2019 Special

Workshop on Information Systems Research and Development

How Can Information Systems Make the World a Better Place?

The Upham Hotel
1404 De La Vina Street, Santa Barbara, CA
August 19, 2019

Organized by:
Cynthia Beath
Mary Culnan
Ping Wang
Background

From 1993 to 2004, the Workshop on Information Systems Research and Development (WISRD), a small, annual, invitation-only workshop, founded by Burt Swanson and Lynne Markus, brought together Information Systems (IS) faculty, doctoral students, and alumni of four major IS research programs in Southern California for mutual learning on a theme of current interest. Among the benefits of the workshop were professional relationships and collaborations that continued throughout the year. Held at the UCLA Conference Center at Lake Arrowhead, the workshop was organized and funded in part by the UCLA Anderson School's Information Systems Research Program. Claremont Graduate University, University of California, Irvine, and University of Southern California also participated. Now, 15 years later, mostly just for fun, we are holding a special pop-up WISRD on the occasion of Burt’s 80th birthday.

This year’s theme is *How Can Information Systems Make the World a Better Place?* Burt likes this theme because he wants to know what he should be working on over the next decade, and also (at your own discretion and risk) whether you would be willing to help him with it if he takes it on.

You are welcome to participate in all scheduled activities of the workshop or any portion of it. Non-IS scholars, family members, and friends are also welcome to join us.
# Program

The workshop will be held in the Coach Room at the Upham Hotel in Santa Barbara on Monday, August 19, 2019.

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Topics for Discussion

Prospective attendees of the workshop were invited to suggest specific theme-related topics to discuss at the workshop. Here are the descriptions of the topics written by the participants who have volunteered to lead the discussions at the workshop.

Transactions Rule the World: What Should We Do About It?

Mary Culnan

From the early days of IS, data from transactions have provided the foundation for information systems (e.g. the information systems "pyramid" in the Gordon Davis textbook we used in Burt’s 225A class at UCLA in the 1970’s). In a recent paper (Swanson, 2019), Burt describes the evolution of information systems (IS) and how modern systems have come to "rule the world” through the facilitation of transactions. He further argues that transaction facilitation is at the heart of IS and its development as a field of practice. Most of the systems Burt describes involve a formal exchange of some type between two organizations (B2B) or between an organization and its customers (B2C) or employees. Burt also notes that the role of transactions has not received much attention in our literature in terms of their social impacts.

In today’s world of interconnected devices, transactions are on steroids. We generate transaction data every time we use the internet, a payment card, social media, a mobile app, or a smart device, drive a connected car, talk to an internet assistant such as Siri or Alexa or are tracked by a sensor in a smart city or a store for example. A 2018 IDC study predicted that by 2035, 75% of the world’s population will interact with data every day and each connected person will have one data interaction every eighteen seconds. The majority of these interactions generate one or more transactions that can and likely will be input to an information system for analytic processing of some type.

This session will address two questions. First, the current data environment presents major opportunities for organizations, but it also poses major risks related to privacy, security, fairness and other ethical issues for individuals and organizations. These are not new issues (e.g. Mason, 1986) but given their importance, they do not seem to receive much attention in IS today (Culnan, 2019). What can/should we do to help insure these systems make the world a better place? And are we adequately preparing our students to address these issues in their careers? The second question is related to the first. From my current perspective primarily more as an observer of than a participant in the IS field, we seem to have lost our focus on the fundamental issues Burt discusses in his paper. Instead, it seems to me that today IS is always chasing "shiny objects." Given technology touches everything and everybody, do we need to be more focused in our teaching and research and if so, what should that focus include? Or has “IS” just evolved to be thing, but not a distinct field?

References


What Have We Done? Unintended Consequences of IS/IT on Our Future

Louise L. Soe

Assumption

The information technology revolution we helped foster has brought about huge unintended consequences in people's lives, and in the social fabric of our society (as well as other societies).

Some Issues Facing All of Us

- The Future of Work
  - What happens when technology replaces workers? Replacements for work are feasible, but will they work for most people?
  - How will people find meaning in their lives if they don't have jobs with which they can identify? A return to craft work, which can be deeply satisfying? Giving employees opportunities for self-development during the time freed up from work by technology?
  - Lack of income adequate to support themselves - a minimum income from government: e.g., the "Freedom Dividend" proposed by Andrew Yang?

- Political and Privacy Concerns
  - What about the ability of technology to track our lives, including not only our buying habits and political preferences but our faces, and our DNA?
  - The influence of technology (social media, hacking, etc.) on our elections and political decisions?

- Cyber Warfare and Cyber Security
  - What role will technology play in generating and preventing wars?

- Our Responsibility and Our Possible Role
  - Is there anything we as academics and teachers learned from all of this?
  - What can people in our field do but watch, analyze, record, and predict? Can or should we try to do anything to make it better?

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4 A surprising variety of open source and commercial facial recognition software is available on the Internet.
Is Surveillance Capitalism Ethical?

Dick Mason

Samuel Morse asked: “What has God Wrought?” IS and IT people should be asking the same question now. Google (Alphabet), Facebook, Amazon and other digital services companies currently dominate the American economic market system. Their critical success factor is the methods they use to collect, process, and utilize personally identifiable and user profile information. (PII/UPi) “... we are the objects from which raw materials are extracted and expropriated for Google’s [and other digital service firm’s] prediction factories.” Shoshana Zuboff argues, “Predictions about our behavior are Google’s [et al.] products, and they are sold to its actual customers [like advertisers] but not to us. We are the means to other’s ends.” She calls this “Surveillance Capitalism.”

In the second formulation of his categorical imperative Immanuel Kant stated that an ethical human being must: “Act in such a way that you always treat humanity, whether in your own person or in the person of any other, never simply as a means, but always at the same time as an end.” Surveillance Capitalists (SCs) currently violate this ethical imperative.

A peek through Johari’s Window helps show us how:

<table>
<thead>
<tr>
<th>Personally Identifiable Information</th>
<th>Known to Self</th>
<th>Not Known to Self</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Profile Information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Known to Others</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Not Known to Others</td>
<td>2</td>
<td>4</td>
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Pane 4. Let’s dispense with it first. It contains mysteries, unknown unknowns, dark data and is not considered here.

Pane 1. It primarily contains public information, information that is available to all and that users typically express little concern when it’s shared or used widely. Many organizations, including SCs, use it.

Pane 2. It primarily contains private information that users may wish to share with others but only under conditions of informed consent or a favorable benefit/cost tradeoff. SCs use it. It’s the stuff of privacy concerns.

Pane 3. It contains private information that forms “the New Frontier of Power” that alarms Zuboff. It is information about us and about our behavior that SCs learn about us and that we very likely do not consciously know about ourselves. SCs employ this information to control our behavior and thereby to enhance their market power. It is the main source of their current market success.

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10 Foxie Mason suggested using the Johari Window approach.
SCs sense and record a user’s behavioral actions, capture them in a digitalized form and use them to create behavioral data. As information economist Hal Varian observes: “Every action a user performs is considered a signal to be analyzed and fed back into the system.” 11 These behaviors are crucial clues to a user’s interests and their voice, personality, and emotions. Data collection is accomplished by deploying numerous sensors of various types that are able to access a comprehensive set of sources, some reaching beyond the initial application itself: for example, website activity, games, searches, emails, tweets, “Likes,” online shopping, online friends, mobile apps, CRM systems, marketing automation systems, call centers, help desks, billing systems, wearables, Fitbits, Apple Watches, chatbots like Alexa or Cortana, digital assistants like Amazon Echo or Google Home, automobiles, kitchen appliances, telemetry, GPS and, increasingly and importantly, any item connected to the Internet of Things. These applications may employ a range of devices connected to the Internet such as a smartphone, PC, tablet, or any smart device. Zuboff summarizes: “Surveillance Capitalism unilaterally claims human experience [where ever and whenever it occurs] as free raw material for translation into behavioral data.” 12

“... if industrial capitalism flourished at the expense of nature and now threatens to cost us the Earth, an information civilization shaped by surveillance capitalism will thrive at the expense of human nature and threatens to cost us our humanity.” 13

How Does the Vertical Integration of Information System Markets Undermine Scholarship and Academic Freedom?

Christine L. Borgman

A quiet revolution is underway in the market for information systems that serve universities, with deleterious effects on scholarly communication, academic freedom, intellectual freedom, and privacy. In parallel with surveillance capitalism, public policy and market forces are moving universities toward surveillance scholarship and education, largely unwittingly.

Universities are among the most data-intensive institutions of our day. Not only do scholars and students, from astrophysics to archaeology, generate and consume massive amounts of data, but universities generate and mine massive amounts of data about their own daily activities. These information systems include course management, identity cards, library services, security systems, computer networks and technology, admissions, registrar, food services, human resources, financial aid, benefits, health services, and many more. Every student, faculty, and staff member leaves traces of every logon, door entry, food purchase, library retrieval, homework assignment, tweet, health visit, and so on. Dossiers for graduate student progress and for academic hiring and promotion accumulate in information systems. Whereas some of these records are protected by HIPAA, PII, FERPA, and other rules, large loopholes allow universities to mine these data for myriad purposes (Borgman, 2018).

Three related trends are worthy of our discussion about how information systems can be used to make the world a better (or a worse) place. One is that scholarship and learning

12 Zuboff, op. cit., 8.
13 Zuboff, op. cit., 347.
are embedded in knowledge infrastructures, which are complex ecologies of systems, people, and institutions (Edwards et al., 2013). To conduct research, scholars rely on many tools, services, databases, and resources within their institutional and disciplinary networks. Another trend is that universities are building less of this infrastructure themselves, creating large gaps in data management, digital repositories, research pipelines, and other components necessary to integrate and steward scholarly resources for the long term (Borgman, 2015). A third trend is the integration of academic infrastructure by a small group of very large publishers. Over the last 20+ years, these publishers have acquired hundreds of companies that span the academic enterprise: data systems, personnel evaluation, admissions and recruiting, bibliographic reference tools, library services, course management, repositories, financial services, journal production, etc. (Posada and Chen, 2018). While universities have tried to extricate themselves from budget-busting publisher contracts (Fox and Brainard, 2019), they are delegating control over their internal information systems to these same companies. Because these information systems reside on corporate servers, publishing mega-companies gain an intimate view of individual behavior on choices of research topics, journals, funding agencies, collaborators, data, and tools. Corporate evaluation systems also offer algorithmic guidance on who to hire and promote, and on which disciplines to invest or divest.

Some discussion questions:

- How did universities relinquish control over so much of their operations? How can universities reclaim control over their knowledge infrastructures?
- What future trends in academic information systems should we be watching, to improve education and scholarship for the next generations while protecting privacy and intellectual freedom?
- How does surveillance scholarship compare to surveillance capitalism?

References


Service Science: System, Design, and Culture

Yutaka Yamauchi and Stephen Kwan

Service is a keyword for many domains these days: X as a Service (SaaS, IaaS, PaaS and MaaS), service-dominant logic, service design, etc. Stephen Kwan was part of the group that worked with IBM and others on Service Science since the mid 2000s (Maglio et al, 2015). Yutaka Yamauchi joined the newly created Service Program in Kyoto University in 2010 and has since worked on service. We met in one of the Service Science conferences in 2014 and discovered that we were both students of Burt.

We would like to discuss:

- Why do we talk about service?
- What is service?
- What is next in this path?

To facilitate the discussion, we make small presentations.

1. Ethnomethodology of service interactions: Sushi bars and French restaurants by Yutaka Yamauchi (Yamauchi and Hiramoto, 2016)
2. Creed for service designers by Stephen Kwan and Yutaka Yamauchi (Kwan and Yamauchi, 2015).

References


Ethereal Processing System Based on Dynamic Coalescent Architecture

Randy Cooper

The following scenario depicts a hypothetical development of future computer technology. We will discuss the implications of its usage in terms of:

- The Information Technology (IT) function within organizations
• The structure of organizations themselves
• Emerging research issues for the IT field

Scenario
The year is 2040. IBM has just announced that the Ethereal Processing System will be available for delivery in two years. This system will be the first implementation of their Dynamic Coalescent Architecture.

The Ethereal Processing System (EPS) configuration consists of a mainframe, up to 1,000 Telepathic Control Units (TCUs), and up to 1,000 Sensors per TCU. The maximum distance between a mainframe and a TCU is 4,000 miles, between a TCU and a Sensor is 2,000 miles (Culnan and Beath, 2040). (Note: A future release will include relay units to enable greater distances.) Communication between configuration units is accomplished by a Gravitational Communication System, which senses modulations in the Earth’s gravitational field. Transmission degradation of 9% occurs at the maximum distances mentioned above.

New sensor technology provided the breakthrough enabling this system’s release (Swanson and Wang, 2038). Based on the discovery of idea tangibility, sensor technology provides the means to probe and capture all ideas that have ever been thought within the Sensor’s geographic range. Current Sensors are limited to a range of 1,000 miles. There appears to be little significant degradation of thought tangibility resulting from time. State changes of machinery can be sensed with optional adapters. This sensing capability eliminates the need for a database as well as enabling the implementation of Dynamic Coalescent Architecture (DCA).

DCA is touted by IBM to be the ultimate step in computer development and involves the dynamic configuration of "software" via a hardware bootstrap routine. An illustration of this is:

A person activates his Sensor and poses a problem. The Sensor relays this problem (via its TCU) to the mainframe. The mainframe then polls all of its Sensors for information relating to the procedure with which to solve the problem. Upon receipt of the proposed procedures (there are sure to be several versions), the mainframe employs aggregating, synthesizing, and optimizing algorithms to arrive at the appropriate procedure. This procedure is then followed by the mainframe and the problem solution is output.

References


**Shifting the New Normal: Exploring How MIS Might Help Stem the Slide towards Data-Driven Warfare**

Malu Roldan

Recent years have brought to the fore the wide-ranging role that information technology plays in shifting national agendas and upsetting the geopolitical balance. Much of this phenomenon still remains hidden, misunderstood, and unaddressed as highlighted by
distress signals sent up from all corners – Robert Mueller, Shoshana Zuboff, the Senate Intelligence Committee, among them. Key social networking and online technology platforms, and associated data mining practices have been implicated as enabling this trend. These platforms and the companies which own them (e.g. Facebook, Google) have been scrambling to establish practices to counteract misuse, block abusers, and provide better guidance to their users. Yet, the solutions remain, and are perceived as, limited at this juncture -- even as more opportunities for misuse loom (e.g. the 2020 US elections) and more players join the fray. Lawmakers have been slow to react (intentionally and unintentionally) and there has been a disconnect between the research community and practice. Technology companies have primarily taken a technological approach to the issue and have limited motivation to fully reveal their true tactics regarding user data and privacy. MIS researchers could bring a unique sociotechnical perspective to conversations and initiatives regarding this issue and have several avenues of influence, given their roles as researchers, consultants, and educators. I am thus interested in having a conversation about how MIS researchers could play a role in influencing how we go forward from here. What role can MIS researchers play in informing policies put forward by lawmakers regarding privacy and data use? How might MIS researchers help technology companies expand their solutions to take into account social aspects of the issue? How might MIS educators provide their students with the skills to be discerning consumers and citizens in this new reality?

Some Random Resources
Senate Intelligence Committee Report on Russian Interference in the 2016 Elections (2019).

Overcoming the Dark Side of IT
Richard Boland
We as information Systems researchers cannot make the world a better place until we understand our failure to anticipate the systematic, intentional use of disinformation IS to foment hate, fear, distrust and suspicion among citizens, and undermine democracy in countries around the world. As the scope and consequences of the Russian disinformation campaigns became known, I was dumbfounded by the way I and many others in our community of scholars had not imagined the design of information systems to harm our ability for conducting intelligent, humane self-governance.
The birth of our field coincides with World War II, fighting enemies who were trying to destroy free, open societies. That fight against tyranny occasioned some of the advances in cybernetics, communication theory, computing, telecommunications, and related technologies, which have become the locus of IS research. Yet, we failed to imagine how those technologies of rationality and efficiency could so easily orchestrate social discord and political chaos. It’s not as if posters and billboards had not been used throughout history to spread propaganda and false information, inciting mob violence and worse.

What is the source of our blindness? Is it something we can effectively research and overcome? Or are we swept up in managerialism and cannot imagine organized evil?

The Reflective Researcher

Cynthia Beath

In this session I would like to lead a discussion around the following proposal: Information Systems cannot make the world a better place until Information Systems researchers become reflective researchers. For the term "reflective researchers" I exploit the concept, popularized by Don Schön, of the reflective practitioner. In Schön's view (Schön, D. A. (1983). *The Reflective Practitioner: How Professionals Think in Action*. New York: Basic Books.), the "reflective practitioner" learns more deeply and improves her performance by reflecting on, among other things, relevant theory. Thus, a "reflective Information Systems researcher" will be more successful if she reflects on, among other things, relevant practice when developing theory. Reflective researchers would develop and refine constructs that are actually levers that practitioners can wield, would propose theoretical mechanisms that can be understood and measured in practice, and would publish findings that could be understood and applied by reflective practitioners. We should, perhaps, begin this discussion by defining the "reflective IS researcher." What would have to change to make researchers more reflective? Researcher training? Research genres? Criteria for evaluating research? Criteria for evaluating faculty for promotion?