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Perspectives on Computational Analysis

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**T3 Research and the Perils of Data Science Ethics**

In 2008, the article *Tastes, Ties, and Time: A New Social Network Dataset using Facebook.com* by Lewis, Kaufman, Gonzalez, Wimmer, and Christakis caught social media’s eyes. They used a unique database that depicts some key features of social networks. For the first time in history, researchers tracked the evolution of social networks in an almost complete class of college students since their freshmen year. The unique feature of this dataset is that it is a natural research instrument, which merges university registers, as the dorms assigned to each student, with Facebook profiles, which gives data about demographics, cultural preferences, gender, affiliations to clubs, among others. That highly valuable information helped to understand how social networks emerge. After the first paper was published, the database became available for qualified researchers after signing a non-disclosure agreement. The names of the people in the database, as well as other characteristics were deleted before being released to the public; the latter was done with the firmly intention of protecting the privacy of the subjects involved in the study. However, as Zimmer pointed out (2008a, 2008b, 2010), the privacy of the individuals in their database was not guaranteed because the researchers gave enough clues to identify where the data was collected hence, it was possible to detect quickly some student’s names.

The Facebook database used in this article is just an example of the danger of using non-traditional methods for database collection and research. For instance, De Montjoye, Hidalgo, Verleysen, and Blondel (2013) showed that it is possible to identify 95% of people using only four spatio-temporal points due to the uniqueness of human mobility "fingerprints." Also, De Montjoye, Radaelli, and Singh (2015) showed that with four spatio-temporal points of credit card records is possible to re-identify 90% of the costumers. In addition, Youyou, Kosinski, and Stillwell (2015) showed that an algorithm could make personality judgments more accurate than what peoples' friends could do. These papers illustrate that anonymity in big databases is questionable and that data can be used to understand people's behavior deeper. A consequence of this is that people who can understand and use the data may have power and information above others, factor that can be used in many positive and negative ways. Hence, it implies an ethical challenge for scholars, universities, and firms.

Salganik (under review) emphasizes four principles to be respected while doing human research: respect for persons, beneficence, justice, and respect for both law and public interest. However, one of the complex points is that it is not possible to respect them all every time. For example, research on social networks may be nonsensical for people outside social sciences, while for social scientist is of crucial importance. According to academics, many researches on social networks are beneficial (second principle), but people may believe that the world might be the same with or without that knowledge. Circumstances such as this, defy any of these principles yet are interesting for social scientists. In order to teach researchers about the ethical implications of their studies, and considering the new challenges that new data generates, universities and other public and private institutions have created institutional review boards (IRBs). Those are responsible not only to preserve research’s ethics but also to not limit creative methodologies and insights.

There are two unintended consequences of IRB committees, at least. The first one is that researchers may hide research ideas that can be audited by IRBs. That is to say, instead of presenting research projects to IRBs, academics decide to carry on their investigation without IRBs' advices because they believe that their procedures might never be approved by IRBs due to the reputational risks involved. But if they realize that their research methodology might be successful, then they will ask for IRBs' views. As a result, the damage that IRBs aim to prevent may arise even before IRBs know about the projects. In extreme cases, scholars might decide to look for opportunities in other research centers or companies, where they can execute their research with more flexible policies.

The second possible consequence, highly related with the first one, is to hide research made by corporations. Universities and public institutions have strong policies against ethics misconducts, but it does not necessarily mean that private companies will follow the same principles. For instance, hundreds of web pages, such as internet search engines, electronic commerce companies, and even restaurants are doing research every time people click on a website. That might privilege a political candidate or induce the purchase of some products, with excellent results, but without people’s awareness. If ethical practices are not correctly executed, they might foster incorrect practices, such as hiding information from the scientific community. One of the reasons for that is that journals will not publish some papers due to ethical considerations. In other words, private companies such as Facebook may continue to conduct experiments with their users but will not publish their results. In this case, the harm can be public and the knowledge private.

Like many other policies, IRBs need to be there to preserve the ethics of institutions and researchers. However, it is useful to be aware of the unintended consequences. IRBs need to help researchers to take better decisions on what procedures should be followed and preserved the entrepreneurial spirit of researchers however, they have a delicate task because it is difficult to predict the consequences of new methodologies. There are effects to have stringent ethical committees, but also there are of having none. Regarding data science, the challenge is to foster innovative research without naïve mistakes like the ones Lewis, Kaufman, Gonzalez, Wimmer, and Christakis did. Challenge accepted?

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