

Proxy reasoning Olga Goriunova

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The lacklustre term, “proxy” is a kind of connector - an intermediary - that, as an untranslated loan word, populated languages other than English with the emergence of the World Wide Web in the 1990s. A proxy server sits between an individual computer and a web page, providing services or limiting what one can see. The error messages Proxy TimeOut and Bad Gateway are examples of those that were prolific in browsing experiences of the time. Proxies remain a key part of network communication architecture, filtering content, accelerating service requests, handling access, enabling eavesdropping or anonymity. But a proxy is not only an element of network architecture but also a form of reasoning prevalent in a data-driven society and thus a key instrument of a certain kind of technological arrangement of the world. The latter is the focus of this entry.

The origin of the word “proxy” lies in administration and its larger meaning in English extends to cover a person acting on someone else’s behalf, the authority to act in such a way, or the legal instrument making it possible. The simplest form of proxy - a substitute - standing in for someone or something else, retains a two-way connection to what it stands in for, which endows it with a capacity to act on their behalf. The authority of the proxy, endowed by the state, is the state’s authority itself. Politically, this means that assaulting the proxy harms the sovereign. Proxy wars, a staple tool of foreign policy, gained a new scale in mid-twentieth century, when the threat of nuclear winter complicated the possibility of direct conflict between superpowers. Politics became a form of threat management through deterrence - a mathematically-grounded calculation of probabilities of various actions and their outcomes (Fuller, Goriunova, 2019).

The calculation of probabilities, which acquired a new grounding with computational power and predictive models, relates the use of proxy in deterrence to its function in statistical reasoning, data analytics and machine learning. By developing the capacity to link back and harm those who are represented by proxies (not of their choosing) in predictive computation, proxy retains its genealogy in the administration and discharge of power while developing new computational capacities.

The terms “proxy data” or “proxy variable” name a piece of data that is used to measure something that cannot itself be directly measured. The reasons for the impossibility of direct instrumental measurement could be qualitative (how to measure conscientiousness?), structural (real data not available), ecological (the cost of collecting and processing all data too high), cosmological (data about the future non-existent) or legally enforced (under European GDPR, it is illegal to gather and use ethnicity data unless for strictly defined purposes), amongst other reasons. Hence, proxy variables are widely used instead. The decision on the kind of proxy data that would stand in for something that cannot be measured is based on disciplinary knowledge, historical practice, personal judgement or “intuition”.

In statistics, for example, GDP can be used as a measure of the economic health of the nation. The use of GDP as a proxy variable is standard practice in the discipline of economics. It has been criticised as overly focused on economic growth, both harmful to the planet and unrepresentative of people's lives. In data analytics-driven fields, which now seem to include every sphere of action, but most notably policing, healthcare, insurance, finance, advertisement, and retail, the use of proxy data is widespread. While these sectors are subject to regulation, scrutiny doesn't (yet) extend to regular auditing of proxy variables, models, or outcomes of predictive analytics. Given that our societies are structurally racist, patriarchal and ruled by capital, it is not surprising that historical practices, cultural habits and personal opinions that determine and use proxies return racist, sexist, and discriminatory computational judgements.

The examples are innumerable. Names, for instance, are routinely used as proxy variables for ethnicity and gender. Sweeney's investigation of the delivery of online ads offering prison data when Black-associated names are entered in a search engine, but not for White-associated ones, is an example of the operation of name as a proxy variable for race (Sweeney, 2013). There is significant work documenting discrimination against Black people in terms of accessing loans and many other services based on the use of their address and neighbourhood postcode as a proxy variable for financial stability and trustworthiness as well as critical investigations of the use of predictive models in the prison-industrial complex, such as recidivism prediction (Angwin et al., 2016). The use of proxy variables in these examples is rooted in historical practices, the use of newly invented algorithms and supported by an infrastructure. This includes separate companies offering databases linking names to ethnicity and gender or historical records of insurance claims. It extends to practices of policing and imprisonment as well as an infrastructural cohesion across specific industries' use of proxy variables.

The use of proxy variables as a source of discrimination is widely discussed in the critical data research community. One of the problems preventing a quick remedy is that excluding proxy variables that can lead to discrimination would not prevent a machine learning algorithm that specifies a structured relationship between data from inferring certain information about people on the basis of other characteristics. Proxy variables will emerge even when not directly specified (for instance, age could be inferred from the length of work experience, health records, etc.). Removing parameters does not fix discriminatory outcomes.

Thus, while some proxies are stable and can be critically addressed, many proxies are shape shifters. They are also ubiquitous, - in a relational world, everything is connected to and can act as a weak indicator for something else. Indeed, it seems that any data can become a proxy variable standing in for something else. For instance, in 2021 it emerged that the UK's Conservative party illegally appended ethnicity data to voter data (Gayle, 2021). The Tories historically used ethnicity data to stoke racial tensions and exploit anti-Muslim feelings in certain South-Eastern-Asian ethnicities in voting, for instance, against Sadiq Khan London's Labour mayor who is Muslim. Here, ethnicity is the proxy variable for political affiliation and voting decision. What the Cambridge Analytica scandal revealed, among other things, is how personality traits were used as a proxy for voting intentions and a psychometric profile - as the proxy of a receiver of political

advertisement. In an ideal world of political communication turned propaganda, such a proxy could reliably and measurably convert the political vote of the living human it stands for (Hern, 2018).

Proxy reasoning is not only based on past correlations used to make judgements about the present. Its main vector of operation is future-oriented. Prediction relies on large amounts of proxy operations, taking some activity of some people as an indication of the future likelihood of another activity of that same people - or the future activity of another group of people, related to the control group by - again - another proxy operation. The infrastructure of proxy reasoning that includes the models that the proxy variables are embedded in, the ways in which data is combined and weighted, historical and training datasets, correlation databases and libraries, the data analytic services, (free and paid for) the practices of managers and data analysts, expands by layering on and on, on and outwards until it becomes one with the general proxy prediction of the future.

A knee-jerk reaction to proxy reasoning is a total rejection of technology. Historically, a large proportion of European philosophy framed technology as instrumental, rationalising, objectifying and thus deprived it of existential value. Husserl's mathematisation of nature and Heidegger's enframing are a criticism of a technological arrangement of the world of which the proxy seems a perfect exemplar. Indeed, in the era of proxy politics and proxy culture, which rely on action through mediation, surrogate forces, hidden inferences, cunning correlations, and pattern fallacy (Steyerl, 2014; Apprich, Chun, Cramer and Steyerl, 2018; Tollman and Levin, 2017), it is a very tempting position. When faced with the vocabulary of "targeting and measuring" as responses to politics and culture, it is almost impossible to suppress this urge. The currently dominant logic of proxy reasoning is dreadful: it is about extending instrumental measurement not only to areas where it's not possible, but also in space and in time.

A critical response to proxy reasoning is of utmost importance (Noble, 2018; O'Neil, 2016). It can't, however, proceed by a full rejection of inference, and specifically, of the abductive reasoning that is key to the use of proxies. This would be defeatist. Medicine, climate research and many other forms of enquiry that could contribute to a survivable world use proxy variables in their analysis. It has been argued that the operations of the proxy, i.e. relating things to each other, expressing one thing through another and inference, are habitual capacities of language (i.e. metaphor) and reasoning (logic). Peirce wrote that "not the smallest advance can be made in knowledge beyond the stage of vacant staring, without making an abduction at every step" (Peirce, 1981). Moreover, the logical operation of proxy is not limited to human reasoning. Elephants use the sound of fallen fruit as a proxy for its ripeness and the availability of food to dine on. There are arguments in botany to extend the animal capacity to infer the likely reason for an event (abduction) and to expect related things to happen (foresight) to plants that exhibit learning behaviour, and are able to anticipate on the basis of past experience (Trewawas, 2015).

There are larger questions concerning the alternative framing of technology that could account for proxy reasoning that extends from Haraway's notion of the cyborg to technofeminism, and the propositions of Afrofuturism to software studies (Haraway, 1991; Sollfrank, 2019; Eshun, 1998; Fuller, 2008). While proxy reasoning

embedded in the current techno-capitalist complex may seem to have a chilling grip, Heidegger cannot have been right. Things have always been technical. What can make technology so deadly are the alliances it enters into and therefore the question of technology is a question of struggle rather than of essence.

The proxy reasoning that is currently used as a tool, a manoeuvre, a trick, is inescapably linked to questions of causality. Whereas "the end of theory" through big data replaced causality with correlation as proclaimed by Chris Anderson, clearing the way for discrimination sold as objectivity, for the politics of slow destruction and quick annihilation, complex causality and theory has not gone away. Indeed, "theory is back!" The proxy has the cunning capacity to be right in the middle, - a glue that sticks things together. Many operations of proxy reasoning can indeed be true Bad Gateways and should TimeOut. But as a shifter, the proxy can and must be deployed for other purposes, turned against its crippling use, manoeuvred to work as an ally.

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