

Ibn Khaldun's iPad:

Towards Interdisciplinary Collaboration Between Social and Computer Science

Lara Aasem Ahmed لارا عاصم أحمد

SID: 900130390

Mobile phone: +201147265755

Email: lara.aasem@aucegypt.edu

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## Introduction

For the over 350,000 Syrians seeking shelter in Gaziantep, Turkey, 97 kilometers is a sizeable distance.<sup>1</sup> It is the amount of space that separates them from Aleppo – the nearest major Syrian metropolis, Gaziantep's sister city, and the ravaged hometown from which many of them had to flee – and from all that is familiar (O'Toole, 2016; UNHCR Turkey, 2017). In Turkey, they must contend not only with the difficulties of adjusting to a new place and the precarity of their migrant status, but also with the confusion of navigating their daily and more long-term legal, economic, and social needs in a completely foreign language. To bridge this distance, developers in Turkey – many of them asylum-seekers themselves – have been building web and mobile applications to address the specific problems refugees face, from Gherbtana ("Our Exile"), which provides refugees with information in Arabic on laws, the job market, and the Syrian community and Syrian establishments in Turkey, to Tarjemly ("Translate For Me") Live, which connects refugees to translators to provide real-time translation services (Lepeska, 2016).

Refugee-targeted web and mobile technologies prevail in Turkey given its status as a major transit and host country for refugees, but they are not limited to it. 2016 and 2017 have witnessed the launch of similar apps worldwide (Becker, 2017; Malo, 2016), as well as software to help refugees find housing, learn new skills, and connect with healthcare providers (Bock, 2016; AppsForRefugees.com, n.d.). Technology, in the broad sense of the word, has always been about finding innovative solutions to exigent needs, and so its swift response to the refugee crisis is not a unique incident. Indeed, recent global trends – from the proliferation of smartphones in everyday life to concerns about privacy, cyber security, and intellectual property rights – have

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<sup>1</sup> This number is an approximation (O'Toole, 2016). Due to the difficulties of attaining refugee status, Turkey's placement of Syrian refugees under the legal category of "temporary guests" (Lepeska, 2016), and documentation issues, the number of Syrian refugees registered with UNHCR in the entire Gaziantep province, not only Gaziantep city, is just over 135,000 (UNHCR Turkey, 2017).

increased public awareness of the connections between the realm of the technological on one hand and that of the social, political, and economic on the other.<sup>2</sup> However, this awareness has not translated into an appreciation of the importance of genuinely interdisciplinary collaboration between the fields of computer and social science.<sup>3</sup> I will look in particular at two reasons why this is the case, before moving on to discuss the similarities between the two fields, what they can learn from each other, and the benefits they stand to gain by working together, concluding by reflecting on the impact this can have on Egypt and the region.

### **Distances between fields**

#### *Nodes of multidisciplinary*

On the practitioner level, anyone with a background in social science or technology is conscious of the impossibility of separating the social and the technological in and of themselves. Many social sciences utilize technology made possible by computer science to teach and learn, undertake research, analyze data, and present results. For their part, social science insights help computer scientists design better user experiences and understand the contexts within which their work operates. This awareness also manifests on the disciplinary level, particularly in research. Econometrics is impacting data science. The social science subfields of digital sociology and anthropology, as well as science, technology, and society (STS) studies, have been on the rise recently, with publications coming out and university study programs being established (Berman, 2014; Boellstorff, 2012). Research units – such as the Microsoft Advanced Technology Lab in Cairo (Microsoft, n.d.) – often task multidisciplinary teams with investigating

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<sup>2</sup> Throughout the rest of the essay I will refer to this realm of interconnected social, political, and economic issues – in other words, society in its broader meaning – as “the social.”

<sup>3</sup> In speaking of “social science” and “computer science” in these general terms as “fields,” I do not mean to uncritically lump together the varied disciplines that fall under the umbrella of each one, but rather, to address the connections between these two sets of disciplines at this general level.

domains such as cybernetics, artificial intelligence, and machine learning, which rely heavily on psychology. What, then, is missing?

What these examples show us is that, while great strides have been made, the relationship between social and computer science remains *multidisciplinary* rather than *interdisciplinary*. That is, if we attempted to represent this relationship using a Venn diagram, each field would remain a distinct circular set, with the circles occasionally bumping into each other rather than actually intersecting at any point. In each of these collisions – which stand in for the multidisciplinary subfields mentioned above – it is either that: (a) one field is bumping into and using the insights of, or researching, another, or (b) the two fields work side by side, but never truly interact. This is understandable given the degree of specialization necessary in the technical knowledge and conventions employed in each field, which can impede dialogue between social and computer scientists and raise the costs of training an individual in both fields. However, this is not a dead end since, as I will discuss in more detail below, many of these conventions build on skills necessary for both fields. As such, this challenge is simply a reminder of the possibility and necessity of finding innovative ways to fuse computer and social science because of the potentialities that can be opened up by allowing the two fields to have a proper conversation with one another.

### *Caught in the old*

Another factor contributing to the distancing of social and computer science is, ironically, one they share: the fact that they both operate within the neoliberal crevices of increasingly corporatized higher-education institutions, and/or corporations themselves. Certain aspects of corporate culture often present technology as a neutral medium divorced from social, economic, or political associations or ramifications (Cohen, 2007). This is embodied in the person of tech

entrepreneurs, with Silicon Valley business leaders often being hailed as distant yet progressive observers for their stances on certain issues (Vara, 2017). The implication then is that this neutral, progressive medium, which is above politics, does not need to engage with or learn from social science. However, this portrayal conceals the very real social, economic, and political context within technology is embedded. It hides issues like the digital divide, which is the inequality in access to technology and thus knowledge and other resources, as well as debates over net neutrality, or whether we can genuinely call the Internet a free space for the exchange of information when corporations with more capital are able to secure more bandwidth. It also masks social, economic, and political issues within the technology industry itself, from the sometimes poor working conditions of outsourced and migrant labor to the troubling economic and political ties of some programmers-turned-business-tycoons (Faris, 2013; Berman, 2014; Vara, 2017).

### **Synthesizing computer and social science**

#### *Forging the new*

If social science research on these issues exists, the problem, then, is integrating it into computer science and the technology industry. This is not to say that the latter are completely unaware of these issues, but rather, that they do not have the opportunity to give these issues due attention as a result of disciplinary boundaries, especially between the natural or physical sciences and the social sciences (Boellstorff, 2012).<sup>4</sup> Taking into account social science insights at a deeper level can thus reduce idealism, helping us to address problems in order to design

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<sup>4</sup> One need only think of how social and computer science are housed at different schools at AUC, with few bridges connecting them. This cannot be dismissed as an inevitable outcome of organizing a university; each of these schools, the School of Humanities and Social Sciences (HUSS) and the School of Sciences and Engineering (SSE), respectively, collaborates periodically with the School of Business, but rarely with each other. For example, the Cynthia Nelson Institute of Gender and Women's Studies, headquartered at HUSS, is under the auspices of the School of Global Affairs and Public Policy, housed at BEC, and strongly affiliated with the School of Business. The Management of Information and Communication Technology (MICT) major is also an example of collaboration between SSE (computer science) and the School of Business.

more accessible software and work towards a more equitable technology industry – and a more equitable world more generally. For, despite the corporatization of education and technology, the fields of social and computer science both value thinking “from the margins,” so to speak; they understand the importance of refusing to naturalize the status quo and constantly imagining new and more progressive and inclusive possibilities. A prime example of this is the use of social media in the Arab Spring and subsequent protest movements (Faris, 2013). This is not to generalize or to erase the less celebrated uses to which these fields have been put, from the history of social science’s complicity in justifying imperialist and neoliberal forms of oppression in the Middle East and elsewhere (Edelman, 2009) to that of computer science’s development of weaponry used by both state and non-state actors to enact physical and structural forms of violence, such as the Egyptian government’s use of technology to track and imprison dissenting voices or ISIS’s use of cyberwarfare techniques (Kingsley, 2014; Nash, 2015). Rather, it is to stress the potentialities each field opens up and the synergetic possibilities that can be unlocked by combining them – particularly the possibility of being better informed about such downsides in order to find innovative ways to tackle them. As any social or computer scientist knows, implementation is key; one person’s opiate of the masses (Marx, 1844/1970) can be another’s liberation theology (Gutiérrez, 1971/1988).

*Technical know-how, nuanced understandings*

Combining social and computer science in this way thus enhances their subversive and innovative qualities by capitalizing, not only on the more nuanced understandings the former brings to the table, but also on the technical know-how of the latter. Social science can all too often be a depressing enterprise, providing students with an extensive critique of the world’s problems and few resources via which to change them. This is not to say that research in and of

itself, and the development and social work that builds on that research, do not constitute such change. Rather, it is to say that the lack of training in the technical skills that students can use to actively build alternatives – and which can also benefit such research, development, and social work – can be frustrating. As such, combining social science critique with computer science “pratique,” if you will, is one solution to this problem. It is also an empowering one; students go out into the world with a nuanced understanding of the myriad ways in which it works as well as the problem-solving skills to directly change and create in an increasingly digital world.<sup>5</sup>

### *Transferable skills*

This critique/pratique synthesis can be achieved by capitalizing on the bases social and computer science share. As a sociology major and economics minor who recently took up programming, I was surprised to discover that writing code requires many of the same skills as writing a social science paper. First, one needs to approach situations curiously and inquisitively, and to critically analyze them to determine problems or issues by breaking down, synthesizing, and working with large amounts of information; as such, one needs to be able to move seamlessly from big picture vision to paying close attention to detail. Moreover, both enterprises adopt agile working methods, adding iteratively onto previous work, both one's own and the body of existing work on the topic; and both require working collaboratively with others, be they fellow programmers, researchers, and/or research participants. Furthermore, both endeavors emphasize the importance of documentation and rely heavily on translation, be it from human to programming language and vice versa, or from the language used by research participants to that used in writing, usually Arabic to English and vice versa in Egypt. Finally, as forms of writing, both require one to be able to express clearly and concisely, with editing and refactoring, as well

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<sup>5</sup> In fact, so empowering is computer science in today's world that many development initiatives targeting marginalized groups, such as refugees, focus solely on teaching them coding (Bock, 2016).

as proofreading and debugging, being intrinsic parts of the process. These skills form the bases of computer and social science, and their transferability is not only useful in facilitating career moves from one to the other field, but also as a common denominator for truly interdisciplinary collaboration between the two.

### **Conclusion**

I have attempted throughout this essay to show that, despite growing awareness of the connections between the social and the technological, collaboration between social and computer science remains minimal and multidisciplinary due to logistical and ideological factors that widen the gap between the two fields. However, a fresh outlook reveals that computer and social science share many of the same essential skills and values, and can complement each other in ways that address their respective problems and open up new possibilities, behooving us to find innovative and interdisciplinary means to combine them.

This is not impossible. As mentioned above, the fields of business and computer science have already realized the benefits of interdisciplinary collaboration between them, opening up new possibilities such as business process intelligence practices, technologized business resource management, and business training for computer scientists (Blanchard, 2016). Business has also collaborated with social science in such areas as social entrepreneurship and corporate social responsibility, although more collaboration is perhaps necessary to ensure more inclusivity in business and address some of the problems of corporate culture discussed above. Future work could explore and outline guidelines for the ways and areas in which social and computer science in general, and the specific fields and concentrations within them, can collaborate interdisciplinarily. These will inevitably involve individuals with training in both fields.

This will not only make said individuals more dynamic and competitive in the job market, but will also have more far-reaching positive effects. Based on what we know so far, trade, society, and new innovations will always exist and impact each other, perhaps more so as the world becomes more interlinked. The fact that, as I write this, AUC has just appointed a new Vice President for Digital Innovation with experience in applying computer science to business needs, and who will now connect this expertise to educational needs, is an example of growing awareness of these interlinkages. In building on this existing awareness to continue redefining disciplinary boundaries – which we must remember are constructed and constantly changing, the ones we have today having been defined recently – to allow them to reflect the state of the world, rather than to impose one on it, we can better address the issues at hand, from the refugee crisis to education. This is by no means a sufficient condition for the progress of development in Egypt and the region, but it is most certainly a necessary one.

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