

Information Architecture

Andrew Dillon
Don Turnbull

School of Information, University of Texas, Austin, Texas, U.S.A.

INTRODUCTION

Information architecture has become one of the latest areas of excitement within the library and information science (LIS) community, largely resulting from the recognition it garners from those outside of the field for the methods and practices of information design and management long seen as core to information science.

The term, “information architecture” (IA), was coined by Richard Wurman in 1975 to describe the need to transform data into meaningful information for people to use, a not entirely original idea, but certainly a first-time conjunction of the terms into the now common IA label. Building on concepts in architecture, information design, typography, and graphic design, Wurman’s vision of a new field lay dormant for the most part until the emergence of the World Wide Web in the 1990s, when interest in information organization and structures became widespread. The term came into vogue among the broad web design community as a result of the need to find a way of communicating shared interests in the underlying organization of digitally accessed information.

BACKGROUND INFORMATION

Two seminal events serve as milestones in the more recent emergence of this discipline or community of practice: the publication of a book on the topic by Rosenfeld and Morville in 1998 and the organization of a preliminary summit by the American Society for Information Science and Technology (ASIS&T) in May 2000 on the theme of Defining Information Architecture. The Rosenfeld and Morville text was aimed at, in its own words, “applying the principles of architecture and library science to web site design,” an ambition that is simultaneously broad in its coverage of issues but narrow in its application domain, implying that IA has no role in non-Web environments, which has largely been taken as a given by most people in IA since. Now in its second edition, this text is often referred to as the “bible” of IA, but its focus is on the practical rather than theoretical domain, with guidance on how to implement web sites and intranets that support management and growth of information.

The original IA Summit, part of the normal, one-off midyear series run by ASIS&T, was so successful that it has been repeated annually since. The summits are now considered the primary annual conference for professionals in this area. While the first summit sought to define the field, it never actually succeeded in doing so. Instead, it brought together almost 400 library and information scientists, usability and user experience professionals, information designers, and company web masters; all of whom recognized a shared interest and a need for broader dialog. A resulting special issue of the ASIS&T Bulletin (vol. 25, part 5) (www.asist.org/) did its best to make sense of the process. As well as launching a series of summits, which at the time of writing number six, ASIS&T launched the SIGIA-L listserve to provide a forum for continuing discussions in the field. This list remains, in 2005, the most active of ASIS&T discussion lists and has many subscribers who are not even members of the parent organization.

Other groups have followed. A dedicated IA professional collective, the Asimilar Institute for Information Architecture (AIfIA) was formed in 2003 (see www.aifia.org) by a self-identified group of information architects dedicated to advancing and promoting the field. It was renamed “The IA Institute” in early 2005 and at this time has 500 members in 40 countries. There is a considerable overlap between the ASIS&T and AIfIA groups, though the former is largely populated with academics.

Further signs of progress can be observed in academia. There are now dedicated degree programs in IA at universities such as Kent State and Baltimore, with many IA programs and courses offered through graduate programs in library and information studies across the nation. The establishment of such programs in such a short period of time within a slow-moving university system is testimony to the interest that has been created for IA.

While the advent of formal education in IA has arrived, the majority of professionals in the field are self-identified as information architects on the basis of their work or job title. No formal credentials are required to become an IA though it is probable that the majority of people using that title have received some education or training in LIS. Perhaps

not surprisingly, LIS programs are also the most likely home for courses and degrees in IA.

There are other routes into the profession however. A large number of IA practitioners have backgrounds in technical writing and graphic design. Skills in clear communication of ideas, structuring information flow, representing information, etc. all prove extremely valuable for the work of IA. Yet another group of IAs came from a user experience or usability background, though there remains some disagreement about the boundaries between these roles.

DEFINING IA

Formal definitions of IA tend to vary from the general to the multiple. Rosenfield and Morville offer a variety of definitions as candidates:^[1]

1. The combination of organization, labeling, and navigation schemes within an information system.
2. The structural design of an information space to facilitate task completion and intuitive access to content.
3. The art and science of structuring and classifying web sites and intranets to help people find and manage information.
4. An emerging discipline and community of practice focusing on bringing principles of design and architecture to the digital landscape.

Central to this mix is the idea of structuring information spaces for management and use, which can be interpreted in several ways, either as a relatively narrow concern with labeling, as in (1), or more broadly as a concern with facilitating interaction, as in (2). For present purposes, we emphasize the larger or broader perspective.

Other definitions abound, but it is clear that the precise wording of any one has failed to capture the terrain in such a way as to be taken as definitive. Even Wurman, in his original conception of the field, left scope for interpretation in his definition of the information architect as “the emerging 21st century professional . . . focused upon clarity, human understanding, and the science of the organization of information.”^[2]

In as much as there is or could be a science of information organization, other disciplines may lay justifiable claim to the territory: library and information scientists who have long dealt with classification and categorization of recorded knowledge; cognitive psychologists who have contributed to our understanding of information use, comprehension, and problem solving; anthropologists and sociologists who analyze cultural constructions of meaning, to name but a few.

To this extent, IA is an interdisciplinary field of practice and research, borrowing heavily from these domains.

Dillon offered a broad definition that attempted to accommodate the diversity of approaches by defining IA as “the process of designing, implementing, and evaluating information spaces that are humanly and socially acceptable to their intended stakeholders.”^[3] This not only aimed at inclusion, but bypassed any reference to IA as a discipline or field of its own, likening it more to human activities such as design or creative writing, which of necessity draw on disciplines to support process and education.

Furthermore, Dillon advocated a view of IA as craft rather than engineering, a distinction based on the lack of separation within IA between the design and the manufacture of the resulting application.^[3] As craft, IA creates as it produces, often reacting to emerging elements of its own design to drive subsequent modifications. Craft-based disciplines are less amenable to formal methodological abstraction for management and instructional purposes, which can result in them shifting or being altered radically by outside forces. One problem facing the IA community in its drive to professional status is the need to overcome abstraction and education problems in order to provide the field with the legitimacy accorded to related fields within information science.

Big IA vs. Little IA?

In the absence of formal definition, a line of division has been drawn between two competing views of the field, known generally as the Big IA vs. Little IA perspectives. Big IA is used to describe those who practice or believe in IA as an all-encompassing term for the process of designing and building information resources that are useful, usable, and acceptable. From this perspective IA must cover user experience and even organizational acceptance of the resource. On the other hand, Little IA refers to those who practice or believe that IA is a far more constrained activity that deals with information organization and maintenance, but does not involve itself in analyzing the user response or the graphical design of the information space. Big IA tends to be seen as top-down, conceiving the full product and its human or organizational impact; Little IA is viewed as more bottom-up, addressing the metadata and controlled vocabulary aspects of information organization, without dealing directly with, and certainly never evaluating formally, the user experience of the resulting space.

For present purposes we adopt the view that IA is an umbrella term for the process of designing interactive information spaces, and it is likely then that within its ranks will be advocates of specific styles, and practitioners

focusing on specific architectural issues to the exclusion of others. Reconciling these niche perspectives within a unified field remains the major challenge.

WHAT DO INFORMATION ARCHITECTS DO?

One can gain an appreciation of the process of IA by examining what practitioners actually do. An incomplete list would include:

- Illustrating key concepts or steps through graphics.
- Designing site maps.
- Creating metaphors to brand content and promote navigation.
- Developing style and formatting templates for elements of information.
- Conducting user analyses.
- Creating scenarios and storyboards.
- Building taxonomies and indices.
- Testing user experience.

Engineering approaches to the building of the IA include: programming and database design, content and source code management, functional evaluation (including usability testing), as well as final information deployment and versioning.

The breadth of these IA activities suggests that most information architects perform only a few of these tasks, owing to either skill limitations or the constraints of the IA project. Generally, IA tasks revolve around four major areas of effort. The first involves understanding the information as content and shaping its organization and access; the second includes building the abstract associations between units of content; the third focuses on developing browsing and searching functionality; and the fourth is designing the graphics, interfaces, and interaction techniques to allow users to access the body of information.

Creating Content Organization Systems

A content inventory involves identifying, collecting, and cataloging the project's content to establish the scope of materials involved, often requiring a meeting with all of the project stakeholders and initially planning out the other IA tasks. An initial information taxonomy (sometimes called a hierarchy) is also prepared by sorting the information into common, subjectively derived sets such as alphabetical, chronological, geographical, or topical among others. Derived from this taxonomy, a set of term names or labels is established to provide naming consistency when both organizing the information and describing or representing the

topics. Classifying content types and formats to provide the basis for presentation (markup) standards is also important to keep the content organized and presented consistently throughout the project, and for user consumption.

Creating Semantic Organization Systems

A semantic (logical and associative) organization of the information is created to represent the complex, objectively derived relationships that can be further understood after the project's content has been inventoried. This process may involve coding a set of data with a set of overlapping or multifaceted conceptual organizational schemes, such as those required for browsing, searching, learning a concept embedded in the information, or performing a task based on the information. In many cases, this conceptual organization has been mapped out in a content inventory, but no additional data have been added to express the more complex, often multifaceted, relationships in the information. This semantic organization would be used when accessing information via a search function and could be used to suggest alternate searches or different types of search results. These relationships are coded with metadata (information about the content such as creation date, author, location, intended use, or language) by using schemas (specific types of formal, descriptive specifications to convey syntax and structure) that can be used by machines, authors, and sometimes users to promote access for each type of information. Popular metadata schemas include the Dublin Core Metadata Initiative, which utilizes the Resource Description Framework syntax for representing this metadata in the Web.^[4,5]

Other conceptual IAs needed include thesauri (synonyms, antonyms as words or phrases) and indices (terms and phrases with links to their location in the information space), which provide users with paths for browsing through information or an array of possible keywords to be found while searching the information space. These thesauri and indices are populated by controlled vocabularies (subject domain-specific sets of terms—e.g., medical) and synonym rings (groups of words not strictly equivalent) that provide a (potentially comprehensive) variety of language to enable users to locate sought-after information.^[1]

Creating Navigation Systems

The user's view of an information space is influenced significantly by the navigation systems that provide points of access to associated information via any interaction method from simple Web links to more

