David Jank
Long Island University, Brookville, NY

An 18th Century Internet: Modeling Knowledge Organization and Information Retrieval in a Living History Museum

Abstract: The purpose of this paper is to examine knowledge organization structures and information access protocols in the Colonial Williamsburg historic restoration in Williamsburg, Virginia. It reports the results of a pilot project designed to provide preliminary models for studying such schema in the interactive learning environment of living history museums.
Résumé: Le but de cet article est d'examine les structures d'organisation de la connaissance et les protocoles d'accès à l'information lors des reconstitutions historiques de Colonial Williamsburg à Williamsburg, en Virginie. Sont présentés les résultats d'un projet pilote conçu pour dégager des modèles préliminaires d'étude de schémas dans l'environnement d'apprentissage interactif que constituent les musées d'histoire vivante

1. Introduction

The use and representation of historical artifacts in conjunction with information services is studied in a variety of settings. As with traditional library and information service environments, the design and layout of exhibits in museum settings may be viewed in terms of knowledge organization and information retrieval (Marty, Rayward, and Twidale, 2003). These patterns are also evident in living history exhibits that are not typically examined in such a manner. It is uniquely challenging to model information transfer in such environments due to the historical time period limitations surrounding character actors and information objects that are functionally dictated by historical events. In these environments, the need for adherence to historical context and organizational protocol offers particular challenges from both a knowledge organization and information retrieval point of view.

The purpose of this paper is to examine the information organization structures of the Colonial Williamsburg historic restoration in Williamsburg, Virginia. It reports the results of a pilot project designed to provide preliminary models for further exploration of the dynamics of information delivery in living history museums. This project takes a qualitative approach, using observational techniques outlined by Berg (2004). As an exploratory study, it contributes to ongoing research in museum information services by modeling information organization and transfer within established information science paradigms. Structural models are proposed that can be used to support ongoing research and conceptual mapping of information structures in living history exhibitions.

2. Background

Scholarship on the structure of museum exhibits discusses them as works in progress, and as ideas that are continually restructured as exhibitors and curators reconsider their various forms (Marty, 2006). The many forms that exhibits take are quite similar to the evolutionary aspects of more concrete textual works, as discussed by such scholars as Smiraglia (2001a) and Hjørland (1998). In these instances, information objects in museums are examined in terms of knowledge organization, instantiation, and manifestation. Further, research on museums as interactive learning environments, as evidenced in the work of Babcock (2005) and Lampert (2005), offers discourse on the role of knowledge representation in the interactive learning process. Additionally, established writings in information science concerning ideational conveyance and information access – such as the "invisible substrate" (Bates, 1999); the "conduit metaphor" (Day, 2000); and the “information grid” (Jank, 2010) – contribute to consideration of museum exhibits in terms of information organization and representation.

Hjørland and Albrechtsen (1995) discuss “domain ecologies” as a means of understanding the knowledge organization and information transfer practices governed by the knowledge sharing practices in specific information environments. In the case of Colonial Williamsburg, multiple ecologies co-exist, in that information artifacts are simultaneously used by players approaching them from "different" centuries. There is a community of 18th century restoration players, a community of visitors from the present day, and a community of scholars and historians whose role it is to provide ongoing quality assurance and fact-checking.

The ideas discussed in this paper are grounded in published scholarship that discusses physical objects as conveyors of ideational content in specific learning communities (Jank, 2010). The historic restoration of Colonial Williamsburg was selected for this qualitative study because it so closely fits the "extended metaphor of a work" (Smiraglia, 2004). Knowledge sharing and content genealogy, critical to scholarship on the extended metaphor, are central to the effective operation of the living history exhibits at Colonial Williamsburg. The purpose of this proposal is to highlight the models developed as part of the pilot project that are discussed in more detail in the research paper.

3. Knowledge organization in Colonial Williamsburg

Beghtol (2003) demonstrated that taxonomies may either be constructed based upon pre-determined classification structures (professional classification schema), or they can emerge as the result of domain-specific practices and standards (naïve classification schema). The Colonial Williamsburg restoration is best considered in terms of the latter, as it follows domain ecological structures. In its intent to recreate and depict a specific historic period of time, Colonial Williamsburg exhibits many of the characteristics basic to taxonomic design. At the level of organization, the streets, buildings, and character representations of the restoration illustrate relationships that are clearly classification-based. For example, the vegetable and floral gardens on Duke of Gloucester Street are

adjacent to the herb gardens of Bruton Parish, and so placed as to be conducive to the functioning of farmers' markets at the northern end of the street. Similarly, effort is made to ensure that costumed characters appear in colonial dress, and use colonial artifacts, that are identical in design and material to that of their personage during the 18th century.

To most observers, this would simply be common sense; however, it is this sort of logic that Beghtol (2003), Cornelius (2002), Buckland and Liu (1998) , and Tillett (1991) have all illustrated are endemic to emergent classification systems. What can be seen in Colonial Williamsburg is how lifestyle practices and day to day activities can follow a kind of order that is similar to the classification of textual artifacts. It is these internally constructed meanings of visual information that bear significance in the role that signs and symbols play in classification research (Smiraglia, 2001c).

It is possible to consider Colonial Williamsburg as a collection of works, in much the same way as we do in the world of textual documents. Figure 1 utilizes a variation on Smiraglia's (2001b) model of "a work" to illustrate the relationships extant among the physical components of Colonial Williamsburg.

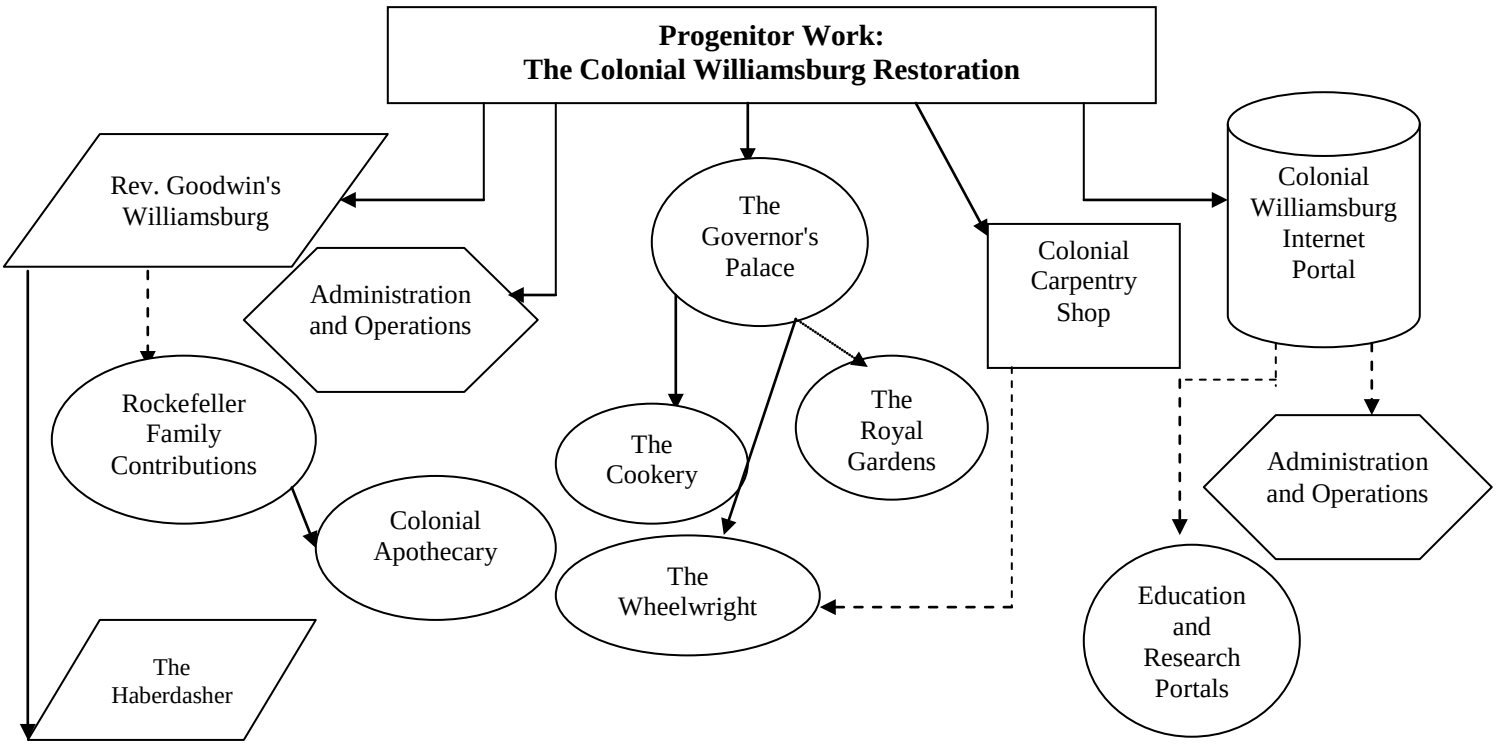

Figure 1:
The "Work" Relationship at Colonial Williamsburg

The "works" model can be applied to Colonial Williamsburg if one considers that its artifacts go through a reiteration process on a relatively regular basis. For example, the Peyton Randolph house, and the neighboring Callahan Farmhouse, each were restored during different centuries (the former at the end of the 20th, the latter during the 21st). Their foundations, on the other hand, were laid during the 18th century. Following fires and related deterioration, these buildings either fell or were torn down twice before, during the 19th and 20th centuries; yet, archaeologists and historians agree that the foundations on which the buildings now stand have remained intact since their first iteration during the 1700s.

It is not common to think of historical artifacts in such terms as "reissued works," but the buildings at Colonial Williamsburg definitely resemble edited versions with multiple instantiations, given that their foundations are authentically 1700s, and their component parts, although added in later years, were authenticated as being identical in material content and design to the original "works."

4. Information access and retrieval at Colonial Williamsburg

At first glance, it is difficult to think of Colonial Williamsburg in terms of an information retrieval (IR) system. Such "systems" are traditionally interpreted as machine-based, and as manifest in such environments as online databases and the Internet. A more philosophical reflection on IR, however, presents a meaningful structure that need not be so specifically represented. For example, Shannon and Weaver's (1949) communication model does not presuppose the existence of an automated system. Figure 2 provides an example of how a communication model for Colonial Williamsburg can be constructed.

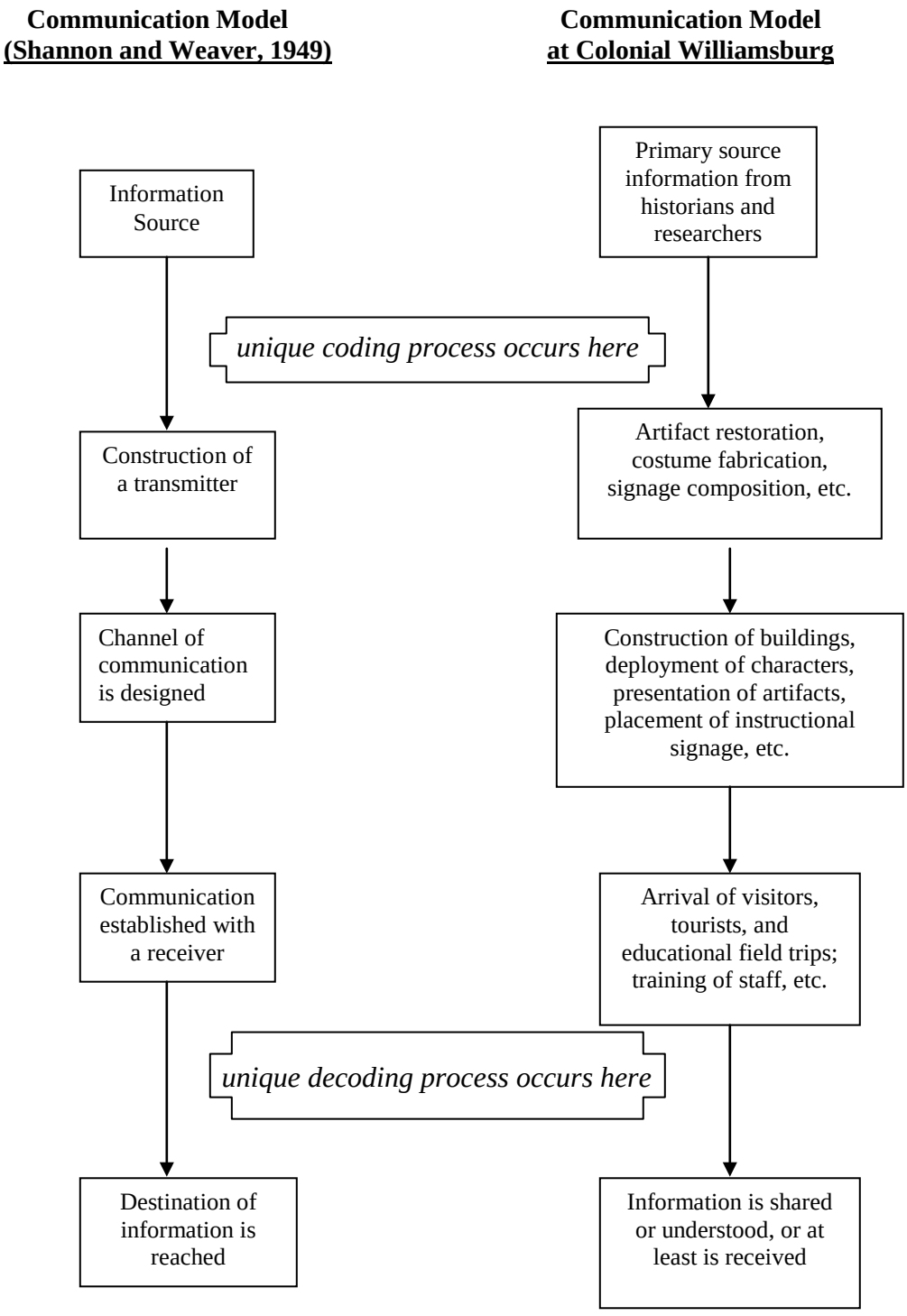

Figure 2:
The Communication Model at Colonial Williamsburg

Throughout Colonial Williamsburg, the emphasis is on "interacting" rather than "displaying" (Greenspan, 2002), a key distinction between physical museums and living history exhibits. This allows for referencing not only models that are technology driven, such as those proposed by Pao (1989), but others that relate to the transfer of knowledge via oral history, such as those proposed by Moss and Mazikana (1986). All of these contribute to a possible model for information access and retrieval in the Colonial Williamsburg restoration. Figure 3 is an attempt to design such a model.

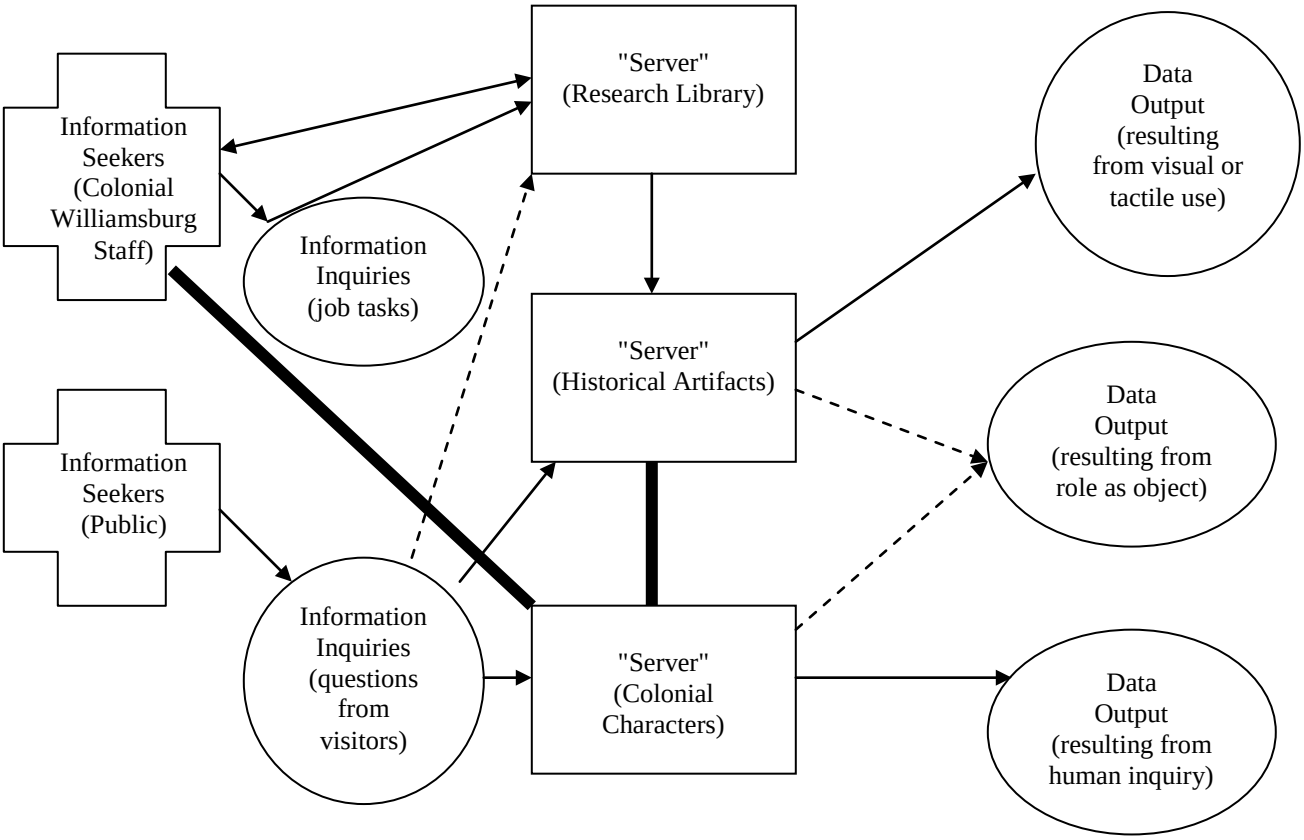

Figure 3:
Information Access and Retrieval in Colonial Williamsburg

5. Conclusion

The research conducted for this project is part of an ongoing study that attempts to model a domain ecology that has not been examined in detail. Its intent is to determine what parallels to the established scholarship in information studies as a whole can be found within that ecology. There is a wealth of source data to draw on; however, there are certain fundamental corollaries that appear to link knowledge organization for information retrieval to the design principles of living history museums.

Living history exhibits represent a rare convergence of data, information, knowledge, and users, functioning as a conduit for information organization and exchange over multiple time continua. The models proposed here further demonstrate real life manifestations of research findings in information studies scholarship outside of the realm of the printed work. It is hoped that these ideas will contribute to further scholarship on living history exhibits as a subdiscipline of information studies.

References

Babcock, Elizabeth C. 2005. Natural history as archive: Using museum exhibitions and artifacts to teach history. In *Proceedings of ALA/RUSA, American Library Association Conference.* Chicago, Illinois: ALA.

Bates, Marcia J. 1999. The Invisible substrate of information science. *Journal of the American Society for Information Science,* 50: 1043-50.

Beghtol, Clare. 2003. Classification for information retrieval and classification for knowledge discovery: Relationships between "professional" and "naïve" classification. *Knowledge Organization,* 30: 64-73.

Berg, Bruce L. 2004. *Qualitative Research Methods for the Social Sciences*. Boston: Pearson Education.

Buckland, Michael and Ziming Liu. 1998. The history of information science. In *Historical studies in information science,* ed. Trudi Bellardo Hahn and Michael Buckland. Medford, New Jersey: Information Today, 272-95.

Cornelius, Ian. 2002. Theorizing information for information science. In *Annual Review of Information Science and Technology,* 36: 393-425.

Day, Ronald E. 2000. The 'conduit metaphor' and the nature and politics of information studies. *Journal of the American Society for Information Science and Technology,* 51: 805-810.

Greenspan, Anders. 2002. *Creating Colonial Williamsburg*. Washington: Smithsonian Institution Press.

Hjørland, Birger. 1998. Information retrieval, text composition, and semantics. *Knowledge Organization,* 25: 16-31.

Hjørland, Birger, and Hanne Albrechtsen. 1995. Toward a new horizon in information science: Domain-analysis. *Journal of the American Society for Information Science,* 46: 400-425.

Jank, David. 2010. Toward a unifying ontology for human-information interaction. *Canadian Journal of Information and Library Science*, 34: 403-432.

Lampert, Lynn D. 2005. Where will they find history? The challenges of information literacy instruction and primary resource research strategies for undergraduates of the electronic age. In *Proceedings of the ALA/RUSA, American Library Association Conference.* Chicago, Illinois: ALA.

Marty, Paul F. 2006. Meeting user needs in the modern museum: Profiles of the new museum information professional. *Library and Information Science Research,* 28: 128-144.

Marty, Paul F., W. Boyd Rayward, and Michael B. Twidale. 2003. Museum informatics. In *Annual Review of Information Science and Technology,* 37: 259-294.

Moss, M.W. and P.C. Mazikana. 1986. Archives, oral history, and oral tradition. *ERIC Document ED272215.* Washington, D.C.: U.S. Department of Education.

Pao, Miranda Lee. 1989. *Concepts of Information Retrieval*. Englewood, Colorado: Libraries Unlimited.

Shannon, Claude E. and Warren Weaver. 1949. *The Mathematical Theory of Communication.* Urbana, Illinois: University of Illinois Press.

Smiraglia, Richard P. 2001a. Further reflections on the nature of 'a work': An introduction. *Cataloging and Classification Quarterly,* 33(3/4): 1-12.

Smiraglia, Richard P. 2001b. *The Nature of "a work": Implications for the Organization of Knowledge*. Lanham, Maryland: Scarecrow Press.

Smiraglia, Richard P. 2001c. Works as signs, symbols, and canons: The epistemology of the work. *Knowledge Organization,* 28: 192-202.

Smiraglia, Richard P. 2004. Knowledge sharing and content genealogy: Extending the "works" model as a metaphor for non-documentary artefacts with case studies of Etruscan artefacts. In *Knowledge Organization and the Global Information Society: Proceedings of the Eighth International ISKO Conference, 13-16 July 2004, London, U.K.* Würzburg, Germany: Ergon Verlag.

Tillett, Barbara. 1991. A taxonomy of bibliographic relationships. *Library Resources and Technical Services,* 35: 150-158.