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Abstract

Originally, institutional theory posited that cultural change emanates from the interplay of technological innovations and cultural institutions, learned behaviors verified by ceremonial processes. Ceremonies derive their legitimacy from myths and legends, and are static and resistant to change; things are done the way the ancestors did them. Technological innovations provide the ability to do new things or to do old things in new ways, and are thus dynamic, and foster institutional change. There is a never-ending interplay between the forward push of technology and the backward resistance of institutions and ceremonies. Ceremony and technology are opposite sides of the same coin and inextricably bound in complex ways. Some of the current literature seems to over-simplify institutionalism, producing misleading results regarding its relevance to modern problems. This paper reviews the "old time" institutionalism and applies it to the conduct of information systems research. It is shown that logical positivism is the mythical basis of North American IS research, that statistical methodologies are its tools, the scientific method is its ceremony, and that the process of "scientific" IS research wastes scarce intellectual capacity, which only ensures its scarcity.

Keywords: Institutional theory, institutional economics, IS research, logical positivism, myth, ceremony, technology

Introduction

Recently, Orlikowski and Barley (2001) suggested that "information technology research can benefit from incorporating institutional analysis from organizational studies, while organization studies can benefit even more by following the lead of information technology research ..." (p. 145). Following Orlikowski and Barley, our interest in this paper is in the former, how IS research might be informed by institutional theory.

The senior author (the more elderly one, that is!) is fortunate to have studied institutionalism under one of its great masters, Clarence Ayres, whose book *The Theory of Economic Progress*, first published in 1944 and republished in 1996 by the Association for Evolutionary Economics, is one of the classic works in institutional economics. Unfortunately, great confusion seemed to surround institutionalism, even in 1944, as Ayres wrote that "No word is more frequently or more vaguely used in contemporary social sciences than 'institution.'" (1944, IX, p.1) And in the forward to the 1962 edition, he wrote that "…even today, there is no clear defined body of principles on which institutionalists are generally agreed and by which they are known" (Foreword, p. 3).

The tradition of confusion seems to have continued. In 1987, Scott described four different varieties of "sociological formulations, all claiming an institutional focus." (p. 493). A review of the more recent institutional literature shows this diversity still reigns. As we shall see later, institutionalism is a rich and complex theory. There is evidence today that in some works it has lost this richness and in some instances has been rather trivialized. Ang and Cummings (1997) purport to have an institutional element in their study of IS outsourcing by banks, but their instrument had only two institutional constructs, peer pressure and federal regulation. These constructs were each "measured" by three perceptual items. To us this is not nearly enough to capture the complexity of institutional influences as we shall describe them below.

Certainly, no one piece of work is going to resolve this confusion, and that is not our aim. The word "institution" will no doubt be used in a myriad of ways. However, for us to make any progress in understanding how institutionalism might contribute to IS research, we must be more precise in how the term is to be used. In an attempt to bring some clarity to the term, we have decided to go back to the roots of institutionalism, focusing primarily on institutional economics and the works of the fathers in this field, Thorsten Veblen and Clarence Ayres. This brief paper relies heavily on their works. The objective of the paper is to try to bring some cohesion to the realm of institutional theory, so that its applicability to IS research may be evaluated. We make some preliminary steps in that regard, by showing how the conduct of IS research itself can be viewed through an institutional lens and make some suggestions as to how the IS research arena might be improved.

The Old Time Institutionalism

More than one hundred years ago, Thorstein Veblen (1899/1912) initiated one of the most interesting currents of thought in America, the original theory of Institutional Economics. Faithful to Veblen's approach, Clarence Ayres (1944) introduced to institutional economics philosophical thoughts regarding technological development and economic progress and other associated elements. In this section, we present the main elements of institutional theory as Veblen and Ayres introduced them originally.

Institutions

Veblen believed that "institutions are in substance prevalent habits of thought with respect to particular relations and particular functions of the individual and of the community" (Veblen 1899, p 132). In his most famous work, the *Theory of Leisure Class* (1899,/1912), Veblen introduced the idea that "Institutions are products of the past process, are adapted to past circumstances, and are therefore never in full accord with the requirements of the present." (Veblen 1889, p 132-133). Institutional change takes time, being the product of habit. Therefore the implication is that, while institutions cannot remain totally static over time, they do provide much of the stability for organizing human activities. Veblen grants "perpetuity" to institutions, yet in the same breath he asserts that institutions are continually in a state of "revision." Because of their relative stability, institutions cause established behaviors and social structures to seem "natural" and therefore correct.

Although Ayres (1944) never really provides a precise definition of "institution," he does provide a lengthy discussion of institutions in Chapter IX of his book. Elaborating on Veblen's view, he states that "modern institutions derive their substance from the past" (IX, p. 9) through carryover of "folkways and mores." He sees inheritance as a main feature of modern institutional structures. For Ayres, institutions are "permissive and not dynamic," they are the land for exerting powerful myths, ceremonials and rituals. Therefore, upon reflection, the basic characteristics of institutions as both Veblen and Ayres thought them are "static, inherited from the past, creatures of habit, mythic, legendary, superstitious."

Technology and Institutions

While Veblen and Ayres see institutions as a stable, static element of culture, they view technology as the driving force of change. Ayres defines technology as including both tools and the skilled use of those tools, and therefore a function of human behavior. Human skills and tools are inseparable because skills always employ tools and tools are always employed in acts of skill by human beings. Technology and technological innovations involve much more than just tools themselves, but include the process of adopting and invention (the tool) and the diffusion of the new technology throughout society. This view of the technology is consistent with Orlikowski & Barley (2001) who see technology as both social and physical artifacts.

Once this dual character of the technological process is made clear, the explanation of the dynamic character of technology becomes easy. As tools and skills are inseparable, the technological process is cumulative and progressive. It is a process of tool and skill accumulation through elaboration and combination of existing tools. All inventions are combinations of previous inventions or combinations of previously existing tools (the tool combination principle, Ayres 1944, XI, p. 6). Tools are capable of being combined (by humans) and applied to new functions and uses. This means that technology is progressive, dynamic and the main agent of social change. Therefore, technology means change and institutions, being backward looking, resist change. Static institutions and dynamic technology and the way they interact are two key elements of institutional theory.

Myths, Ceremonialism and Status

Myths, ceremonies and status are the main elements characterizing and legitimizing any institution. According to Ayres, myths are quasi-scientific explanations of the phenomena of group behavior (X, p. 6). Institutions are past-binding and involve combined continuities and discontinuities with antecedent institutions. They come into existence as part of a mythical heritage, evolving out of the past institutions and technology. Therefore, institutions have powerful myth and legend creating capacities. This idea is consistent with Myers and Rowan's (1977) statement that "in organizations, many elements of the formal structure (i.e. professions, programs and technologies) are highly institutionalized and function as powerful myths" (p.344).

Ceremonial processes derive from myths, legends and traditions. Myth, ceremonies, status and the use of tools are all closely related. As Ayres noticed "ceremonial behavior implies the existence of a myth or legend and a myth or legend implies the existence of a ceremonial pattern" (XIII, p. 7). The importance of ceremonial behavior is that it determines or conveys status in an institutional environment, by the ritualistic transfer of "mystic potencies." *These ceremonies often confer upon one a particular status, and the right to use a specific tool.* This idea is what Veblen called "ceremonial adequacy," that is the determination of competence in tool use by ritual directly inherited from the past. The institutionalized "ceremony" of attaining a driver's license conveys upon one the privilege of driving a car, and accords considerable status in the eyes of a teenaged driver.

This notion is also consistent with Myers & Rowan's (1977) assertion that ceremonial criteria legitimate organizations in the eyes of internal and external participants, therefore conferring to that particular organization a certain status in its environment. (Please note that we are using the term "organization to refer to entities, such as corporations, government agencies, non-profit enterprises, etc. – we use the term institution to refer to customs and habits, and not to organizational entities as a whole.) Therefore, we can say that legitimacy is conferred by ritual and ceremony. For example, the "ceremony" of auditing the accounting system of an organization legitimates its financial statements (unless you are Enron or Arthur Andersen!). Professional and trade associations provide other arenas in which organizational members are given positions of substantive or ceremonial influence (DiMaggio and Powell 1983, p153).

A very interesting ceremonial phenomenon described by Ayers, to which we will return later, is the wasting of some asset or commodity of special value to a culture. As Ayres puts it:

> What they waste, yams, for example, is the very thing they have been at greatest pains to produce and accumulate; and what we, and they, mean by "waste" is a performance in complete contrast to the meticulous grubbing care which has gone into production and accumulation. These two activities condition each other in both directions. Yams are ceremonially wasted because they are hard to produce; and they are hard to produce in sufficient quantity because they are ceremonially wasted. (1944, V, p. 5)

Ceremonialism such as this is invariably bound to technology and its use, and the use of technology is invariably bound to ceremony. Some refer to this as Veblen's dualism, later writers, including Ayres call it a dichotomy, with ceremonialism at one pole and technology at the other.

Therefore, according to Veblen (1899/1912), Ayres (1944) and consistent with Myers & Rowan (1977), organizations process information and experience through all kinds of ceremonial hazes. Traditions, ceremonial behaviors, habits, all counteract the progressive impetus of technology, in effect retarding the social change process. What happens to any cultural institution is determined jointly by the forward push of its technology and the backward pressure of its ceremonial system.

To summarize:

- An institution is a learned behavior verified by ceremonial processes. Ceremonial processes derive from myths, legends and traditions.

- Institutions are past-binding and involve combined continuities and discontinuities with antecedent institutions.

- Institutions have powerful myth creation and maintenance capacities. Many linkages are based on myths and superstitions because no other adequate or acceptable explanation exists.

- At their bases, institutions are static and resistant to change as opposed to technology which is a dynamic force. This does not mean that institutions do not change at all. They do, but not at the same pace imposed by the dynamic force of

technological change. There will always be a "ceremonial residue" from past experiences that will keep institutions from being well adjusted to the present.

• Rank, status, power, authority, have an institutional basis and are often conferred through ceremonies.

• Legitimacy is also conferred by ritual and ceremony.

Institutionalism and IS Research

We can conceive of three ways in which institutionalism might inform IS research. One it may inform us as to why some organizations are successful in implementing IT while others aren't. The strengths of the beliefs and conformity to the myths and legends existent in the organizational culture may determine whether some information technologies are adopted or not. Kaarst-Brown and Robey (1999) identified the important role that symbolism and myths may play in the way IT is managed in organizations, "this lens may reveal some of the dilemmas associated with successfully integrating IT with business needs" (p193).

Institutionalism may also inform system development (ISD). Hirschheim et al (1991) wondered why so many ISD efforts have not been successful and why ISD has been so problematic. They argued that myths, metaphors and magic are strong elements implicated in the process of developing information systems.

A third way that institutionalism may inform IS is in the conduct of IS research itself, and in the training of IS researchers. Because of space limitations, we will concern ourselves with this viewpoint in the remainder of the paper. While the other topics are of great interest, they will have to be addressed in other venues.

In the IS literature, it seems customary to recognize three epistemological foundations for IS research, positivism, interpretivism, and critical theory (See, for example, Hirschheim, Klein and Lyytinen, 1995 and Schultze, 2000). We like Michael Myers (http://www.qual.auckland.ac.nz/) definition of positivism,

> Positivists generally assume that reality is objectively given and can be described by measurable properties which are independent of the observer (researcher) and his or her instruments. Positivist studies generally attempt to test theory, in an attempt to increase the predictive understanding of phenomena. In line with this Orlikowski and Baroudi (1991, p.5) classified IS research as positivist if there was evidence of formal propositions, quantifiable measures of variables, hypothesis testing, and the drawing of inferences about a phenomenon from the sample to a stated population.

It is no secret that positivism and the "scientific method" constitute the dominant paradigm in North American IS research. For example, the Orlikowski and Baroudi article that Myers mentions found that, of the papers published in *Communications of the ACM, MIS Quarterly, the ICIS Proceedings,* and *Management Science* between January of 1983 and May of 1988, over 95 percent adopted a positivist perspective. While the situation has probably changed some, as evidenced, for example, by the special issue of MIS Quarterly on "intensive research" in March of 1999, a quick glance at leading North American journals today still shows a decidedly positivist bias.

Ayres points out that science has some institutional tendencies. We believe that positivist IS research exhibits definite institutional tendencies, giving the scientific method virtually mythical status. On her website (http://dharma-haven.org/science/myth-of-scientific-method.htm) describing "The Myth of the Magical Scientific Method," Terry Hawles quotes psychologists Cheyne and Tarullli:

> "[T]o have one's ideas appear compelling to the psychological establishment in the late-twentieth century it is necessary, because of the esteem in which hypothetico-deductivism is held, that the ideas be expressed as theory-generated hypotheses that have undergone the "ordeal" of experiment. The advice of "Writing", while implicitly denying the relevance of prediction to science, clearly recognizes the importance of prediction to journal editors. "

We believe that one can say the same about North American IS journal editors. Hawles also writes:

> The current situation is harmful in many ways: People in some immature scientific disciplines are actually trying to use this "method" as a guide to research practice; Others are required to pretend to have followed it when they report their results; and everyone is denied the benefit of useful, insightful analysis of how science works.

The devotion to logical positivism and the scientific method indeed approaches mythical proportions. How often has the introduction to an article read something like, "The results in previous research have been inconsistent." The assumption, of course, is that eventually more and more positivistic studies will ultimately lead to consistent results when enough is "learned" and the phenomena are well understood. When in fact what usually happens is that the studies go on and on, continuing to produce inconsistent results *ad nauseum*.

The stream of group decision support system (GDSS) studies provides a good example of inconsistencies arising within the positivist approach. Generalizations about the effects of GDSS on group decision making have been plagued by inconsistencies among study findings. Some studies found strongly positive results, while others found mildly positive results and still others found mixed, neutral, or negative results. Rao & Jarvenpaa (1991) noticed that " Empirical research in the area of computer support of groups is characterized by inconsistent results across studies" (p. 1). Although there has been substantial research in this area, the effectiveness of GDSS remains an open issue" (Dennis & Gallupe, 1993, p. 59). "Whether GDSS technology can really improve the decision outcomes of group decision making is an important research question (Lam 1997, p. 1). Realizing that this issue still remained open even in 2000, Gopal & Prasad, in an MIS Quarterly article, tried to understand GDSS in a symbolic context finally resorting to qualitative methods in order to clarify some of the inconsistencies prevalent in GDSS research.

As Donabedian (1998, p. 2) noticed, there are inconsistent empirical findings regarding another well-known theory in IS research, Information Richness Theory (Daft, Lengel, & Trevino, 1986; Lengel & Daft, 1988; Russ, Daft, & Lengel,1990). There have been confirmations of this theory as well as disconfirmations (El-Shinnawy & Markus,1992; Jones, Saunders, & McLeod, 1988; Kinney & Watson, 1992; Markus, 1994; Rice, 1992).

Even the most solid theoretical model in IS research, the Technology Acceptance Model (Davis et al 1989) has not always been "proved." Igbaria et al (1997) found that adoption in small firms don't follow the pattern predicted by TAM. The total effect of perceived ease of use is greater than the total effect of perceived usefulness on usage.

The continually conflicting results notwithstanding, ***no one seems to question the assumption that eventually enough experimentation will explain the phenomena and resolve the inconsistencies***. Let us, in the spirit of logical positivism, offer a proposition:

> Proposition: Laboratory experimentation will will almost surely never resolve inconsistencies in findings from studies of GDSS, TAM, information richness or any other complex topic of IS research.

Of course, this proposition cannot be tested because there are always additional experiments that can be run, or old experiments that can be replicated, and we would predict, with inconsistent results!

While other methodologies may be used in conjunction with a positivist philosophy, the tools, technology and skills most closely associated with the myth of the positivist approach involve statistical methodologies and the computer apparatus used to employ those methodologies. North American schools invariably require numerous courses in statistical methodology. At the end of the methodological training are ceremonial comprehensive exams, the passing of which confers upon the student the status of Ph. D. "candidate," and the right to use the methodologies in conducting a dissertation. Of course, awarding the Ph. D. degree, including the anointing of the student with the traditional hood to go along with the cap and gown, entitles the student to a position as assistant professor. If the assistant professor successfully enacts the "research – publication ritual" a sufficient number of times in high-status outlets, then promotion to associate professor occurs, etc., etc. The status of the outlet is determined by reputation, that is, the right people have to agree that this is the right outlet.

The problem is that the positivist viewpoint and quantitative analysis have become institutionalized, they have become ingrained, habitual, backed by dogma and orthodoxy, not by rational thought. Instead of being on the technological side of the equation, they have moved to the ceremonial side. On the technological side, "instruments" are valued for their production efficiency; on the ceremonial side, they are valued for conformity to orthodoxy. It has become necessary to exhibit the trappings of science in

order to get published. The actual production of knowledge and the resources going into the production of that knowledge seem to have gotten lost in the fray.

One might argue that this ritualistic application of the scientific method is simply an example of ceremonial waste (burning the yams, for example) on a grand scale, the wasting of intellectual capacity and skill so laboriously groomed in doctoral programs. Does the positivistic research – publication ritual really contribute to the creation of knowledge, or does it simply document the fact that the canons of the ritual were followed precisely? Does the arcane statistical analysis assure us that we are getting at the "truth" or does it simply lead to filling journals with articles that incomprehensible to the practitioner in need of real answers? We would like to see the evidence to support the assertion that this is actually getting IS somewhere in terms of knowledge. It seems more likely that the intellectual capacity of Ph. D.'s is ceremonially wasted because it is hard to produce, and hard to produce in sufficient quantity because it is ceremonially wasted.

We believe that the adherence to the positivist – scientific method – quantitative analysis approach is obsolete. Other methodologies, including case studies, ethnographies, phenomenology, hermeneutics, and action research, for example, may contribute more per labor hour invested than the "conventional" approach, even when used in conjunction with a positivist philosophy. The typical hypothetico-deductive study requires extreme reductionism in problem statements and assumes a precision in data collection that is extremely difficult to attain in complex, "messy" IS situations. It doesn't seem plausible to us that one can reduce holistic IS problems to their bare essentials, study them in isolation and then combine the results into any sort of realistic whole. One must study as much of the whole beast as possible, and use philosophical perspectives and methodologies that match the situation. Blind adherence to the orthodoxy of positivism and quantitative analysis just does not seem to fit the bill.

Summary

An institution is a learned behavior verified by ceremonial processes. Ceremonial processes derive from myths, legends and traditions and are backward looking. Institutions derive their legitimacy from ceremonies, myths and legends, and are static and resistant to change; things are done the way the ancestors did them. Technological innovations provide the ability to do new things or to do old things in new ways, and are thus dynamic, and foster institutional change. There is a never-ending interplay between the push of technology and the resistance of institutions and ceremonies. Ceremony and technology form a dualism or dichotomy and are inextricably bound in complex ways. From this brief review, one can see that the old institutionalism is a rich theory indeed, far more complex than one can get at with two survey constructs and six questions, as Ang and Cummings attemted.

Logical positivism is the myth on which North American IS research is founded. The least effective type of scientific method, at least for messy social problems, is its primary form of ceremonialism. Follow the ritual and ye shall publish. Stray from the path and suffer the wrath of the reviewer goddesses. Statistically based methods are the technology of positivism and have become its orthodoxy. The comprehensive exam ceremony conveys the right to the successful examinee to employ statistical tools in dissertations and research projects. Replication of the positivistic research - publication ritual in "reputable" outlets means continued "success," even in the face of continually inconsistent results. Training produces the intellectual capacity to conduct "research," the conduct of which consumes prodigious amounts of intellectual capacity, thereby assuring its scarcity. Go forth and experiment!

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