.

Archival Anxiety

“The challenges archivists face are the result of a growing recognition of the importance of records in our society and its organizations, although these challenges are pushing archivists to think well beyond the cultural mission so many archivists have chosen to emphasize. The days of archivists sitting quietly in their stacks and waiting for the occasional researcher to appear are long gone (if they ever really existed). Archival

anxiety may be the result of this community being shaken out of its complacency.” (Cox, 2011)

In addition to the importance of records, the digital format poses new problems in preservation and management. Whereas physical paper and film documents can be set aside and forgotten and remain intact to a certain extent, bit-rot, obsolescence, and other issues make immediate and sustained action necessary for the preservation and control of digital records. Often, information anxiety in the sphere of digital archiving manifests as the fear of loss of control, context, access, and ultimately the story of who we are and who we were.

Personal digital archiving (PDA), a movement that popped up in mid 2000s in the U.S., seeks to address the archival challenges posed by our digital, networked lives from the point of view of the individual rather than the institution. Core professional values and practices set out by the Society of American Archivists--practices intended for application at an archival institution by a professional archivist or librarian--are scaled to individual, non-professional use. For example, selection and appraisal guidance asks individuals to consider: what was the original purpose of your content? Where is it located? Do you want to keep it long term? What value does this have for yourself, your family, your work, your community? What kind of digital formats do I have? Do I need to download or export content that is online? The answer to these questions can help individuals identify necessary actions for organization and preservation. Open-source tools--such as WAIL (Web Archiving Integration Layer to create copies of web pages), created by Mat Kelly; file management software such as DROID (Digital Record Object Identification); and XifTool for adding and editing file metadata--can aid individuals in executing plans for managing their content. While the guides, tip-sheets, and tools are available and often explicitly created for individuals and those outside of the archival and library profession, they are not always accessible. Lack of technical knowledge, ability, resources, and time can prevent individuals from utilizing PDA recommendations. However, the underlying goal of PDA is to empower individuals to enact any action at all. Reflecting back on Speier et. al.'s definition of information overload as the reduction in decision quality caused through exceeding cognitive processing--our own individual production through digital life has created a volume of information that necessitates new tools and paradigms to maintain. PDA application may not create perfect order, but it can be employed to alleviate the anxiety of having personal output and records that are not meaningfully curated and organized.

Information as Other

If you spend time working on a book for publication, you are conscious of your role as a creator. Your creative process results in an information object that you are likely invested in preserving. Conversely, but more commonly, you might not think of posting a birthday message to your daughter's Facebook as an act of creation, but that post is in effect an information object. Both are examples of the creation and dissemination of information, although they utilize widely varied communication methods and are enacted with wildly different intentions. We are frequent information creators in the digital realm, often without even being conscious that we have created an information object. The scale of our individual information generation, multiplied by the number of information creators whose work ends up in the digital realm, leads to the difficulty of separating bad or ephemeral information from that which is valuable. In reference to our own information and that which we consume, this can lead to overload and deep anxiety.

This person can spend hours using the information available on the open web or Wikipedia, or in the library's databases, and can access their social media profiles to keep in touch with friends and family. This person CAN do all these things, hypothetically, if they understand how to browse Wikipedia (or even know what Wikipedia is), or know how to find a library database on genealogy. But has this person ever engaged with a search platform that places ads adjacent to the list of results? Are they aware that the ad they clicked is not actually a search result for their query? Do they know their Facebook page is public, and potential employers can see what they have posted? It is true that "millennials" demonstrate a competency for digital platforms that previous generations might not as frequently possess. But the inability to discern between a well-design ad and a legitimate search result spans all age groups.

While it is incredibly easy to use the internet to compose, edit, and publish a manuscript, it's also now incredibly easy for others to collect robust metadata about you, your family, and your social network in order to sell you products. We speak often about how our lives are divided between the analog/physical and the digital, but for many people, that division hardly exists any more. It's almost impossible to remain "off the grid" given how thoroughly our lives have been integrated into digital platforms. It is almost impossible to apply for an entry-level job without an email address. Almost every single email platform requires the user to have a personal cell phone for activation. These requirements are not prohibitive for those who are already integrated into the digital world, but can be nearly insurmountable barriers for those who are not.

The Bill (S.J.Res.34) which rolls back consumer protections against the sale of their browser history and user metadata by Internet Service Providers has created a reasonable amount of public outcry. It has emphasized the fact that we do not own the data about our digital lives. We do not have control over who can see it and who can access it. Our previous concepts of privacy have changed dramatically with the advent of the internet. The potential vulnerability of our personal data contributes to the growing cultural perspective that we are always unsafe. The internet is a landscape that requires specialized skills to navigate, and an environment where information proliferates and mutates until it is difficult to discern what is valuable and what is untrustworthy.

Conclusion: The bright side

Of course, the fundamental tension of online spaces is that this idea of vulnerability exists alongside the potential for communal interaction and the exchange of ideas. It is not just a space for disinformation and manipulation, but a space where communities can grow, disseminate ideas, and create meaningful and unique content. The same space that can be used to work collaboratively and foster community can also be used for bullying, harassment, and hacking. This is a reflection of physical spaces in certain ways, but is of a scope and immediacy that is unique. Information professionals seek to empower users with the skills necessary to navigate this environment confidently rather than anxiously, and to take advantage of the wealth of information and communication platforms available. Focusing on promoting insightful behavior when it comes to information objects, both those which they encounter when

seeking information to fulfill a need or those which they create, empowers users to sift through that which is damaging, false, or useless to locate that which is valuable. It is important to remember that navigating the information landscape is always an imperfect endeavor, but that interacting with information is a journey rather than a safe harbor, and it is possible to teach and learn strategies to alleviate overload and assuage anxiety.

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