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Computer Science and Cultural History: A Dialogue

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Presentation for CESTEMER Conference: Cultivating Ensembles in STEM Education and Research

16 September 2017, Goodman Theater, Chicago, IL.

Our title for this session--"Computing and Cultural History: A Dialogue"--says it all!"

Given these two "fields," traditionally perceived as separate, what we are undertaking today is to quickly initiate a couple of "dialogues" about them--as well as present a book project intended to carry those dialogues forth.

First, this is a literal dialogue between experts in Computer Science and Western Cultural History--supposedly separate fields..

George is a Computer Scientist who teaches the History of Computing among many other CS classes, and the author of books including *Codename Revolution: The Nintendo Wii Platform* and *Software Engineering for Science*.

I am a scholar of European Cultural and Intellectual History, a Professor who teaches the History of Western Civilization through the Humanities, and the author of *Beethoven in German Politics: 1870-1989* and *Inhumanities: Nazi Interpretations of Western Culture*.

Second, this an effort to trigger a dialogue with all of you about overlaps between the two areas, and the possibilities for advancing *The Cultural History of Computing* as a field.

Besides its methodological potential, we consider this to be a way to open Computer Sciences to wider audiences (our college students, but also younger persons) and make STEM studies more "popular" in academics and beyond.

So far, most histories of Computing have deployed a very traditional form of historiography: a linear narrative of (to paraphrase Churchill) "one damned machine after another."

This is what most of the surveys have (rightly) provided. First, we do need to know “what happened,” of course.

But, as was the case for traditional political and military histories, there comes a time to go beyond the "events" and consider perceptions of those events and their impact.

There *has* been a great amount of "cultural theorizing" about the impact of computing and computers.

However, as has been the case in various stages of historiographical development, much of this analysis is accessible only to the "intellectual elite."

Though valuable in setting forth interpretive approaches to the subject, the narrative and the theoretical approaches need to be *synthesized* in ways more accessible to students and general audiences.

The goal should be to combine the two, as Western (and World) historiographies have done over the last 25 years.

Masterworks in my field are works where scholars have drawn together historical narratives with interpretive methods based on cultural-literary criticism of ideology, for instance.

This combination has resulted in a "new cultural history" that identifies the impact of ideas about events as having as much significance as the "events themselves."

Ultimately, as in historiography, the question is whether the field of The History of Computing, or the Cultural History of Computing can be understood and undertaken as a field of "Humanities."

We believe that it is, and that it *always has been!*

[And we have copious notes to that effect which we cut in order to fit things into a ten minute presentation!]

Moreover, by bringing Computer Science *back* into the Humanities, we believe that we can help to bridge many of the obstacles to popular interest that may be hindering the advancement of CS in particular and STEM fields as a whole.

To this end, we are undertaking to continue this dialogue in the form of a major textbook project that I will let George introduce with the time we have left--hoping that both sides of this presentation will initiate ongoing discourses with all of you.

As the computer age comes to full realization, a sophisticated summary of what led to the digital transformation of not just Western but Global existence is necessary.

Our book aims for a comprehensive understanding about computing history and its cultures, with the hope that it could be resource for every student, scholar, teacher, and general reader.

By assessing the historical and cultural factors, we will come to understand the networked/interconnected world we inhabit.

We didn't get here by accident.

We got here through advances in philosophy, mathematics, physics, computation, and communication, which occurred across multiple generations and civilizations.

Our approach mimics a helix-like structure found in biology.

The main strand delineates the fundamental series that everyone needs to know about computing history from the evolution of number systems and arithmetic, through the invention of calculating and computing machines.

This gives rise to advanced communication technology via the Internet and beyond (e.g. the great singularity (a.k.a. machine learning/AI and robotics) and exponentially faster computing, a.k.a. quantum computing)

Our book aims to look beyond machines by placing emphasis on cultural relevance, with as inclusive a picture as possible, starting from its emergence in the East to its rise in the West.

Computing history is a vehicle for changing attitudes about computing, specifically, and STEM more generally.

Because computing history shares a history with mathematics and science, it is something every mathematics and science student also should learn.

(I almost want to include a sentence about how the singular focus on programming is just one form of "computational" literacy. In the end, "literacy" is about reading, and computer history is a great way to get more of us to understand the ideas that will impact us for generations to come, even if we're not writing code.)

Computing history will become even more important as the disciplines of computer science and related specializations becomes more integrated with "other" disciplines especially history and cultural history.

This serves as an apparatus for thinking of computing, minimally, in equal parts STEM and the Humanities.

Computing history is a complex and beautiful story that needs to be understood both by its modern practitioners (but rarely is, in our experience) and also by a world that largely consumes computing as opposed to creating it.

To get more creators, again, requires us to include the humanities in any discussion of computing history, an ideal we share with the CESTEMER organizers!

We'd love to hear about any computing stories you wish to share and/or understand when it comes to this great story that remains one in the making.