Harald Weston:

Data Analytics as Predictor of Character or Virtues, and the Risks to Autonomy

Abstract:

Can we measure and predict character with predictive analytics so a business can better assess, ideally objectively, whether to lend money or extend credit to that person, beyond current objective measures of credit scores (when available) and standard financial metrics like solvency and debt ratios? We and the analysts probably do not know enough about character to try to measure it, though it might be more useful to measure and predict a person's temperance and prudence as virtues, or self-control as psychology, or sense of obligation, particularly a moral commitment or sense of duty to honor a contract and re-pay a loan. The pervasive data surveillance of people that goes with "big data" and predictive analytics is not only an invasion of privacy in general, but an impairment of the aspect of privacy called autonomy that will constrict and alter a person's choices and development of self.

Agenda:

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Introduction

The question of measuring character comes from a *New York Times* article with the catchy title, *Determining Character with Algorithms*, which reported on two companies using data analytics to determine what they loosely call character in assessing a potential borrower. SAT scores, grade points averages, colleges and majors, even longevity of a cell phone number are used. "The idea, validated by data, is that people who did things like double-checking the homework or studying extra in case there was a pop quiz are thorough and likely to honor their debts." (Hardy, 2015). Trying to score for character is a clever idea.

Separately, companies use algorithms for hiring (Miller, 2015a). The contention is that these data points are less subjective measures than the usual methods of hiring, which can often lead to claims of discrimination or favoritism (Lam, 2015). Probably so, though some bias is inevitable because an algorithm is written by a human, as a Microsoft programmer notes (Miller, 2015b). This is not the first time people have tried to quantify what has previously been a subjective exercise. A few years earlier, *The Times* noted that people on dates were inquiring of each other's credit scores early in the relationship to assess the potential financial costs that the other might bring to the relationship (Silver-Greenberg, 2012). This seems to be an earlier use of character scoring with an existing metric.

This raises the question whether character can be scored. This essay contends that character is too broad and flexible to be measured, or is being measured by this predictive analytics. Rather, something more specific like the virtue of prudence or temperance is being measured, or something different like following rules and honoring promises should be the target. Whatever is being predicted, we should expect there will be an effect upon an person's autonomy knowing that all past transactions and data points are being evaluated, either in constraining choices, or trying to game the system for a better score, or foreclosing personal development.

Credit Scores And Non-Credit Measures From Data

Credit scores have been used by lenders, employers and landlords to help assess the risk and reliability of prospective borrowers, employees and tenants. A similar insurance score is used by insurers to help assess risk of prospective insureds (Halon and Boyd, 1996). Credit scores, called FICO scores because based on the proprietary algorithm invented by Fair Isaac & Co in 1950 (thus FICO), use past bill-paying practices and utilization of credit by the individual (Boulard, 2004); the scores are considered good predictors of risk of the individual as borrower, employee, tenant, or for losses as an insured (FTC, 2007; Brockett and Golden, 2007). FICO scores are subject to some problems such as unfair practices by the credit reporting agencies including failure to investigate disputes (Siegal, 2015), and are subject to controversies, including mysteries about how scores are determined, and declines in scores due to potential creditors merely inquiring about the scores or the status of a mortgage (Ritzholz, 2010), and due to uncovered medical expenses, (CFPB, 2014; Rosenthal, 2014), although revisions to the algorithm are supposed to reduce the impact of medical losses (Fair Isaac, 2014; Andriotis, 2014). The collection and use of credit scores is governed by the Fair Credit Reporting Act, and enforced by the United State Federal Trade Commission, and to a lesser extent by individuals affected by the score through lawsuits under the FCRA. The use by insurers of a slightly different "insurance score" is governed by the federal law, and by state law overseen by state insurance commissioners.

Information gleaned from consumers' use of the internet and on-line shopping, and other publicly available information such as voter registration, frequent shopper or loyalty cards, giving e-mails to businesses, restaurant reservations, types of computers, geolocation applications on smart phones and license plate readers[60], and of course criminal records, are all data sets. This is called "data exhaust" (Davenport, 2013). Data brokers compile this information and create their own scores, which are not subject to the FCRA (FTC 2012, FTC 2014a), though these scores have sometimes been offered to and used by employers and landlords

[60] The police are doing this and storing the information, as are repo crews (Atiyeh, 2014, EPIC, Lynch 2014).

in violation of the FCRA (FTC, 2014b, Wyatt, 2012)[61]. The credit reporting agencies – TransUnion, Experian, Equifax – which are subject to the FCRA, also have sideline businesses that are competitive with data brokers that "create and sell 'consumer evaluation,' 'buying power' and 'marketing' scores, which are ingeniously devised to evade the FCRA (a 2011 presentation by FICO and Equifax's IXI Services was titled Enhancing Your Marketing Effectiveness and Decisions With Non-Regulated Data'). The algorithms behind these scores are designed to predict spending and whether prospective customers will be moneymakers or money-losers." (Taylor and Sadowski, 2015; and see Cohen, 2013: 1916). The database marketing company Acxiom (one of many data brokers) reviews 50 trillion data transactions yearly on 500 million consumers worldwide, including 190 million Americans, with 1,500 data points per person based publicly available information like home valuation and voter registration to Internet usage to create precise profiles on consumers, ranking consumers from "high-value prospects, to be offered marketing deals and discounts regularly, while dismissing others as low-value — known in industry slang as 'waste.'" (Singer, 2012).

The ability to predict customer's interests and financial risks is captured in the infamous story in *The New York Times Magazine* that retailer Target used predictive analytics to determine which young female customers were likely pregnant, even before the women knew, to then offer them coupons and hook them into Target for their maternity and baby clothing and care needs (Duhigg, 2012). Other risks and critiques of big data have been addressed in many articles.[62]

Character or Behavioralism as the Metric

If the trait to be measured directly or indirectly with data analytics for risk assessment in lending is character, we need to look a little at what is character. "Character is the whole of which the virtues are some of the components; but a character trait can be a virtue or a vice depending on the circumstances," writes Hartman (1998: 550). He gives the example of self-confidence: when acting despite peer pressure this is virtuous, while when against good arguments it is vice. Hartman describes character as "one's standard pattern of thought and action with respect to one's own and others' well-being and other important concerns and commitments." (Hartman, 2007: 316). Sherman (1989: 1) describes character as "a person's enduring traits; that is, with the attitudes, sensibilities, and beliefs that affect how a person sees, acts, and indeed lives. As permanent states, these will explain not merely why someone acted this way *now*, but why someone can be *counted on* to act in certain ways." Wilson defines character as "empathy and self-control" (Wilson, 1991: 5).

Character is developed from the practice of virtues, which "are traits of character that constitute praiseworthy elements in a person's psychology. To have a virtue is to have a praiseworthy character trait appropriate to pursuing the particular kind of good with respect to which the trait counts as a virtue." (Audi, 2012: 273; similarly Feldman, 2000: 1438). As Philippa Foot wrote, "… virtues are in general beneficial characteristics, and indeed ones that a human being needs to have, for his own sake and that of his fellows." (1978: 107). Aristotle says that doing virtuous acts does not alone make the person virtuous, the acts must be done virtuously. "The agent also must be in a certain condition when he does them; in the first place he must have knowledge, secondly he must choose the acts, and choose them for their own sakes, thirdly his action must proceed form a firm and unchangeable character." (§ 1105a.). Wilson (1985:15) describes virtue as:

> *"habits of moderate action; more specifically, acting with due restraint on one's* impulses*, due regard for the rights of others, and reasonable concern for distant consequences. […] Virtue is not learned by precept, however; it is learned by the regular repetition of right actions. We are induced to do the right thing with*

[61] The collection and distribution of such information outside of the Fair Credit Reporting Act and the standing of a person to sue over that use is a question before the United States Supreme Court in *Spokeo, Inc. v. Robins*, No. 13-3339 (certiorari granted April 27, 2015, on appeal from 742 F.3d, 409 (9th Cir., 2014)).

[62] Michael Lewis (2015) has wryly suggested that some type of analytics be used by universities – Harvard – to predict who among the applicants is likely to be worth a few billion dollars years after graduation, so Harvard doesn't again turn down the next Steven Schwarzman, who is worth $13 billion and whom Harvard turned down as a student.

respect to small matters, and in time we persist in doing the right thing because now we have come to take pleasure in it. By acting rightly with respect to small things, we are more likely to act rightly with respect to large ones."

Although character develops through practice into habits, it allows – even requires – that sometimes the right thing to do might be wrong in most circumstances. This is Aristotle's "practical wisdom." Consider the person who reliably pays her bills, lives within her budget, saves enough for the occasional indulgence. The virtue of temperance is shown here. Yet now our person's daughter needs expensive medical care, and this being the United States the out-of-pocket medical expense will be thousands of dollars.[63] Many news stories report that people with high deductible medical plans in the U.S. forego or delay medical treatment (e.g. Abelson, 2015). Does the person of character tell the daughter, "Too bad, I have bills enough to pay, we're out of money, you're out of luck"? Or does this person say, "My daughter needs medical care to live, everyone else will get paid later"? This is the modern equivalent of the classic ethical problem of whether it is right for the poor person to steal food and medicine to survive. But in this example there is no theft, only unpaid and un-payable bills: a common dilemma for Americans, for whom 33% put off medical care due to the cost in 2014 (Riffkin, 2014) with a higher percentage in 2013 (Commonwealth Fund, 2013[64]), and many are unable to pay their medical expenses (Cohen and Kirzinger, 2014; Kaplan, 2014).

The ethical problem can be extended to the mother proceeding with the necessary medical care knowing she will be unable to pay the medical bill. From the legal perspective, not paying the existing creditors is breach of contract, and entering into a contract for medical care knowing one cannot pay the bill is fraud and deceit. From a business point of view trying to predict a customer's likelihood to pay his or her bills, it is the legal and financial issues to be forecast, not the ethical, although some psychological assessment can be useful here too (see Ding, Chang and Liu, 2006, discussed further below.)

The virtues of temperance and prudence might be the proper category to measure for a borrower's financial risk. A virtue is the mean between the excess and deficiency (Aristotle, §1106A-1108; Gottlieb, 2009: 19-20). The person who is temperate in most things in life probably does not spend money excessively, thus should be able to handle money and repay any loan. The temperate person will not be extravagant, and will control his or her passions, and will likely act with deliberation rather than impulse. Predictive analytics has shown that people who buy felt pads for the bottom of the chair legs, or buy carbon monoxide detectors for their home, or buy premium birdseed, are better financial risks, while people who frequent particular bars or place charges on their credit cards for marriage therapy or pawnshops are worse risks (Duhigg, 2009). Academic studies have found that male business executives who are unmarried or on the third wife pursue more aggressive investment risks (Nicolosi and Yore, 2015), and an executive's prior legal infractions, such as traffic violations, driving under the influence of alcohol, domestic violence, reckless behavior, disturbing the peace, have a positive correlation

[63] The economists and policy makers have previously provided incentives to Americans to control their unnecessary or discretionary medical expenses by creating high deductible medical plans, and then providing tax-free incentives to save for medical expense eventualities through health saving accounts, $6,550 in 2014 and $6,650 in 2015. This assumes Americans earn enough to save this amount, plus save for retirement, a doubtful proposition given that the median income for all families in 2013 was $46,7000 (Fed Reserve Bulletin, 2014) and median retirement savings in 2014 for households age 55-64 was $104,000 (GAO Retirement Survey, 2015).

[64] "More than one-third (37%) of U.S. adults went without recommended care, did not see a doctor when sick, or failed to fill prescriptions because of costs, compared to as few as 4 percent to 6 percent in the U.K. and Sweden, according to the study published today as a Health Affairs Web First article. In addition, nearly a quarter (23%) of U.S. adults either had serious problems paying medical bills or were unable to pay them, compared to less than 13 percent of adults in France, the next-highest country, and 6 percent or fewer in the U.K., Sweden, and Norway. About two of five (41%) U.S. adults spent $1,000 or more out-of-pocket for care in the past year—by far the highest rate of any country surveyed.

"Uninsured adults in the U.S. were the most likely to struggle to afford health care. However, even U.S. adults insured all year were more likely than adults in other countries to forgo care because of costs, to struggle with medical bills, and to face high out-of-pocket costs, with 42 percent paying $1,000 or more out-of-pocket for medical care. According to the study, U.S. health insurance has higher deductibles and higher cost-sharing, and does not place limits on out-of-pocket costs. This potentially explains why even people with health insurance in the U.S. struggle to afford needed health care." (Commonwealth Fund, 2013).

with a propensity to perpetrate fraud (Davidson, Dey and Smith, 2012). Another way to describe this is impulse control, exemplified in the famous marshmallow experiments and their follow up studies (Konnikova, 2014).

As humans have long done, we look to a person's friends to help assess the person. Do you associate with quality people or scoundrels? Facebook extends its predictive analytics to evaluate the credit scores of a person's friends to help assess this persons' creditworthiness (LaFrance, 2015).

In psychological terms, temperance looks much like self-control, which does correlate with risk (e.g. Limerick & Peltier, 2014; Fischer, Kastenmüller & Asal, 2012). A behavioral economics study was able to correlate prudence and temperance with risk (Ebert & Wiesen, 2014).

Impulsiveness and impulse control are psychological traits, which can also be examined as behavioralism. Behavioralism, like character, evinces a person's tendency to act in predictable ways. Behavioralism is a response, perhaps trained through incentives and rewards. Studies on self-control failures explain why people act impulsively and take on too much debt (Limerick & Peltier, 2014; Baumeister, 2002). Credit card companies study such psychology to assess lending risk (Duhigg, 2012; Gathergood, 2012). Thus impulse control as psychology can be behavioralism, and can also be the virtue of temperance or reason. This is an important distinction for data analytics and the measurement of character, because it seems that the data wranglers seek to measure propensity and constancy, but mostly as an aspect of behaviorialism. The person who reliably pays his or her bills on time because of fear of a bad credit score, or the converse reaction of desire to maintain a good credit score, acts under different motivation than the person who pays his or her bills on time because it is the right thing to do as a moral obligation – the obligation of contracts and promises. The whistleblower who acts for the reward shows behavioralism, while the whistleblower who acts to expose wrongdoing regardless of gain or loss shows ethics. Hartman (1998: 548) gives the example of the person who acts from courage because it is the right thing (character), in contrast to the person who does exactly the same thing because the economic incentives guide him without a bit of courage (behavioralism). In virtue ethics, "there is the agent's motivation to act appropriately in that field …. Moral virtue requires not just good deeds, but good motives." Not just having virtue, "but action grounded in virtue" (Audi, 2012: 275).

Data analytics for credit risk seems to be scoring for propensity and self-control, which might equate with the virtues of temperance and prudence, while self-control gets closer to a measure of character. Whether using psychological or ethical terminology to describe the position, the prudent person is likely to avoid taking on too much financial or other type of risk, thus making the person a better customer for a financial lender.

Thus despite catchy news titles and loose talk, it seems unlikely that data analytics is yet scoring for character. With the crucial Aristotelian components of individual flourishing and the common good that compose and result in character, it seems a metric for character would be fore more complex.

Duty, Commitment or Promise as the Metric

Another dimension that predictive analytics could assess is a sense of duty or commitment, or possibly guilt, because this will direct the customer to fulfill the deal to repay the debt. Here we have something closer to ethics – an obligation. Ding, Change and Liu (2006: 819) examined the ethical side of people's decisions not to repay credit card debts, finding that people who have internal senses of control are more like to take responsibility and have an intent to repay credit card debt than people who believe control is external to them and thus incur the debt with little intention to pay it. Further, people with more risk-taking behaviors are likely to have lower ethical standards and expect to benefit from unethical conduct.

The sense of duty or intent creates a bridge to law in the form of contracts as to why contracts are binding. The philosophical basis of contracts as commitments is developed in two lines, not necessarily incompatible. Gordley (1991: 10-13) argues the proper theoretical underpinning of contracts is essentially Aristotelian, as explained by Aquinas, based on the virtues of truth telling in keeping promises, ad commutative justice that recognizes the bargain made and owed. Fried (2014: 4, 137-140) develops a theory of contracts as a Kantian

obligation, where a person undertakes a promise, a moral invention whereby a person creates an obligation arising out of trust and respect for others.

In this way, we might look at predictive analytics as possibly measuring the strength or propensity of persons' sense of moral obligation. That possibility seems for now to be beyond what the analytics is trying to do, but surely the concept could be measured in psychological terms as strength of rectitude or guilt. Ding, Chang and Liu (2006: 828) recommend the use of personality tests for "locus of control" and risk-taking as good predictors for lenders to assess an intention to repay. A lender would prefer a potential borrower with a high sense of control and low risk-taking. But the same measures would work against the merchant who would prefer a customer with a low sense of control and high risk-taking who will succumb to impulse purchases (see Achtziger, 2015). This is the internal conflict of predictive analytics: the consumer score that is bad for the lender is good for the merchant, and thus the incentives and enticements to the consumer are like the devil on one shoulder and the angel on the other each whispering into the consumer's ears to be good or be bad.

The predictive possibility of measuring a person's sense of obligation might be an interesting link to the philosophical and legal questions of what makes a contract binding: how strong a sense of obligation might be necessary to predict contractual fulfillment, how weak might demonstrate fraudulent intent? Further study could compare such predictive ability of commitment with the economic notion of "efficient breach" to renounce one's obligations for economic advantage regardless of commitment because it results in higher overall optimal utility for all parties. Do the economists prefer the efficiency of predictability and commitment, or the efficiency of breach for better options and utility? These questions are beyond the scope of this essay.

Implications for Privacy and Autonomy

A different dimension of contracts and promises leads to the question of autonomy, a subset of privacy.

Predictive analytics invades privacy in many ways, mostly obviously by companies holding and using all sorts of bits of personal information about a person, often without a person knowing their acts have been observed, compiled, traded and turned against the person. Privacy is a broad and multi-dimensional concept. If the concern about privacy in general is ownership and use of information (data), then we are largely stuck with a debate about spying, intellectual property, and rights; these issues have been addressed in many articles about data and privacy. The more interesting implication, which I focus on here, is the subset of privacy called autonomy (Halper, 1996: 133; Kupfer, 1987), because it affects a person's freedom to enter into contracts, and freedom of self-determination (or self-governance) and psychological development.

One aspect of autonomy is the ability to make contracts. Fried contends that the undertaking of the promise is an act of autonomy (2014:14,16, 144). A promise voluntarily (autonomously) made, with other legal factors, forms a contract, but a promise formed involuntarily is not autonomous, and contract law absolves the promise as coerced, using various legal defenses such as duress, fraud, mistake. Fried's focus is on contracts, not the philosophical problem of autonomy. He takes it as given that a person has autonomy to enter into a contract. But with predictive analytics that seek to predict, then instigate, then recommend, then initiate a contract, we should be concerned about the autonomy of the person being analyzed. In some respects, this path of prediction to contract is an algorithmic version of the charming salesman or conman. The consumer can walk away from the sales- or conman. Predictive analytics, however, follows the person around the Internet, as anyone who notices repeat advertisements knows.

Autonomy itself has many dimensions. Raz (1986:369) calls it a purposeful, self-determining, responsible agent, able to make plans and decide for oneself what to do by projection into possible futures, to control one's destiny through successive decisions. Fallon says "autonomy is largely a *descriptive* concept, which refers to people's actual condition and signifies the extent to which they are meaningfully 'self-governed' in a universe shaped by causal forces. … To be autonomous, one must be able to form a conception of the good, deliberate rationally, and act consistently with one's goals" (Fallon, 1994: 877). This sounds right, but research shows that the long-term planning to act consistently with one's goals can be a problem for people with impulsiveness. (Baumeister, 2002; Benhabib and Bisin, 2005). Christman (1988) surveys many dimensions of autonomy: the psychological

condition of self-governance; the right to be free of interference with one's choices and desires; a set of preferences; a choice of a person's life and freedom of action; the ability to have values and preferences and to choose them and approve them without manipulation, and to make such choices as a matter of utilitarian-type utility or welfare; moral agency; acting with reason and rationality (the Kantian model) or at least some cognitive awareness of ones choices. (See also Fallon, 1994: 877. This should lead to an examination of the differences among law, philosophy and economics as to the meanings of reason and rationality.) These are important distinctions that Christman addresses at length, but as concerns predictive analytics, the distinctions are mostly shades of the problem when predictive analytics seeks to sway a person's actions and choices. Thus a system that seeks to make people act on impulses or temptations, and preempt the control process people can develop to resist impulses, interferes with self-governance. "The power of big data is thus the power to use information to nudge, to persuade, to influence, and even to restrict our identities" (Richards and King, 2013: 44). (See Benhabib and Bisin, 2005, examining agents' automatic impulses against agents' control processes for consumption-saving decisions, and Baumeister, 2002 on the weak self-control showed by people who act impulsively.)

Cohen (2013: 1908) has a slightly different conception of autonomy based on a "liberal" model of precultural determination, which she rejects because of her important point that autonomy is necessarily culturally-situated.

Predictive analytics looks at a person and regardless of that person's possible choices, treats the person as having nearly made or inevitably will make certain choices. Cohen (2013: 1917) contends that such predictions are "designed to produce … a particular kind of subject … whose preferred modes of self-determination play out along predictable and profit-generating trajectories." If the prediction is correct, all should be well. But if the prediction is incorrect, or the person creates a new choice not in line with past conduct, then that rational choice (if it is a rational choice) is constrained or preempted by the business user's model. Kerr and Earle (2013) call this a preemption prediction; with a preemption prediction, predictive analytics might accurately predict the desire, or it might constrain or prevent that choice, at least insofar as the business user and the person have occasion to possibly intersect. Of course, the business faces positive and negative risks in constraining the person's autonomy: a good prospect may make a bad choice that adversely affects the business, and a bad prospect may now make a good choice that could be profitable to the business, but whom the algorithm says to avoid.

The autonomous person, in developing character, will be aware of choices and their lasting impact on his or her life, as Raz notes (1986: 371). That impact might only be realized long afterwards, when time, other events, and judgment allows one to assess impact. This is defeated with the enduring compilation of data about people. In a simple way, credit scores – an early predictive analytic -- already constrain and guide people's choices, as people try to improve their credit score. This guidance is not necessarily bad, it might even be good, but it means that the scoring system is altering choices.[65] We should expect that individuals who are aware of other predictive analytics scores on the choices offered to them may seek to improve the predictive scores by doing things that the analytics favor to improve the score. Where the individual is engaged in gaming the system, such as by doing Internet searches for things that look good for predictive scoring, or buying felt pads for the bottoms of chair legs and buying bags of premium birdseed as a previously discussed study showed, we might call it fair play, even if it creates another level of distraction and manipulation. Nevertheless, where the individual engages in conduct, or refrains from other conduct, to improve the score, this constrains autonomy and molds the individual in a way desired by the business interest. Raz (1986: 373, 378) says in general that the "choice must be free from coercion and manipulation by others," although he allows that some coercion to protect a person against harm is not necessarily bad. Cohen (2013: 1920) says, specific to big data, "it is modulation, not privacy, that poses the greater threat to innovative practice. Regimes of pervasively distributed surveillance and modulation seek to mold individual preferences and behavior in ways that reduce the

[65] People are also admonished to build their personal brands, (Peters, 1997), for which "authenticity is the key" (Hyder, 2014).

serendipity and the freedom to tinker on which innovation thrives." (The point is developed in other ways in Christen, et al., 2013.)

If such modulation improves the person, intentionally or not, we should be wary that our technology is up to the task of building character or "'normalized soul training of the Orwellian nightmare." (Cohen, 2013: 1916). More likely such feedback modulation is behaviorist, fostering internalization of new norms and constructed subjectivity (Cohen, 2013: 1917, 1924), which diminishes autonomy and individual development.

Selective Disclosure, Data Collection And The Right to Be Forgotten

A person cannot function autonomously without some control over the information about that person (Kupfer, 1987: 81-82). Beardsley (1971) calls this selective disclosure. This is a crucial problem and foundational basis of big data, collected from data exhaust: that the selective disclosure a person makes in one place becomes an aggregated enduring disclosure available to the entire commercial world. Predictive analytics runs afoul of autonomy, because autonomy requires "that others affirm the social boundaries of this self. They must grant the individual control over this movements and information about himself. They must also permit the individual to have some say in who can experience him and when." (Kupfer, 1987: 82). Further, we need privacy to try out options and rehearse our thinking without being convicted by public opinion. (Kupfer, 1987: 83). This cannot be done when our every inquiry, search and message is scanned, recorded, tagged and compiled[66] with public information and business exchanges into a predictive model of ourselves. The data is many bits of information gathered from almost anywhere on the Internet, whether put there by the consumer or not (usually not), and stored and indexed forever (Tsesis, 2014), by over 100 companies that track a person's moves through the Internet (Madrigal, 2012). This surveillance is the digital rebuke to Beardsley's (1971: 70) "selective disclosure," "the conceptual core of the norm of privacy," that set "the conditions one will be communicated *about*, much less to determine what will be *known* about one" (See also Wall, 2011). The person who gives up, fully or partially informed, some information for some commercial advantage, (Beardsley, 1971: 67) may never have expected that the information would then be sold and merged with other information to create a model and category of that person. Beardsley wrote decades before our current concern of data exhaust, digital breadcrumbs, and ersatz and misleading corporate privacy policies. Thus bits of information that might have been public but too hard to find, and thus remained essentially private, are now public and easy to find, and are gathered and distributed or at least searchable. Cohen labels this "informational capitalism" (2014: 1912). This enduring retention of previously hard-to-find discrete bits of information is the focus of the right to be forgotten, or right of erasure, enacted in the European Union (European Commission, Right to be Forgotten). The E.U. Data Protection Directive, 96/46EC, states in its preamble that the object of the data protection laws is to protect privacy and freedoms of natural person:

> *"(2) Whereas data-processing systems are designed to serve man; whereas they must, whatever the nationality or residence of natural persons, respect their fundamental rights and freedoms, notably the right to privacy, and contribute to economic and social progress, trade expansion and the well-being of individuals;*
>
> *[…]*
>
> *(10) Whereas the object of the national laws on the processing of personal data is to protect fundamental rights and freedoms, notably the right to privacy, which is recognized both in Article 8 of the European Convention for the Protection of Human Rights and Fundamental Freedoms and in the general principles of Community law; whereas, for that reason, the approximation of those laws must not result in any lessening of the protection they afford but must, on the contrary, seek to ensure a high level of protection in the Community;"*

[66] See for example, Herold, 2014, on Google "reading" e-mails.

Citing to these and other provisions of the Directive, and the right of access by persons to erase or block data that does not comply with the Directive, the European Court of Justice ordered Google Spain to remove links to particular information as violating the Directive (Google Spain v. Agencia, 2014[67]). The French Commission nationale de l'informatique et des libertés made a similar order in 2015 (CNIL 2015). Thus if our every transgression is indexed and retrievable, then our future autonomy of a developed self in the commercial "free" world will be constrained, as it was in the Eastern European countries under Soviet- dominated police-state surveillance.

Conclusion

Predictive analytics is its own ideology: "Big Data is the intellectual engine of the modulated society. Its techniques are techniques for locating and extracting consumer surplus and for managing, allocating, and pricing risk, and it takes data sets at face value. But the values of predictive rationality and risk management are values, and they are the values with which serious critics of Big Data need to contend." (Cohen 2014: 1924). Its impact will expand choices for some people, constrain choices for others, and alter people's own behaviors and thus autonomy, all while seeming to be value free. To be sure, an excess of choice is not always better, as studies have shown. (I may want a glass of wine with my lunch, though 100 choices is overwhelming to a decision, yet I may be tempted by a favorite wine on the list.) A system that facilitates choices by anticipating our desires and offering our preferred options faster is useful. But a system that preempts our reason and rationality to act on those impulses and options (I should not have the wine today), subverts our self-governance, and interferes with our future development by ever reminding us of our past impulses. Commercial firms that use the same information and models at the same time both to tease one's impulses to spend money, and scold one's self-control to save or repay money, will grind away a person's autonomy, judgment and character.

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[67] And see King and Raja, 2013, and Rosen, 2012, and Tsesis, 2014 for a discussion of the differences between the E.U. and U.S approaches to privacy and the right to be forgotten.

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