

## **New Frontiers in Management Research: The Case for Industrial Archeology**

**William Crandall, University of North Carolina at Pembroke**  
**Alan Rowe, West Virginia Division of Culture and History**  
**John A. Parnell, University of North Carolina at Pembroke**

### **ABSTRACT**

*Management scholars traditionally rely on the review of journals and empirical data for information used in research projects and in the classroom. However, there is also a vast amount of material that remains virtually untapped by many management researchers - the artifacts, pictures, and remains of industrial and commercial organizations. Industrial archeologists specialize in studying organizational life, particularly, the life of manufacturing facilities, by examining of empirical data, as well as pictures, records, internal and external correspondence, other printed materials, and artifacts. This article delineates how management scholars can also take advantage of the wealth of secondary material that exists by integrating an industrial archeological perspective into their teaching and research programs.*

### **NEW FRONTIERS IN MANAGEMENT RESEARCH: THE CASE FOR INDUSTRIAL ARCHEOLOGY**

The majority of published management research relies primarily on empirical data as information sources. However, a number of researchers have called for the integration of qualitative methods to add richness to explanations and measure constructs elusive to extant quantitative approaches (Jick, 1979; Kekale, 2001; Parnell & Bell, 1991). Within the industrial archeological framework, additional avenues of inquiry, including the ruins, photographs, documents, and artifacts of old industrial and commercial sites, have not yet been fully utilized by most scholars. In many cases, these sources can augment traditional approaches and build more effective research networks. Borrowing from this perspective, this paper offers such alternatives to supplement traditional management research information assimilation.

Industrial archeology examines ruins from the past, but specifically, the remains of old buildings, artifacts, and other related industrial and technologically specific sites. Potential study areas include old mills, textile and steel plants, canals, bridges, coalmines, and railroads. Typically, this area of study has been reserved for archeologists, engineers, architects, historians, and artists. Unfortunately, management scholars have been slow to integrate this mode of inquiry. However, this area can serve as an exciting and insightful supplement to many research streams, providing rich descriptions and realms of understanding that can often be difficult, if not impossible, to duplicate through quantitative forms of inquiry.

This article offers a brief overview of industrial archeology and its prospective application to management scholarship. A non-technical perspective appropriate for researchers other than archeologists is utilized. Resources and motivation for the management researcher's involvement are also presented.

## **A BRIEF REVIEW OF INDUSTRIAL ARCHEOLOGY**

### **Definition and Scope of Inquiry**

A number of definitions of industrial archeology have been offered, most of which are consistent in describing a discipline that examines the remains of technology and industry. According to an early definition, industrial archeology (IA) is concerned with the discovery, recording, study, and where appropriate, the preservation of the physical remains of past industrial society (Butt and Donnachie, 1979). Recently, the Smithsonian Institution Archives Center (2001) offered this overview of industrial archeologists and their work:

“Industrial archeologists study and measure industrial sites and structures, document them without removing artifacts, and encourage their preservation or adaptive reuse. Industrial archeologists combine their fieldwork with other sources to arrive at a better understanding of the time period, industry, or technology in question. To bring the site to life and put it into a meaningful human and industrial context, they interview retired workers, visit still-active industrial sites, examine museum collections, and study old photographs, trade catalogs, memoirs, correspondence, corporate records, and publications.”

Industrial archeology topics typically include an eclectic blend of technological, commercial, and industrial sites, although most scholars tend to specialize in a specific area, such as:

- mills - including steel, cotton, and textile
- canals
- bridges
- railroads - including stations, the rails themselves, and trains
- ports
- sawmills
- automobile plants
- mines - including coal, copper, and gold
- tunnels - including steam, water, subway, and transportation
- power stations.

Traditional archeologists study ruins, often focusing on remains that are beneath the ground. In contrast, industrial archeology often focuses on ruins that are above the ground (Minchinton, 1981), with the obvious exceptions of mines and tunnels. The key point of focus is an abandoned

ruin, such as a steel mill that is no longer operational, an abandoned automobile plant, an antiquated power station, or an impassible bridge.

The artifacts that accompany ruins are also studied, many of which end up housed at technology museums. For example, the Museum of American Textile History, holds a vast collection of textile tools and at one point, was considered to house the largest IA collection in the world (Truman, 1986). Even old discarded computers and their accompanying hard drives are studied as historical artifacts. One archeologist even gleaned insights about the culture of the 1980s and 1990s from the data and files often left on discarded computers (Finn, 2001). Underground digs have also been pursued; such as excavations that have been conducted at Dunbar Wharf in London (Divers, 2000), wooden waggonway remains in Sunderland, England (Ayris, Nolan, & Durkin, 1998), and a sawmill in southeastern Kentucky (Day & Kerr, 1999).

### **IA as a Unique Perspective**

Industrial archeology is an eclectic discipline, but is unique in its focus on methods of technology and industry. Distinctions should be made among the areas of commercial archeology, social archeology, and urban archeology.

Commercial archeology examines the buildings, artifacts, structures, signs, and symbols of the 20th-century commercial landscape (Society for Commercial Archeology, 2002). Topics of interest include roadside diners, old motels, amusement parks, roadways and turnpikes (such as Route 66 and the Pennsylvania Turnpike), restaurant chains, tourist attractions, and automobile memorabilia. Some might argue that this interest area is not true archeology, since there is not an emphasis on excavations and ancient cultures. Nonetheless, the history of these artifacts and their aesthetic qualities are of great interest to enthusiasts since they do illustrate the commercial prosperity of the automobile age (Silberman, 1991).

Social archeology focuses on industrial workers and their subsequent living conditions, emphasizing such areas of study as housing and industrial settlements, churches, and leisure and entertainment areas (Minchinton, 1981). Examples include Timmins' (2000) account of housing quality in rural British textile colonies and Crosby's (1998) description of Silver End in Essex, England. The Silver End village was built for the workforce of the Crittall Manufacturing Company and was considered a model housing project for its time. Anderson (2001) examined the company towns of iron furnace operations in the Hanging Rock region of southern Ohio, discovering that company towns were located near the furnaces and included all of the necessities of worker life such as prefabricated homes, garden plots, a church, a school, and a company store. The distinction between social and industrial archeology is sometimes blurred (Minchinton, 1981).

While there are actually hundreds of organizations that have interest areas with industrial archeology, most of these are related to some particular field within the discipline. However, two organizations serve as umbrella associations, striving to unify the various efforts at industrial exploration in their respective countries. The older of the two, the Association for Industrial

Archeology is based in Britain while the Society for Industrial Archeology is based in the United States. Both associations publish journals containing refereed work in IA.

The Association for Industrial Archeology (AIA) seeks to document the industrial heritage of Britain, the birthplace of the industrial revolution. The Society for Industrial Archeology (SIA) was founded in 1971 at a conference held at the Smithsonian Institution in Washington, D.C. The SIA serves as a medium of exchange for those working on projects related to industrial archeology, generates bibliographical materials for researchers, and creates awareness of the industrial archeology to the public with the goal of promoting historic preservation (Hyde, 1991).

### **TOWARDS AN INDUSTRIAL ARCHEOLOGICAL PERSPECTIVE IN MANAGEMENT RESEARCH**

Specific training in industrial archeology is neither necessary nor feasible for most management scholars. Benefits can be attained by studying what other industrial archeologists have done, as well as by augmenting traditional management issues in new and creative ways. Indeed, the reader may begin to see that the distinction between an industrial archeologist and a management historian is not always clear.

Many management scholars conduct research by collecting empirical data and reviewing published studies in scholarly journals. By adopting an IA perspective, other methods may also be incorporated, such as the viewing of photographs, reviewing of old documents, visiting industrial ruins, examining post cards, using websites as a research tool, and reading selected fiction works.

The choice of such methods is often based on the philosophical perspective of the researcher. Specifically, in the area of social research, the division of quantitative research from qualitative methods may draw some clear distinctions. In many respects, the division between quantitative and qualitative research in social science exhibits many of the same characteristics as other divisions in society. Researchers with a quantitative perspective often disparage qualitative forms of inquiry as imprecise and unscientific, whereas qualitative researchers may regard quantitative research as superficial and inappropriate (Babbie, 1986; Fowler, 1986).

Each management scholar must determine how his or her research paradigm is influenced by the tension between quantitative and qualitative approaches. In the 1980s, social science research including behavioral management studies began to adopt a decidedly quantitative perspective. One of the major reasons for this shift was the newfound ability of computers to process large amounts of quantitative data. Understandably, new scholars emerge from graduate schools equipped to exploit quantitative analysis to the fullest (Babbie, 1986). This trend has continued as many management scholars conduct their dissertations from the scientific method of question, hypothesis proposal, data collection, quantitative analysis, and discussion.

Although the scientific method/quantitative paradigm is a valid perspective, IA challenges the management researcher in at least three ways: First, numerical data that provides insight into a problem may not exist. Indeed, the nature of the study may lead the researcher in different non-

empirical directions. For example, survey research to current employees of a defunct organization is not possible, although it *might* be possible to survey former employees. If the number of former employees available is small, then interviews or oral histories may be conducted instead. These methods of research move away from the quantitative and towards the qualitative realm.

For the more hopeful quantitative researcher, old records indicating financial performance of a firm or industry may be available for analysis. However, much of this data is not easily found on computer data sets. Instead, the extraction of data may have to occur while sitting in the collections room of a major library, or sifting through the files of a dusty industrial warehouse. Such methods of data collection may exasperate the patience of the contemporary management scholar.

A second difference is the shift of focus from the present or recent past to the distant past. Whereas, archeology typically examines the distant past, management researchers generally consider only the more recent past. But do linkages exist between this past and contemporary management phenomena? Can the distant past be viewed as an isolated microcosm of organizational life? The IA perspective answers both questions in the affirmative. The industrial archeologist works to increase understanding of that early history to enhance the understanding present phenomena.

Third, the IA perspective seeks to understand, not necessarily predict organizational phenomena. In this regard, industrial archeology has an unusual similarity to chaos theory, a metaphor used by some organizational researchers that seeks to understand the workings of the entity, particularly when the behavior of the system unfolds in an apparently random sequence that is difficult to define using linear cause and effect analysis (Murphy, 1996). In a similar manner, industrial archeology seeks to understand the past, drawing from multiple sources of information. It is not a linear model, except in a time frame perspective.

Chaos theory also holds that a small change in the system can cause a larger change, which could become amplified over a period of time (Pascare, 1999). The Bhopal disaster illustrates how a series of faulty maintenance conditions form a chain of events that are eventually triggered by a somewhat minor occurrence that eventually escalates to a deadly gas leak (Sethi & Steidlmeir, 1997). Chaos theory and industrial archeology both seek to explain why a system behaves the way it does based on a comprehensive analysis of multiple variables and sources of information. While chaos theory is inherently a mathematical model, however, industrial archeology is a historical model.

Industrial archeology incorporates the “unknowns” that are not apparent in empirical research, which relies on linear, cause and effect thinking. These unknowns can be deciphered by studying artifacts, pictures, and obscure documents that are not easily quantifiable, yet can play a large part in understanding organizational outcomes. Several examples discussed in the next section illustrate this point.

## ALTERNATE SOURCES OF INFORMATION GATHERING IN MANAGEMENT RESEARCH

Much of today's management research focuses on the review of academic and practitioner based journals. This function is crucial in order to build a coherent literature review and to form hypotheses. The collection of data is also used by researchers. Organizational behavioralists often construct surveys to measure the "soft side" of organizational life, whereas strategic management researchers frequently access financial data in order to access organizational performance. Indeed, quantitative approaches are necessary for hypothesis testing and the analysis that explains what the results revealed.

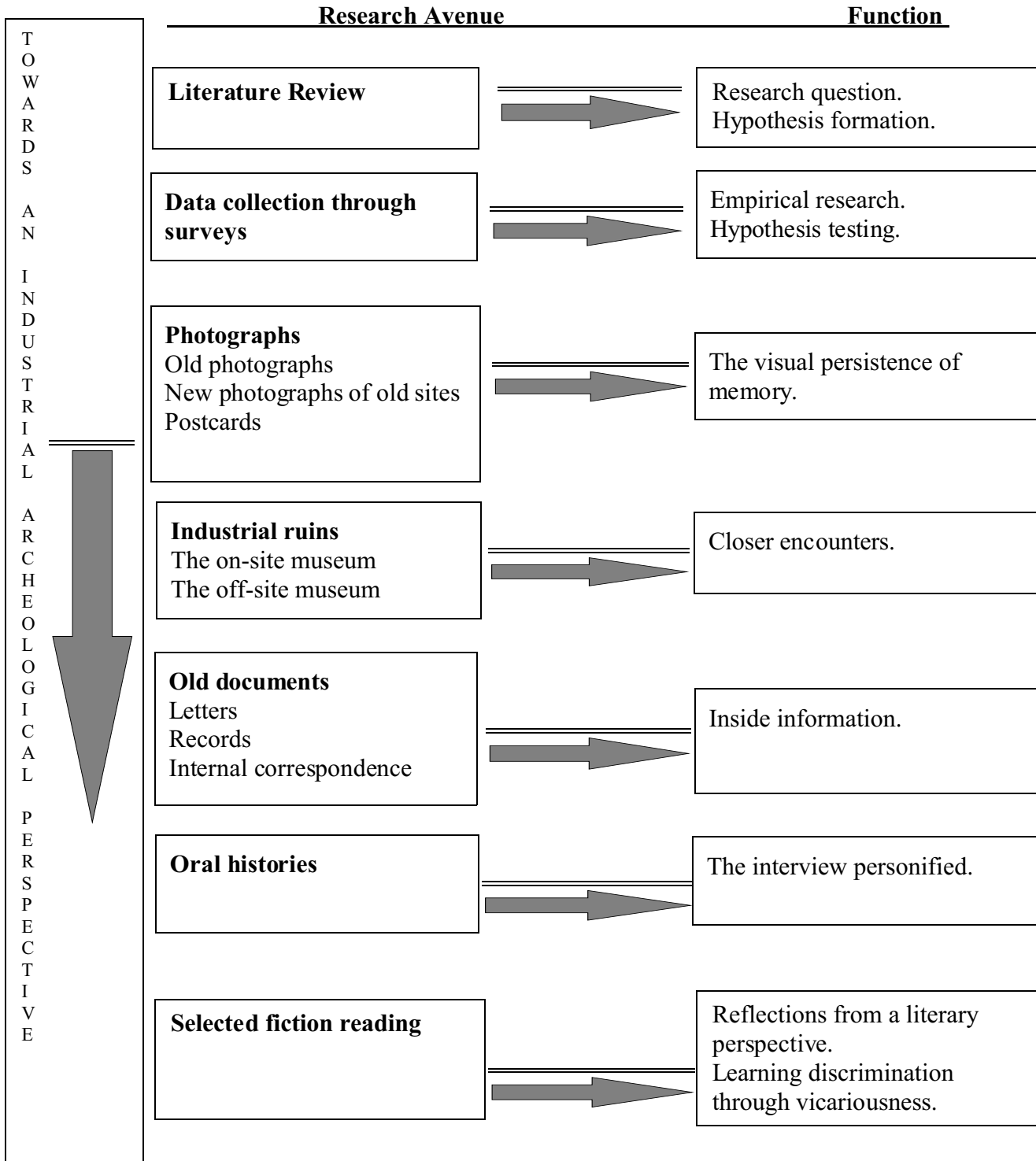
However, not all constructs can be easily quantified. From an IA perspective, alternate forms of information gathering can be used to supplement journal research and data collection. These forms include the use of photographs, visits to museums, studying old documents, learning from oral histories, and even taking part in archeological dig. Figure 1 offers an industrial archeological perspective for the management researcher

### **The Viewing of Photographs**

Photographs can be studied to glean insights that may not be readily apparent in a journal article. For example, in their documentary of the Bethlehem Steel plant, Schwarz and Wilkes (1999) show a recent photograph of an old room filled with some interesting artifacts, baskets with hooks on them. Workers would place their clothes and other personal belongings in this basket and then hoist them to the ceiling via a pulley, which was locked to keep the items secure from theft. This system served the same function as modern day lockers and used less space as well (Schwarz & Wilkes, 1999). While the written word can describe these artifacts, it does not adequately give the reader a feel for the visual impact of these baskets, nor the aesthetic surroundings of the room in which they were kept; indeed, a picture can be worth a thousand words. Interestingly, this room was once referred to as the welfare room, whereas today it would be recognized as the employee locker room.

The above example discusses a newer photograph taken of an old item. However, many dated historical photographs can bring unique insights to the management scholar. The quality of the photograph can give the researcher a feel for the mood of the time, as well as the adequacy of the photographic medium. In addition, older photographs preserve an image that is typically, no longer accessible. For example, the construction of the Hawks Nest Tunnel, built in West Virginia to transport water through a mountain to a hydroelectric plant, claimed at least 700 workers (Cherniak, 1986). Today, the operating tunnel is full of water and inaccessible. To understand how so many workers could perish from breathing related illnesses, Cherniak's book included photographs of the interior of the tunnel *before* it was activated for use. Viewing these photographs transports the reader to the scene of the activity, and adds a visual dimension that aids understanding of what Cherniak has labeled, America's worst industrial accident. The old saying, "a picture is worth a thousand words," definitely applies in viewing industrial related photographs.

**Figure 1 - Alternate sources of management research**



## Examining Postcards

Although postcards are an unlikely resource for most management scholars, they can provide an abundance of industrial history. A number of websites exist that depict the industrial history of various cities (see Rochester NY for an excellent example). In addition, some universities house expansive postcard collections, such as Loyola Marymount's collection with over one million postcards. Researchers have used this collection to help illustrate a book on kitsch architecture, document the evolution of a Los Angeles neighborhood, and study gender differences in messages written by men and women (Rosenblatt, 1991).

Like photographs, postcards offer a visual persistence of memory. In fact, postcards may offer the only historical image available for study (Olmsted, 2000). In many respects, postcards are meant to purposely reflect the culture of society during the period of their issue. As Willoughby (1992:89) noted, "The beauty of the picture postcard is that it reflects the society in which it originated. The fads and fashions, the latest inventions, everyday items and products long since obsolete all appear and are proudly depicted with the purpose of appealing to the members of that society - but with a charm that endures to the present day."

The sub-area of commercial archeology is well represented with postcard documentaries. One of the first books written on the subject, *Gas, Food, & Lodging*, by John Baeder (1982), depicts American roadside history using illustrations exclusively from postcards. Today, many books and websites abound with commercial history depicted with postcards.

## Reviewing of Old Documents

Documents in this paper indicate any reading material that is not specifically a scholarly journal or general reading magazine. For example, in his documentary of the Hawks Nest incident, Cherniak (1986) examined U.S. Congressional Testimony from victims of the disaster. Document retrieval has been instrumental in enhancing the Engineering and Industry Collections at the National Museum of American History (Smithsonian Institution). In one case, a passing engineer retrieved documents from the curb at the home of James Forgie, a recently deceased tunnel engineer for the Pennsylvania Railroad. The discarded documents contained drawings, photographs, and comments from his work on tunnels during the early 1900s (Kernan, 1998).

Letters, memos, and reports can also be a source of interesting data. In 1985, a series of documents were retrieved by a group of Georgia Institute of Technology students from the old Fulton Bag and Cotton Mills factory in Atlanta. This collection of information detailed the company's efforts to infiltrate the threatening union movement within the plant (Wilson, 1992). Apparently, Oscar Elsas, the president of the mill from 1914 to 1923 took great lengths to keep the union out of his plant. Documentation reveals that he had hired spies to monitor any potential union activity.

Even humorous events can be found by examining old documents. For example, one of the reports from 1914 revealed that two spies had hidden a microphone in order to eavesdrop on a union



meeting. Unfortunately for the spies, the microphone began to emit noise, and soon the plot was uncovered. The spies, fearing for their safety, boarded a train and fled the area. In Elsa's report, he simply noted that the "Dictograph men quit today" (Wilson, 1992: B5). Today, these retrieved documents can be found in a special collection at the Price Gilbert Memorial Library at Georgia Institute of Technology.

Other special collections exist at university libraries and can include a wide assortment of materials such as letters, photographs, internal correspondence, and reports. One such collection, the J. & W. Seligman Archives, is housed at the University of Oklahoma within the Harry W. Bass Business History Collection. One part of this collection, letters and internal correspondence, reveals the working operations of this investment banking firm and its relationship with its stakeholders in the financial community (Wren, 2000). The actual letters are suggestive of archeological remains as Wren (2000:113) described in this account:

"The early records are difficult to read because of the crude copying technology before the typewriter, carbon paper, mimeographing, and xerography. The letters were hand-written with ink that had been thickened with sugar or some other substance. A letter was then placed face up on the flat surface of a press. A dampened sheet of thin absorbent paper was placed over the original and the two were pressed together by a roller or screw press. The resulting impression was reversed and had to be read from the back of the absorbent paper, which was thin enough to be transparent. In using the records it is necessary to become accustomed to the use of this thin paper as well as reading in the style of the writer."

Other institutions that have substantial collections for business history research include the Kress Library of Business and Economics at Harvard's Business School (Rogers, 1986), and the Historical Society of Pennsylvania (Little, 1996).

Interestingly, some analysts may wonder if saving large collections of "paper" will be necessary in the future with the availability of electronic storage. The answer appears to be a resounding yes. As Ed Rider, an archivist at Proctor & Gamble put it, "The electronic medium is more fragile than the paper medium ever was ... Paper is still the best way to save history", (Frazier, 1999: 3). In addition, electronic data may not be readily accessible with updated versions of software.

### **Visiting Industrial Ruins**

Many industrial ruins are now museum sites. These sites offer the advantage of careful reconstruction of remaining buildings and equipment in order to provide an educational experience to the visitor. They also reveal the archeological data at the actual site, as opposed to an off site or multimedia approach museum. Such new media approaches to museums have been criticized because they may draw subjective interpretations that are not supported by the archeological data (Dean, 1999). Although museums have always been popular sites for class field trips, they seem

to have been utilized more by elementary and secondary school teachers than by management scholars.

One example of an industrial site turned museum is the old Bethlehem Steel plant complex in Pennsylvania. Part of this facility has been converted into the National Museum of Industrial History, a project that was created in association with the Smithsonian Institution (McIntosh, 1999). Several furnaces that produced pig iron and later gave birth to the steel industry in Birmingham, Alabama have also been converted to museums. One example is Tannehill Historical State Park in Alabama, which houses the Tannehill furnaces and is responsible for making ordinance for the Confederate Army during the Civil War. In downtown Birmingham, the Sloss Furnaces are available for study by the public.

### **Oral Histories**

The interviewing of an individual forms the basis of oral history research. The management scholar may either conduct oral history research or access research that has been conducted by others. Oral history methods are typically emphasized by history scholars (K'Meyer, 1998), whereas management scholars have often not received training in this approach.

Accessing and citing the work of others is a more feasible approach for the management researcher. Fortunately, journals are available that offer oral histories in an article format. Crandall & Crandall, (2001) accessed oral histories contained in an academic journal as part of their study of the Hawks Nest Tunnel disaster. A number of oral history based websites also exist that contain interview summaries, transcripts, excerpts, and audio files (McClellan, 2001). Reti (1999) outlined the "Hard Hat Research Project" that investigated stories of industrial workers and their relationship to modified artifacts such as hard hats, lunch boxes and toolboxes. The same article also documents "Working in Steel", a research project based on workers at the AK Steel Corporation's Middletown Works.

### **Selected Fiction Reading**

The reading of novels has been advocated in the industrial archeology community as a way to gain insight on historical events . As Gross (2001) noted:

"Jack Conroy's depiction of the assembly lines of the 20s in *The Disinherited*, William Attaway's Monongahela steel mills and the conflicts between blacks and immigrants in *Blood on the Forge*, John Dos Passos, Ralph Ellison, Upton Sinclair, Thomas Bell – these writers studied the material culture of and/or participated in the industries that play major roles in their fiction," (Gross, 2001:39).

In addition, a host of depression-era novels exist that depict life during this difficult period of American history. Steinbeck's *Grapes of Wrath* is famous, but lesser known, but equally moving is Skidmore's *Hawks Nest*. Both depict the often-impossible lifestyles of migrant American workers

and are detailed with factual accounts and artifact descriptions of life on the road as part of the working poor.

The reading of novels adds a dimension of vicariousness to the researcher. The ability to transport the reader in space and time, via literary prose, has long been an effective teaching tool. Therefore, the use of novels in management research can also extend to students as well. Readers are also given the challenge of comparing fact with fiction, a necessary element in developing the discriminating researcher. After all, not all so-called “research” is believable and students especially must learn to distinguish “facts” from reality.

### **Utilizing the Internet**

The use of the Internet among non-academic users is common. In a recent study of Research & Development practitioners, the average time spent on the Internet for work purposes was 66 minutes a day. Almost 68 percent of the respondents used the Internet to read scientific journals (Studt, 2000). On the other hand, academic users, including management researchers, need five basic elements for effective electronic information retrieval—accessibility, timeliness, readability, relevance, and authority—the first three of which are addressed effectively via the Internet in terms of academic research (Kibirige & DePalo, 2000).

Internet research has the advantage of accessing journal articles, photographs, postcard collections, internal documents, oral histories, and archeological excavation projects—resources not really available to most management scholars. In addition, university-licensed databases, provide researchers with complete articles. However, websites dedicated to the ruins of old buildings and industrial sites, may not be fully appreciated by management researchers. For example, *The Fabulous Ruins of Detroit* (2002) is a website that contains numerous high quality photographs of now unused buildings, including hotels, neighborhoods, department stores, and automobile plants. Today, anyone can read about urban decay caused by the downsizing of automobile plants, the absence of photographs make it virtually impossible for the reader to fully appreciate the devastation caused by these closings. *The Fabulous Ruins of Detroit* captures this demise in a way that cannot be fully appreciated from text only.

### **UTILIZING INDUSTRIAL ARCHEOLOGY IN MANAGEMENT RESEARCH: AN EXAMPLE**

Crandall & Parnell (2001) utilized website research, artifact study, site visitations, and published studies to develop a case study on the once popular Howard Johnson’s restaurant chain, presently struggling for survival. The study began by accident when the first author accessed a website (Kummerlowe, 2000) on the chain and began studying photographs of old restaurants, many of which no longer exist. This fact is significant since a record of restaurant sites and pictures was still available. After extensive study of the photographs, the author determined that an academic research paper could be developed.

A formal review of the book and journal literature on the chain served as a basis for much of the text of the project. Available artifacts and printed materials were also observed, such as menus, brochures, postcards, salt and pepper shakers, ashtrays, and photographs provided by a colleague. While some management scholars may minimize the value of this research approach, these items add an aesthetic quality to the knowledge of the chain that cannot be gleaned through articles and books. They also illustrate the strong brand identity the chain was able to exert in the restaurant industry.

Interestingly, the website founder, Richard Kummerlowe, was also a trained historian. Hence, the site had a distinct academic flavor. The founder also graciously permitted the authors to use photographs of the restaurants to make presentations on the history and demise of the chain. Without the photographs, the audience is deprived of a visual element necessary to understanding the chain.

Several site visitations were also made. In one instance, the first author observed that a single employee was operating the entire restaurant for a short period of time before a second employee arrived to assist. The image of this visit is remarkable: A sit-down restaurant, which once might have employed up to ten employees or more on one shift, has been reduced to a commercial ghost town.

Other visual cues were observed that are not always extracted in a journal article, such as the booths piled in a corner (no longer in use), the lone customer working cross-word puzzles, the waitress taking an order and subsequently preparing the food by herself, and the dated nature of the chairs and tables. This once grand organization, the premier roadside eatery at one time-is now in the decline stage of its organizational life. The on-site visitation offered a grim reminder that death is real, even to a restaurant chain.

## **CONCLUSION AND FUTURE DIRECTIONS**

The empirically, scientific model prevalent in most published management research has produced a wealth of knowledge in the field. This paper does not challenge the validity of this line of research. However, ample evidence exists that the IA perspective has much to offer many management scholars. A number of prominent researchers have noted the value of such alternative perspectives (King, 1995; Weick, 1979; Whiteman & Cooper, 2000).

The limited application of IA to most contemporary management research appears to emanate from limited training of management scholars in such methods (K'Meyer, 1998) and the current preference for an empirical paradigm (Fowler, 1986). Nonetheless, existing methods can benefit from qualitative approaches that provide richness and understanding. The industrial archeology perspective provides such a model.

Broadly speaking, the application of IA to prevalent quantitative methods of inquiry could also include other qualitative methods as well. Calls for triangulation of quantitative and qualitative methods, as well as the application of phenomenological approaches, have been made in the

literature (e.g., Harmon, 1990; Jick, 1979; Kekale, 2001; Parnell & Bell, 1991). Nonetheless, change has been slow to occur, as the predominant approaches utilized to study organizations remain predominantly quantitative.

Interestingly, although a number of U.S. institutions of higher learning offer programs of study in archeology, only Michigan Technological University offers a degree specifically in industrial archeology. MTU's Master of Arts program stresses an interdisciplinary approach to the field that includes the study of archaeology, historic preservation, the history of technology, and anthropology. West Virginia University and Brown offer some training in IA, but not a degree. In fact, most practitioners in IA do not have degrees, but are self-taught (Hyde, 2001). In Britain, the University of Birmingham School of Continuing Studies offers a Certificate of Higher Education in Industrial Archeology.

Research is also needed that provides additional suggestions outlining *how* IA can augment traditional approaches. Indeed, IA and the scientific method can be integrated into a comprehensive approach, but these approaches are considered to be widely divergent, as is the case with most qualitative and quantitative methods. It is our aim that this paper spark the development of this line of inquiry.

## REFERENCES

- Anderson, T. G. 2001. From ravaged to recovered: The landscape of southern Ohio's Hanging Rock Region. *Now & Then*, 18 (3), 29-33.
- Ayris, I., Nolan, J., & Durkin, A. 1998. The archeological excavation of wooden waggonway remains at Lambton D Pit, Sunderland. *AIA Industrial Archaeology Review*, 20.
- Babbie, E. 1986. *Observing ourselves: Essays in social research*. Belmont, CA: Wadsworth Publishing Company.
- Baeder, J. 1982. *Gas, Food, and Lodging: A Postcard Odyssey Through the Great American Roadside*. NY: Abbeville Press, Inc.
- Butt, J., & Donnachie, I. 1979. *Industrial archaeology in the British Isles*. London.
- Cherniak, M. 1986. *The Hawk's Nest incident: America's worst industrial disaster*. New Haven, CT: Yale University Press.
- Crandall, W. R., Crandall, R. E. 2001. Revisiting the Hawks Nest Tunnel incident: Lessons learned from an American tragedy. *Proceedings of the 37<sup>th</sup> Annual Meeting of the Southeastern Chapter of the Institute for Operations Research and the Management Sciences (INFORMS)*, Myrtle Beach, SC.

- Crandall, W. L. & Parnell, J. A. 2001. Howard Johnson's: Rise and fall of an American icon. *FIU Hospitality Review*, 19 (2), 23-34.
- Crosby, T. 1998. The Silver End Model Village for Crittall Manufacturing Company Ltd. *AIA Industrial Archaeology Review*, 20.
- Day, G. L., & Kerr, J. P. 1999. An archeological view of a southeastern Kentucky sawmill. *SIA Annual Conference Abstracts*, Savannah, GA.
- Dean, E. 1999. The site museum: A means of presenting, revealing, or reconstructing the past? *Journal of Conservation and Museum Studies*, 6.
- Divers, D. 2000. Excavation of post-medieval wharf side buildings, Dunbar Wharf, Narrow Street, Limehouse 1996. *AIA Industrial Archaeology Review*, 22 (1).
- Finn, C. 2001. Rescuing techno-trash. *Archeology*, 54 (3), 28-29.
- Fowler Jr., F. 1988. *Survey Research Methods*. Newbury Park, CA: SAGE Publications.
- Frazier, M. 1999. Local business history's 'Indiana Jones'. *Cincinnati Business Courier*, 16 (38), 3.
- Gross, L.F. 2001. Industrial archeology: An aggressive agenda. *The Journal of the Society for Industrial Archeology*, 27, 37-40.
- Harmon, M.M. 1990. Applied phenomenology and organization. *Public Administration Quarterly*, 14(1), 10-17.
- Hyde, C. K. 1991. The birth of the SIA and reminiscences by some of its founders. *The Journal of the Society for Industrial Archeology*, 17 (1).
- Hyde, C.K. 2001. Wither industrial archeology? *The Journal of the Society for Industrial Archeology*, 27, 41-44.
- Jick, T.D. 1979. Mixing qualitative and quantitative methods: Triangulation in action. *Administrative Science Quarterly*, 24, 602-611.
- Kekale, T. 2001. Construction and triangulation: Weaponry for attempts to create and test theory. *Management Decision*, 39 556-562.
- Kernan, M. 1998. Catching a glimpse of America's industrial past. *Smithsonian*, 29 (3), 22.
- Kibirige, H. M., & DePalo, L. 2000. The Internet as a source of academic research information: Findings of two pilot studies. *Information Technology and Libraries*, 19 (1), 19.

- King, A. 1995. Avoiding ecological surprise: Lessons from long-standing communities. *Academy of Management Review*, 20 (4), 961-985.
- K'Meyer, T. E. 1998. "It's not just common sense": A blueprint for teaching oral history. *The Oral History Review*, 25 (1&2), 35+.
- Kummerlowe, R. 2000. *America's landmark: Under the orange roof*. [Web page]. Available <http://www.autoage.org>. [Accessed 3/28/00].
- Little, C. J. 1996. Business history holdings at the Historical Society of Pennsylvania. *Business History Review*, 70 (1), 91+.
- McClennan, M. L. 2001. Net survey - Using oral histories on the Internet. *History Computer Review*, 17 (2), 49+.
- McIntosh, R. J. 1999. Listening to the mill: Growing up in the shadow of "the steel". *Archeology*, 52 (6), 54-56.
- Minchinton, W. 1981. Defining industrial archeology. *History Today*, 31, 60-61.
- Murphy, P. 1996. Chaos theory as a model for managing issues and crises. *Public Relations Review*, 22 (2), 95 - 114.
- Olmsted, R. A. 2000. Vintage postcards as historical images: Ghosts from the Gipper's era. *Cultural Resource Management*, 23 (10), 5-9.
- Parnell, J.A., & Bell, E.D. 1991. Phenomenology revisited: An examination of its role in contemporary management research. *Asia Pacific International Management Forum*, 17(4), 12-13.
- Pascale, R. T. 1999. Surfing the edge of chaos. *Sloan Management Review*, 40 (3), 83+.
- Reti, I. 1999. Oral history on the web. *The Oral History Review*, 26 (2), 147.
- Rogers, R. R. 1986. The Kress Library of Business and Economics. *Business History Review*, 60, 281-289.
- Rosenblatt, J. 1991. Old postcards: Loyola has a million. *Chronicle of Higher Education*, December 11, B5.
- Sethi, S. P., & Steidlmeir, P. 1997. *Up against the corporate wall: Cases in business and society*. New Jersey: Prentice Hall.
- Silberman, N. A. 1991. Archeology of the Automobile Age. *Archeology*, 44 (3), 72.

Schwarz, R., & Wilkes, S. 1999. A mill that shaped a nation: Industrial archeology at Bethlehem Steel. *Archeology*, 52 (6), 46-52.

*Smithsonian Institution Archives Center*, 2001. Website at <http://americanhistory.si.edu/archives/e-2.htm>. [Accessed 1/4/02].

*Society for Commercial Archeology*, 2002. Website at <http://www.sca-roadside.org/> accessed 1/5/02.

Studt, T. 2000. Researchers integrate Internet tools into their work. *R & D*, 42 (6), E 13.

*The Fabulous Ruins of Detroit*, 2002. Website at <http://www.detroityes.com/home.htm> . [Accessed 1/5/02].

Timmins, G. 2000. Housing quality in rural textile colonies, c. 1800- c. 1850: The Ashworth Settlements revisited. *AIA Industrial Archaeology Review*, 22 (1).

Truman, D. 1986. The Museum of American Textile History: Archival sources for business history. *Business History Review*, 60, 641-651.

Weick, K. 1979. *The Social Psychology of Organizing*. Reading, MA: Addison-Wesley.

Whiteman, G., & Cooper, W.H. 2000. Ecological embeddedness. *Academy of Management Journal*, 43, 1265-1282.

Willoughby, M. 1992. *A history of postcards*. New Jersey: Wellfleet Press.

Wilson, D. L. 1992. A treasure trove of information about the labor movement in the South's textile industry. *Chronicle of Higher Education*, November 25, B5.

Wren, D. A. 2000. The J. and W. Seligman Archives at the Harry W. Bass Business History Collection. *Business History Review*, 74, 113+.

## ABOUT THE AUTHORS

**William "Rick" Crandall, Ph.D.** teaches at the University of North Carolina at Pembroke. His research interests include industrial archeology.

**Alan Rowe** works for the West Virginia Division of Culture & History. He is currently assigned to the State Historic Preservation Office in Charleston

**John A. Parnell, Ph.D.** is the Belk Distinguished Professor of Management at the University of North Carolina at Pembroke. Industrial archeology is one of his current research interests.