Making Places For Thinking Critically About Data

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In a lab space in Midtown Atlanta, under the illumination of a digital projector mounted overhead, undergraduate students are exploring data about recent changes in the physical and demographic makeup of their city through an exercise in map-making. However, their drawing instruments are not what you might expect of digital media. Rather, they are markers, pens, and paint applied to an oversized stretch of white paper, sixteen feet long by four feet wide. The projection is driven by sophisticated, custom mapping software, but it does not dictate the way that students mark up their map. Rather, students must negotiate between the projected data and what they personally know about Atlanta through their own lived experiences.

These students are learning to think critically about data— how to approach unfamiliar sources both effectively and ethically—in the Map Room, a new project currently housed in Georgia Tech's Local Data Design Lab, where I serve as the faculty director. The educational mission of the Map Room, which has evolved out of a collaboration with data artist Jer Thorp, is to support creative and collaborative explorations of civic data, and to help people reflect upon and revise the stories that data tell about their lives and the places they live.

The project is an example of how critical thinking, one of the traditional goals of a humanities education, might be applied to digital things. Educators have long debated how to best teach critical thinking. Many credit the American philosopher John Dewey with setting the modern foundation for critical thought in his book *How We Think*, originally published in 1933. Dewey uses the term "reflective thought" to characterize the "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tends" (Dewey, x). Much about this approach is still relevant.

However, today in 2019, during a period of rapid social, economic, and environmental changes in the United States—many of which can only be seen through "big data," data at a scale unimaginable in Dewey's era—it is time to revisit some of our basic assumptions about what critical thinking means. We have so much data today that we can scarcely see it all without the

use of software. Unfortunately, most of our contemporary software tools are black-boxes; they are inscrutable in the way they work. Moreover, these tools encourage us to treat them as universal instruments for reasoning, regardless of the data, their origins, or their users.

Thinking critically in our data-driven society means, in part, following Dewey's suggestion that we consider new forms of knowledge, such as data, "in the light of the grounds that support (them)." We can approach these "grounds," quite literally, by contemplating data in terms of their locality: where they are created and used. Indeed, thinking critically about data means challenging what anthropologist Anita Chan calls the "myth of digital universalism," which prevents us from considering how data might mean different things in different places.

This approach to critical thinking owes much to scholarship in science and technology studies as well as feminist theory, both of which have sought to demystify the black boxes of technoscience by revealing how all forms of knowledge are situated in their own local conditions. For example, Barbara Thayer-Bacon challenges previous models of critical thinking with her concept of "constructive thinking." She writes "as a model for thinking, it stresses the impossibility of separating the self from the object, the knower from the known." (Thayer-Bacon, 6) Updating Dewey's conception of reflective thought accordingly would mean expanding his notion of grounds to something beyond the first principles of logic. The grounds that support our beliefs about data are personal, as well as material and social.

In following, the Map Room offers a new set of conditions for critical thinking: First, the Map Room is personal. Data do not speak for themselves in the Map Room. They are interpreted and transposed onto paper maps by people who must consider the data in relationship to their own personal knowledge and values. Second, the Map Room is material. In the Map Room, people use making to enhance their thinking. They engage their hands, indeed their whole bodies given the large size of the maps, as well as a range of traditional and digital technologies for map-making. Third, the Map Room is social. Unlike most mapping software, people are not meant to use the Map Room alone. They must coordinate with others by making space for a range of responses to the data—including responses from collaborators who might have different ways of thinking about the data being mapped.

Over the next year, the Local Data Design Lab will be working to foster the development of Map Rooms in a host of other cities. As the project moves into new contexts, we are expecting that it will need to adapt. In order to support critical thinking in unexpected local conditions, we

are imagining the Map Room as a flexible framework rather than a rigid platform. Resistance to the myth of digital universalism requires that the nature of critical thinking about data not be generalized. Thus, the Map Room project seeks to empower local communities as they shape their own effective and ethical interpretations of data.