Through a Glass, Darkly

What Is IS?

Robert L. Glass

In a recent column on the gender balance in the Information Systems (IS) and Computer Science (CS) fields, I mentioned what I called "a question for another time."   That question, you may or (probably) may not recall, was "How many people writing articles for the computing/information technology literature really understand what the field of IS is?

 The reason I raised the question was that I had been pursuing the gender balance differences between the fields of CS and IS, especially where CS has some acknowledged major problems attracting females into its field , and I kept running across studies that seemed to confuse what IS is. For example, one study titled "Why Don't More Women Major in Information Systems?" turned out, in spite of its title, to be about the computing field in general, not IS in particular (you could tell quite easily because of the way the paper defined IS as computer science, computer engineering, and electrical engineering!)

Now that really bugs me! I realize that I may be preaching to the choir here, because all of you readers of Information Systems Management are savvy enough to know what IS really is (after all, you're professionally immersed in it!) Quite clearly, however, something is wrong in the field of IS when our collegial brethren don't know what the heck we're about.

I might have let it all drift by and not bothered to revisit my question, except that something else happened. That something else was the announcement of something called "CSEdWeek," a celebration of the teaching of CS, which came to pass the week containing Dec. 9, 2011. In the announcement for the event, there came a need to define CS. And here's what those folks said CS included:

. computing

. computer engineering

. informatics

. information technology

. software engineering

.information systems.

Mostly, I find this list outrageous. As a software engineer, I am mildly offended that my field is assumed to be subsumed by CS, but OK, that's not too far afield. And I'm even slightly OK that CS

stakes a claim for all of "computing" (I see computing subsuming computer science, the other way around, but I suppose in reality they are pretty similar concepts). And if CS wants to subsume computer engineering and even informatics (since they sort of invented that field anyway!), I'm OK with that, too (although I suspect that traditional engineers would not be so lenient).

But I am outraged by the remaining two CS claims. CS is so far from covering the interests of IS (I'll explain what I see those differences being in a minute) that I could froth at the mouth at the thought that CS thinks it subsumes IS. And Information technology? I see that as the umbrella for the whole field, with CS just one player under that huge umbrella. (In fact, it is my bias that the term "computing" as in, for example, "computer science" is pretty much out of date. Most computers do very little computing these days (think of an application, any application); instead, mostly they process information. So the umbrella title for the field, as far as I'm concerned, has to include the word "information," and not the word "computing").

Now, how about those differences between CS and IS? Well, one way to discuss them would be via the subjects they teach, and one would be by the research they do. Let me discuss the latter. (I've done some comparative analysis studies in both areas, but my data on research is fresher). A couple of colleagues and I did a series of studies on the research pursuits of the separate fields computer science, software engineering, and information systems, and published those findings in leading journals in each of those three fields, plus an overall summary of the findings of all three studies [Glass, Vessey and Ramesh 2004]. And what we learned is that, from the point of view of research interests, it would be hard for those three computing fields to be much more diverse. Focusing this discussion on CS and IS and the topics on which they do research, CS studies "computer concepts" (especially intercomputer communication and computer/hardware principles/architecture (those are the dominant CS research topic interest areas, consuming 29% of the CS research). And IS? Using the same table of potential topics, IS studies "organizational concepts" including information technology usage and operation and technology transfer, and that pursuit consumes 67% of IS research. (Note that CS is disinterested in organizational concepts, the top IS field, spending less than 1% of its research time in that area. And IS is even less interested in computer concepts; it actually spend no research time whatsoever in that topic area. Not only do each of CS and IS carve out different research interest areas, but there is virtually no overlap between the two. Perhaps now you can see why I am outraged that CS wants to say that it includes IS as a subfield!

(I even wrote another column on this topic some time back. It was called "Never the CS and IS Twain Shall Meet?" and it was published in my Loyal Opposition column in IEEE Software. What triggered that column was that I had received a notice for a conference claiming to cover the topics of CS and IS. Based on what I've said above, you can imagine I grabbed the conference announcement and consumed it avidly. And what did I find there? In the list of topics, every single one was of interest to CS people and effectively none was of interest to IS people. Basically, what I saw there matches what I saw in the discussion of CSEd week. CS wants to claim that it covers the topics of IS, but it simply doesn't know enough to do so. As we said in [Glass, Vessey and Ramesh 2004], CS people are sometimes "arrogant and ignorant." "They're arrogant enough to think that the computing field revolves around the CS universe, and they're ignorant enough not to have sought the knowledge that would have shown them how profound that ignorance is."

But that's not the only problem here. Not only do CS and IS have amazingly little in common (a study of what they teach would show a few more likenesses, but not that many), but they have little respect for one another!   For example, in a blog discussion of this very topic, here are some quotes:

. "CS people are the ones who write the software that MIS people implement and use" (that's true enough not to cause offence)

. "Most CS people laugh at MIS people"

. "MIS people make more money and manage the CS folks."

Not exactly a basis for mutual respect!

It turns out that, in fact, I've been bugged about this issue for a VERY long time. There was a book back in the previous century [Freeman and Aspray 1999] that did a thorough and fascinating analysis of workers in the information technology field. But they got one thing totally wrong. Guess what it was (there's a clue in everything I've written above!)? They defined a field called "Management Information Science" (you probably know that there is no such field; there's Management Information Systems and Information Science, of course) and then went on to say that it awarded only 3 PhDs per year.   (That doesn't match either of the two fields they might have been talking about). And, just to cap the error, in their list – in that book – of disciplines, they did not include Management Information Science. Even they didn't know what field they were talking about! I found that book important, and I liked it, by the way. I just talk about it here to illustrate how people who should know better have no idea what IS is!

Because of all of this, I'd be interested in some input from you. How do you define IS? How do you differentiate it from the other information technology fields?   And how do you feel about the apparent attempts by CS to claim the IS turf?

Reference:

Glass, Vessey and Ramesh 2004 – "An Analysis of Research in the Computing Disciplines," Communications of the ACM, June 2004; Robert L. Glass, Iris Vessey, and V. Ramesh

Freeman and Aspray – "The Supply of Information Technology Workers in the United States," Computing Research Associates, 1999