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Behavioral Advertising: From One-Sided Chicken to Informational Norms

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Abstract

When you download the free audio recording software from Audacity, you agree that Audacity may collect your information and use it to send you advertising. Billions of such pay-with-data exchanges feed information daily to a massive advertising ecosystem that tailors web site advertising as closely as possible to individual interests. The vast majority want considerably more control over our information. We nonetheless routinely enter pay-with-data exchanges when we visit CNN.com, use Gmail, or visit any of a vast number of other websites. Why? And, what, if anything, should we do about it? We answer both questions by describing pay-with-data exchanges as a game of Chicken that we play over and over with sellers under conditions that guarantee we will always lose. Chicken is traditionally played with cars. Two drivers at opposite ends of a road drive toward each other at high speed. The first to swerve loses. We play a similar game with advertisers—with one crucial difference: we know in advance that the advertisers will never "swerve."

In classic Chicken with cars, the players' preferences are mirror images of each other. When Phil and Phoebe face each other in their cars, Phil's first choice is that Phoebe swerve first. His second choice is that they swerve simultaneously. Mutual cowardice is better than a collision. Unilateral cowardice is too, so third place goes to his swerving before Phoebe does. Collision ranks last. Phoebe's preferences are the same except that she is in Phil's place and Phil in hers. Change the preferences a bit, and we have the game we play in pay-with-data exchanges. Phil's preferences are the same, but Phoebe's differ. She still prefers that Phil swerve first, but collision is in second place. Given these preferences, Phoebe will never swerve. Phil knows Phoebe has these preferences, so he knows he has only two options: he swerves, and she does not; and, neither swerves. Since he prefers the first, he will swerve. Call this *One-Sided Chicken*. We play One-Sided Chicken when in our website visits we enter pay-with-data exchanges. We argue that buyers' preferences parallel Phil's while the sellers' parallel "collision second" Phoebe's. We name the players' choices in this pay-with-data game "Give In," (the "swerve" equivalent) and "Demand" (the "don't swerve" equivalent). For buyers, "Demand" means refusing to use the website unless the seller's data collection practices conform to the buyer's informational privacy preferences. "Give in" means permitting the seller to collect and process information in accord with whatever information processing policy it pursues. For sellers, "Demand" means refusing to alter their information processing practices even when they conflict with

a buyer's preferences. "Give in" means conforming information processing to a buyer's preferences. We contend that sellers' first preference is to demand while buyers to give in and that their second is the collision equivalent in which both sides demand. Such demanding sellers leave buyers only two options: give in and use the site, or demand and do not. Since buyers prefer the first option, they always give in.

It would be better if we were not locked into One-Sided Chicken. Ideally, informational norms should regulate the flow of personal information. Informational norms are norms that constrain the collection, use, and distribution of personal information. We contend that such norms would ensure free and informed consent to businesses' use of consumer data. Unfortunately, pay-with-data exchanges are one of a number of situations in which rapid advances in information processing technology have outrun the slow evolution of norms. We argue that, in a sufficiently competitive market, the needed norms would arise if we had adequate tracking prevention technologies.

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You download the free audio recording software from Audacity.[1] Your transaction is like any traditional provision of a product for free or for a fee—with one difference: you agree that Audacity may collect your information and use it to send you advertising.[2] Billions of such pay-with-data exchanges occur daily. They feed information to a complex advertising ecosystem that constructs individual profiles for behavioral advertising. Behavioral advertising is "the tracking of consumers' online activities in order to deliver tailored advertising."[3] It merges our digital footprints into pictures of surprising intrusiveness and accuracy. Advertisers can determine where you work, how you spend your time, and with whom, and "with 87% certainty, where you'll be next Thursday at 5:35 p.m."[4] The consequence is a startling loss of informational privacy. Informational privacy is "the claim of individuals, groups, or institutions to determine *for themselves* when, how, and to what extent information about them is communicated to others."[5] *Others* now have considerable power to collect, analyze, and use our information.[6]

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[1] Audacity, http://audacity.sourceforge.net.

[2] How Does Audacity Raise Money?, Audacity, http://audacity.sourceforge.net/donate/.

[3] Federal Trade Commission, FTC Staff Report: Self-Regulatory Principles For Online Behavioral Advertising and Protecting Consumer Privacy in an Era of Rapid Change (2009), http://www.ftc.gov/os/2010/12/101201privacyreport.pdf.

[4] Lucas Mearian, *Big data to drive a surveillance society*, Computerworld, March 24, 2011, http://www.computerworld.com/s/article/9215033/Big_data_to_drive_a_surveillance_society.

[5] Alan F. Westin, Privacy and Freedom 7 (1967) (emphasis added).

[6] We do not distinguish between personally identifying information (PII) and non-PII because recent advances in de-anonymization ensure that, in very many cases, non-PII may in fact identify individuals. *See e.g.,* Arvind Narayanan and Vitaly Shmatikov, *Robust Deanonymization of large sparse datasets*, Proceedings of the IEEE Symposium on Security and Privacy 111 (2008), and Paul M. Schwartz and Daniel J. Solove, *The PII Problem: Privacy and a New Concept of Personally Identifiable Information*, 86 N. Y. Uni. L. Rev. 1814 (2011).

We—most of us—want considerably more control over our information than the advertising ecosystem allows.[7] But we also want the advantages information processing secures: increased availability of relevant information, increased economic efficiency, improved security, and personalization of services.[8] We are willing trade some privacy for some of the advantages, but we want a better tradeoff than the control-depriving one businesses currently impose on us. Our misgivings are evidently idle, however. We routinely enter pay-with-data exchanges when we visit CNN.com, use Gmail, or visit any of a vast number of other websites.[9] Why? And, what should we do about it?

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[7] This is the most plausible interpretation of over twenty years of studies and surveys about consumer attitudes toward privacy. There is an excellent collection of relevant studies at , http://www.heinz.cmu.edu/~acquisti/economics-privacy.htm. For a useful summary of consumer attitudes in this regard, see UC BERKELEY, SCHOOL OF INFORMATION, KNOW PRIVACY, http://knowprivacy.org/report/KnowPrivacy_Final_Report.pdf. For discussion and interpretation, see Richard Warner, *Norms Undermined: The Corrosive Effect of Information Processing Technology on Informational Privacy*, 55 ST. LOUIS U. L. J. 1047 (2011).

[8] For a discussion of the advantages (other than personalization of services), see Jerry Kang, *Information Privacy in Cyberspace Transactions*, 50 STANFORD LAW REVIEW 1193–1294 (1998)(emphasizing availability of relevant information, increased economic efficiency, improved security). For consumer willingness to trade privacy for various benefits, see PREFERENCE CENTRAL, CONSUMER PERSPECTIVES ON ONLINE ADVERTISING - 2010 (2010), http://www.preferencecentral.com/consumersurvey/download/(arguing that "over half of consumers surveyed indicated that they prefer relevant targeted online ads as a trade-off for access to free content"); and ChoiceStream, 2006 CHOICESTREAM PERSONALIZATION SURVEY, http://www.choicestream.com/pdf/ChoiceStream_PersonalizationSurveyResults2006.pdf(claiming that only fifteen percent of web users would give up personalization benefits to avoid revealing personal details); compare JOSEPH TUROW ET AL., AMERICANS REJECT TAILORED ADVERTISING AND THREE ACTIVITIES THAT ENABLE IT (2009), http://ssrn.com/abstract=1478214(arguing that the vast majority of consumers find behavioral advertising unacceptable). The opposing studies illustrate the well-known truth about surveys: what you ask determines what you get. Still, the most reasonable interpretation of the surveys is that consumers (more or less) reject the current privacy/efficiency tradeoff and want a tradeoff that gives them more control over their privacy.

[9] *See, e. g.*, Wendy Schuchart, GOOGLE PRIVACY POLICY CHANGES? GET OVER IT CIO SYMMETRY (2012), http://itknowledgeexchange.techtarget.com/cio/google-privacy-policy-changes-get-over-it/?track=NL-964&ad=860003&asrc=EM_NLN_16191581&uid=3553118 ("Facebook basically knows enough about me to successfully predict what I'm going to wear tomorrow, yet we all grudgingly accept Zuckerberg's evil empire and go on with our status updates").

We answer both questions by describing pay-with-data exchanges as a game of Chicken that we play over and over under conditions that guarantee we will always lose. Chicken is traditionally played with cars.[10] Two drivers speed toward each other; the first to swerve loses. We play a similar game with sellers—with one crucial difference: we know in advance that the sellers will never "swerve." We will call this game *One-Sided Chicken*.

How do we escape One-Sided Chicken and regain an appropriate degree of control over our information? Regaining control means ensuring a sufficiently broad ability to give free and informed consent to information processing; otherwise, we lack sufficient ability to determine—*by and for ourselves*—what information others collect about us, and how they use and distribute it. Currently, businesses purport to obtain consent through "Notice and Choice."[11] The "notice" is the presentation of information (typically in a privacy policy and terms of use agreement); the "choice" is some action by the consumer (typically using the site, or clicking on an "I agree"

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[10] The 1955 film classic, Rebel Without A Cause, popularized the game of Chicken. In the film, Jim Stark (James Dean) races Buzz toward a cliff edge; the first to jump out loses. Bertrand Russell popularized the "drive toward each other" version when he described the mid-twentieth century nuclear brinksmanship policies of the United States and Soviet Union as a game of Chicken. BERTRAND RUSSELL, COMMON SENSE AND NUCLEAR WARFARE (1959). There is a very readable discussion of the game of chicken in WILLIAM POUNDSTONE, PRISONER'S DILEMMA (1992). Chicken, also known as Hawk-Dove, is a standard game theory game. *See, e.g.*,KEVIN LEYTON-BROWN, ESSENTIALS OF GAME THEORY: A CONCISE, MULTIDISCIPLINARY INTRODUCTION (2008); and MARTIN J. OSBORNE & ARIEL RUBINSTEIN, A COURSE IN GAME THEORY (1994).

[11] For a description and criticism of Notice and Choice, see COMMENTS OF THE CENTER FOR DIGITAL DEMOCRACY AND U.S. PIRG, IN THE MATTER OF A PRELIMINARY FTC STAFF REPORT ON PROTECTING CONSUMER PRIVACY IN AN ERA OF RAPID CHANGE: A PROPOSED FRAMEWORK FOR BUSINESSES AND POLICYMAKERS (2011), http://www.ftc.gov/os/comments/privacyreportframework/00338-57839.pdf. *See also* Paul Schwartz, *Internet Privacy and the State*, 22 CONN. L. REV. 815, 822 – 23 (2000); J. H. Beales III & T. J Muris, *Choice or Consequences: Protecting Privacy in Commercial Information*, U. CHI. L. REV. 109–135 (2008); and, Paul Ohm, *The Rise and Fall of Invasive ISP Surveillance*, 5 U. OF ILL. L. REV. 1417 (2009) (endorsing a limited notice and choice regime).

button), which is interpreted as the choice to proceed on the presented terms.[12] As

we have argued elsewhere and will assume here, "notice and choice" is clearly

inadequate. [13] It *does not* ensure informed consent: people do not read and

acquire the information necessary to informed choices.[14]   It *cannot* ensure

informed consent: as Daniel Solove and others have emphasized, you need

information about *unpredictable* future uses of your data to make an informed

choice, and you can't know what you can't know.[15] Even if it were possible, and

even if people made the effort to be informed, notice and choice *should not* be the

mechanism we use. There is no reason to think that the combined result of the

individual choices would yield the socially optimal tradeoff between privacy and

competing goals.[16]

The key to achieving free and informed consent lies instead in informational

norms.[17] Informational norms are social norms that constrain the collection, use,

and distribution of personal information.[18] Such norms explain, for example, why

your pharmacist may inquire about the drugs you are taking, but not about whether

you are happy in your marriage. Norm-governed exchanges not only implement

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[12] As Paul Schwartz notes, "when a Web site says something about its data processing practices—even if this statement is vague or reveals poor practice—the visitor to the site is deemed to be in agreement with these practices so long as she sticks around. This summary, despite its ironic tone, is no exaggeration." Paul Schwartz, *Internet Privacy and the State*, 22 CONN. L. REV. 815, 824 – 25 (2000).

[13] *See* Richard Warner & Robert Sloan, *The Undermining Impact of Information Processing on Informational Privacy*, *in* RIGHTS OF PERSONALITY IN THE XXI CENTURY (Justyna Balcarczyk ed., 2012); and RICHARD WARNER & ROBERT SLOAN, UNAUTHORIZED ACCESS: THE CRISIS IN ONLINE PRIVACY AND INFORMATION SECURITY, Chapter 4 (forthcoming, 2012).

[14] J. Howard Beales III & Timothy J. Muris, *Choice or Consequences: Protecting Privacy in Commercial Information*, UNI. CHI. L. REV. 109–135 (2008).

[15] D. J Solove, *Privacy and Power: Computer Databases and Metaphors for Information Privacy*, 53 STAN. L. REV. 1393–1462 (2001).

[16] *See* Richard Warner & Robert Sloan, *The Undermining Impact of Information Processing on Informational Privacy*, supra note 13, and RICHARD WARNER & ROBERT SLOAN, UNAUTHORIZED ACCESS: THE CRISIS IN ONLINE PRIVACY AND INFORMATION SECURITY , supra note 13.

[17] *See infra* Section III, C.

[18] *Id*.

acceptable tradeoffs between informational privacy and competing goals, they also ensure that we give free and informed consent to those tradeoffs.[19] Unfortunately, rapid advances in information processing technology have greatly outpaced the relatively slow evolution of norms, and lacking norms, we lack any adequate way to give free and informed consent to acceptable tradeoffs. The right response is to create the necessary norms, and we will suggest an appropriate norm generation process.

It may seem to some that all we are doing is offering an unnecessarily complicated description of a collective action problem. Collective action problems are situations in which in which everyone is worse off if everyone does what he or she individually prefers to do.[20] For example, everyone is better off if (almost) everyone does not litter, but, in the 1950's, almost everyone littered, and, as long as almost everyone else did, everyone preferred littering to taking the time and effort to use waste receptacles.[21] Creating the appropriate collective action—almost everyone uses waste receptacles—eliminates littering. Isn't the same true of pay-with-data exchanges? Everyone prefers to acquiesce to pay-with-data information processing as long as everyone else does, but everyone would be better off with a better tradeoff between privacy and competing concerns. And, like littering, can't we eliminate the problem through appropriate collective action—a consumer boycott, for example? So why do we need any more complicated description than this?

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[19] *See infra* Section III, E.
[20] *See* Katharina Holzinger, *The Problems of Collective Action: A New Approach*, SSRN ELIBRARY, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=399140 (last visited Feb 26, 2012)(discussing various definitions). *See generally* MANCUR OLSEN, THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS (1971).
[21] *See Litter Trashes the Environment*, ABOUT.COM, http://environment.about.com/od/pollution/a/litter.htm.

The advantage of the One-Sided Chicken description is that it characterizes the preferences of consumers and advertisers in a way that reveals how we need to alter those preferences to solve the problem.[22] Solving the problem requires more than merely getting buyers to act in concert—more than a mere boycott, for example. Sellers would almost certainly respond to such a boycott by offering information processing more closely tailored to individual buyers' preference.[23] There would, however, be no assurance that the new tradeoff between privacy and business concerns would be socially optimal. Sellers would make the minimum concessions necessary to end the boycott expeditiously, and of course the concessions might slowly disappear once the boycott ended. In addition, privacy tradeoff would still be a take-or-leave it tradeoff unilaterally imposed by sellers, not one to which consumers freely give informed consent. Our One-Sided Chicken analysis shows that, to solve the problem, we need to create a permanent threat of a consumer denial of access to the data needed for behavioral advertising and thereby alter preferences in ways that permit buyers to give buyers give free and informed consent to privacy tradeoffs. We can achieve this result, we contend, by empowering buyers with "do not track" technologies. An appropriate informational norm will arise as a result. The norm will ensure that buyers give free and informed consent to acceptable privacy tradeoffs.[24]

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[22] For the general usefulness of game theoy in analyzing collective action problems, see Austin Rathe, IS GAME THEORY A USEFUL TOOL FOR COLLECTIVE ACTION PROBLEMS? RATHE (2011), http://www.rathe.co.uk/austin-rathe/2011/6/8/is-game-theory-a-useful-tool-for-collective-action-problems.html(noting that game theory game theory analysis allows one to identify barriers to collective action as well as possible solutions). .

[23] It is unclear how long the personalized processing would last once the boycott ended.

[24] For a general discussion of the role of social norms in solving collective action problems, see Cass Sunstein, *Social Norms and Social Roles*, 96 COL. L. REV. 903 (1996).

But aren't we still ignoring another possibility? Why bother with norms? Why not solve the problem with legal regulation which ensures that buyers give free and informed consent to acceptable privacy tradeoffs? But how are we to implement this suggestion? Current privacy regulation in the United States is an unsystematic patchwork.[25] It fails to define acceptable privacy tradeoffs for pay-with-data exchanges,[26] and it has no workable mechanism to ensure free and informed consent. As we argued earlier, the Notice and Choice regime currently favored in legal regulation cannot possibly ensure free and informed consent. We see no reason to think this will change soon.

Section I provides a brief description of the online advertising ecosystem. Section II presents the game of Chicken, both the classic version with cars, and the One-Sided version we currently play in pay-with-data exchanges. We contend that consumers will remain trapped in the game unless we can empower consumers by giving them choices that the current online advertising system denies them. We propose to empower consumers with effective "do not track" technologies. We clam that consumers' use of effective "do not track" technologies would, in a sufficiently competitive market, result in an informational norm. In Section III, we explain the relevant notion of an informational norm. We also introduce the key concept of a *value-optimal* norm. Value-optimal informational norms guarantee free and informed consent to acceptable tradeoffs between informational privacy and competing concerns. We lack relevant value-optimal informational norms governing pay-with-data exchanges, and the result is that we lack any viable

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[25] *See e.g.,* Joel Reidenberg, *Privacy Wrongs in Search of Remedies*, 54 HAST. L. J. 877 (2003); DANIEL J. SOLOVE, UNDERSTANDING PRIVACY (2008); HELEN NISSENBAUM, PRIVACY IN CONTEXT: TECHNOLOGY, POLICY, AND THE INTEGRITY OF SOCIAL LIFE (2010).
[26] *See supra* notes 6 and 7.

means to give adequately free and informed consent to tradeoffs between privacy

and competing concerns that businesses unilaterally impose on us in pay-with-data

exchanges. The solution is to generate the necessary norms. Section IV introduces

the standard economic notion of perfect competition. We show that if consumers

have effective "do not track" technologies, then, under conditions of perfect

competition, a value-optimal informational norm governing pay-with-data

exchanges will arise. Perfect competition is an ideal that real markets only

approximate, and, in Section V, we show how to replicate our norm generation

result in real markets. We conclude in Section VI with a very brief consideration of

the prospects for developing close to perfect "do not track" technologies.

I. The Online Advertising Ecosystem

We present a simplified model of the advertising ecosystem consisting of just

five entities: profilers, advertising agencies, advertising networks or exchanges,

websites displaying the advertisements, and businesses purchasing the

advertisements.[27] A single entity may perform more than one role, but we ignore

that complication.

A. A Simple Ecosystem Model

Profilers create profiles that segment buyers into groups in order to predict

their willingness to buy specific types of products and services. eXelate, for

example, has agreements with hundreds of websites that allow it to collect

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[27] Models may distinguish several more entities and functions. For example, some make a
subtle distinction between advertising networks and advertising exchanges. *See, e.g.,* IAB
DATA USAGE AND CONTROL TASKFORCE, DATA USAGE & CONTROL PRIMER: BEST PRACTICES &
DEFINITIONS 6 (2010), www.iab.net/media/file/data-primer-final.pdf.

information about age, sex, ethnicity, marital status, profession, Internet search

information, and information about sites visited. It combines this data with data

from offline sources. eXelate explains,

> We are capturing billions of deep granular data points . . . We analyze
> [these] . . . and roll them into specific Targeting Segments . . . These
> categorizations include Demographic data . . ., consumer Interest data
> gathered from specific site activity . . . (such as parenting and auto
> enthusiast sites), and deep purchase Intent data culled from relevant activity
> on top transactional sites. We further segment and sub-segment this data
> into relevant buckets that in many cases drill down to the product and
> keyword level.[28]

Profiles routinely identify particular individuals, despite frequent claims to the

contrary from practitioners of behavioral advertising.[29] TARGUSinfo, for example,

boasts that "with our authoritative data and proprietary linking logic, no other

company can match our ability to accurately identify businesses and consumers in

real time—helping you target and recognize your best prospects, even at the

moment of live interaction."[30] The data includes "names, addresses, landline phone

numbers, mobile phone numbers, email addresses, IP addresses and predictive

attributes."[31]

The purpose of the profiles is to target display advertising. A business may

create its own display advertising, or it may outsource that to an advertising

agency.[32]

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[28] AdExchanger, EXELATE ANNOUNCES INVITE MEDIA PARTNERSHIP; CEO ZOHAR OFFERS INSIGHTS ON
DATA MARKETPLACE ADEXCHANGER.COM (2010), http://www.adexchanger.com/data-
exchanges/exelate-invite-media/.
[29] *See* COMMENTS OF THE CENTER FOR DIGITAL DEMOCRACY AND U.S. PIRG, *supra* note 10 at 15 –
20.
[30] TARGUSinfo, OUR SOLUTIONS: ON-DEMAND SCORING, PREDICTIVE ANALYTICS,
http://www.targusinfo.com/solutions/scoring/analytics/.
[31] TARGUSIinfo, ABOUT US: OUR DATA, http://www.targusinfo.com/about/data/.
[32] Advertising agencies include the OmnicomGroup's national advertising agencies,
http://www.omnicomgroup.com/ourcompanies/nationaladvertisingagencies, Epsilon,
http://www.epsilon.com/, and Havas Media, http://www.havasmedia.com/.

Advertising exchanges and networks, such as Google's AdSense, deliver display advertisements to the websites that display them. When a buyer visits a website, an advertising exchange combining the buyer's profile with information about his or her current website activity in order to more precisely target advertisements. The exchange then conducts an auction in which businesses bid for the opportunity to present their targeted advertisements (the whole process takes milliseconds). As one commentator aptly sums up the situation, "Advertisers bid against each other in real time for the ability to direct a message at a single Web surfer."[33] The goal is to tailor advertisements as closely as possible to the interests of the buyer receiving them. Datran Media, for example, promises "to identify who is visiting your Web site, who is being exposed to your advertisers' campaigns, and who is responding to specific ads. Real-time reports paint an accurate picture of whom your audience really is and who is responding to your communications—at the household level!"[34] The amount of information processed is immense. Right Media Exchange processes 9 billion advertising purchases daily[35]; MediaMath, 13 billion daily[36]; TARGUSinfo, 62 billion a year[37]; and Pubmatic, 100,000 per second.[38] The number of Google's AdSense transactions is

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[33] Garrett Sloane, AMNY SPECIAL REPORT: NEW YORK CITY'S 10 HOTTEST TECH STARTUPS AMNEWYORK (2010), http://www.amny.com/urbanite1.812039/amny-special-report-new-york-city-s-10-hottest-tech-startups-1.1724369.
[34] DatranMedia, AUDIENCE MEASUREMENT APERTURE, https://datranmedia.com/aperture/audience-measurement/index.php?showtype=for-publishers.
[35] CENTER FOR DEMOCRACY AND TECHNOLOGY, IN THE MATTER OF REAL-TIME TARGETING AND AUCTIONING, DATA PROFILING OPTIMIZATION, AND ECONOMIC LOSS TO CONSUMERS AND PRIVACY 2, http://www.centerfordigitaldemocracy.org/sites/default/files/20100407-FTCfiling.pdf.
[36] *Id.* at 2.
[37] *Id*.
[38] *Id*.

not available, but it is a network of 1.5 million websites and advertisers.[39]

Participation in AdSense is free for the seller and a route into the advertising

ecosystem for small businesses and free giveaways like Audacity.

Widespread participation in the advertising ecosystem makes it quite difficult

for buyers to find websites that will conform to their privacy preferences. The lack

of buyer choice plays a key role in our characterization of pay-with-data exchanges

as a game of One-Sided Chicken.

B. Buyers' Lack of Choice

Buyers lack choice because, although *advertising* is personalized, *information*

processing is not. It does not vary to conform to the privacy preferences of

individual buyers. Efficient information processing requires standardized,

automated routines using supercomputing power and advanced statistical

techniques to analyze vast collections of a complex mix of data of a variety of

different online and offline sources. Marketing objectives—not buyers' privacy

preferences—drive the collection, analysis, and use of vast amounts of diverse

types of information. As the CEO of the advertising exchange Rocket Fuel notes,

the company's "technology drives results for advertisers by automatically

leveraging massive amounts of internal and third-party external data and serving

only the best impressions *in the context of each advertiser's unique marketing*

objectives."[40]

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[39] Helen Leggatt, GOOGLE DISCLOSES SIZE OF ITS AD NETWORK BIZREPORT,
http://www.bizreport.com/2010/05/google-discloses-size-of-its-ad-network.html.
[40] George John, ROCKET FUEL CEO JOHN SAYS AD EXCHANGES MORE LIKE A TECHNOLOGY PLATFORM
THAN MEDIA SOURCE ADEXCHANGER.COM (2009), http://www.adexchanger.com/ad-
networks/rocket-fuel-ad-exchanges/ (emphasis added).

Sellers do not tailor their information processing to buyers' privacy preferences because they do not need to. The vast majority of buyers acquiesce in information processing practices, thereby guaranteeing sellers significant advertising revenues. Thus, sellers can easily afford to ignore the relatively few buyers who refuse to do business with them unless they adjust their information processing practices.[41] But even so, shouldn't we expect some sellers to break the mold to win business by catering to privacy preferences? That expectation would be disappointed.[42] Sellers do not break the mold—not if they rely on advertising as a significant source of revenue.[43] Participation in the ecosystem gives a seller a competitive edge over non-participants by making it a more attractive advertising platform. [44] To compete, other sellers must also participate, and, to gain an edge, they may need to adopt even more privacy invasive practices. The result is a "race to the bottom."[45]

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[41] One study may seem to suggest the opposite. Sören Preibusch & Joseph Bonneau, *The privacy landscape: product differentiation on data collection*, (2011), http://weis2011.econinfosec.org/papers/The%20privacy%20landscape%20-%20Product%20differentiation%20on%20data%20col.pdf. The study shows that when buyers can detect differences in the privacy characteristics of goods and services, sellers offering roughly homogeneous goods and services try to differentiate themselves by catering to privacy preferences. There is no inconsistency with our claims, however. The study considered only the amount of personal information requested for registration (if any) in mandatory or optional fields and whether the site had a privacy policy. *Id.* at 5. The study did not "include technical data collected implicitly such as a users' IP address or stored third-party cookies." *Id.* Since such information is critical for behavioral advertising, we cannot infer from the study that websites would differentiate with regard to such data (even if visitors were able to detect whether the site collected it).

[42] FELICE WILLIAMS, INTERNET PRIVACY POLICIES: A COMPOSITE INDEX FOR MEASURING COMPLIANCE TO THE FAIR INFORMATION PRINCIPLES (2008), http://www.ftc.gov/os/comments/behavioraladvertising/071010feliciawilliams.pdf (noting that "The vast majority of the privacy policies stated the firms have the right to share any data with any third party for any reason").

[43] Not all sellers do. Dropbox, for example, relies on user fees to generate revenue.

[44] PRIVACY INTERNATIONAL, A RACE TO THE BOTTOM: PRIVACY RANKING OF INTERNET SERVICE COMPANIES (2007), http://www.privacyinternational.org/article.shtml?cmd%5B347%5D=x-347-553961 (last visited Sep 28, 2010).

[45] *Id.*

II. Chicken: Classic and One-Sided

We characterize Chicken, in both its classic and One-Sided versions, by describing the preferences of the players. Our characterization of the preferences for One-Sided Chicken shows us what we need to change to escape that game.

A. Classic Chicken

In classic Chicken with cars, the players' preferences are mirror images of each other. Imagine, for example, Phil and Phoebe face each other in their cars. Phil's first choice is that Phoebe swerve first. His second choice is that they swerve simultaneously. Mutual cowardice is better than a collision. Unilateral cowardice is too, so third place goes to his swerving before Phoebe does. Collision ranks last. Phoebe's preferences are the same except that she is in Phil's place and Phil in hers. Change the preferences a bit, and we have the game we play in pay-with-data exchanges. Phil's preferences are the same, but Phoebe's differ. She still prefers that Phil swerve first, but collision is in second place. To introduce a theme to which we will return, suppose Phoebe was recently jilted by her lover; as a result, her first choice is to make her male opponent reveal his cowardice by swerving first, but her second choice is a collision that will kill him and her broken-hearted self. Given these preferences, Phoebe will never swerve. Phil knows Phoebe has these preferences, so he knows he has only two options: he swerves,

and she does not; and, neither swerves. Since he prefers the first, he will swerve.

Call this game *One-Sided Chicken*.[46]

B. Pay-With-Data Exchanges as One-Sided Chicken

We play One-Sided Chicken when we enter pay-with-data exchanges. We

will argue that buyers' preferences parallel Phil's while the sellers' parallel heart-

broken, "collision second" Phoebe's. We name the players' choices in this pay-with-

data game "Give In," (the "swerve" equivalent) and "Demand" (the "don't swerve"

equivalent). For buyers, "Demand" means refusing to use the website unless the

seller's data collection practices conform to the buyer's informational privacy

preferences. "Give in" means permitting the seller to collect and process

information in accord with whatever information processing policy it pursues. For

sellers, "Demand" means refusing to alter their information processing practices

even when they conflict with a buyer's preferences. "Give in" means conforming

information processing to a buyer's preferences. We contend that sellers' first

preference is to demand while buyers to give in and that their second is the

collision equivalent in which both sides demand. Such demanding sellers leave

buyers only two options: give in and use the site, or demand and do not. Since

buyers prefer the first option, they always give in.

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[46] EVELYN C. FINK, SCOTT GATES & BRIAN D. HUMES, GAME THEORY TOPICS: INCOMPLETE INFORMATION, REPEATED GAMES AND N-PLAYER GAMES 14 (1998). Poundstone discusses feigning to have the preferences of collision-second Phoebe as a strategy for classic Chicken in WILLIAM POUNDSTONE, *supra* note 10. To the best of our knowledge, very little has been written about One-Sided Chicken, perhaps because it is such a simple game with just one Nash equilibrium, and that one being a pure-strategy equilibrium. Discussions of Chicken itself are not uncommon. *See, e.g.,* Vinod K. Aggarwal & Cédric Dupont, *Goods, Games, and Institutions*, 29 INTERNATIONAL POLITICAL SCIENCE REVIEW 393–409 (1999).

1. Buyers' Preferences

Buyers' preferences parallel Phil's. A buyer's first choice is that he or she demands, and the seller gives in—(Demand, Give In) for short. We will use this short form throughout, and will always understand (buyer action, seller action) to be the order. (Give In, Demand) ranks first because it means that the buyer is sure to get information processing consistent with his or her preferences.

Next comes (Give In, Give In), which might either be tied with (Demand, Give in) for first place among a particular buyer's preferences, or be in second place among a buyer's preferences. A buyer may be equally happy with (Give In, Give In) because it also ensures that the sellers' information processing practices are consistent with the buyer's requirements. However, a buyer might also strictly prefer (Demand, Give in) to (Give In, Give In). The (Demand, Give in) buyer gets two things: preference-conforming information processing and a certain attitude— "I insist on conformity to my standards." A buyer might very well prefer the "I insist" attitude to the "I will conform if need be" attitude of (Give In, Give In).

Now we turn to the remaining two options: (Give In, Demand) and (Demand, Demand). Both of these options certainly rank below both the first two options where seller Gives In, because the first two options gave the buyer the combination of information processing consistent with his or her preferences and use of the website, and neither of the two remaining options provide both. Buyers prefer (Give In, Demand) to (Demand, Demand) because the latter means the buyer doesn't get to use the site (although also the seller does not get to process the information). Buyers' behavior—entering billions of pay-with-data transactions daily with sellers who participate in the advertising ecosystem and give buyers no

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control over information processing—shows that buyers prefer to permit the information processing rather than forego use of the website.

In summary, we have: (Demand, Give In) either strictly preferred to or tied with (Give In, Give In) preferred to (Give In, Demand) preferred to (Demand, Demand.)

But what about buyers who are unaware of the advertising ecosystem and the information processing involved? We assume their preferences do not differ greatly from the buyers who are aware of the information processing, and hence that, if they realized their beliefs were mistaken, most of them would most likely join the ranks of the majority of buyers and continue to enter the transactions. In this "if they were not mistaken" sense, we can say they too prefer to acquiesce in the current information processing practices. Our answer is the same for those who think that "do not track" technologies curtail data collection. Cookie-blocking and other anti-tracking technologies are currently remarkably ineffective,[47] and we assume, that if their users were to realize this, most of them would join the majority in acquiescing to data collection.

2. Sellers' Preferences

Sellers' preferences parallel those of "prefer collision second" Phoebe. First place goes to (Give In, Demand), which ensures that the buyers permit whatever

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[47] *See e.g.*, Vincent Toubiana & Helen Nissenbaum, *Content Based Do Not Track mechanism*, (2011), http://www.w3.org/2011/track-privacy/; Bil Corry & Andy Steingruebl, *Where is the Comprehensive Online Privacy Framework?*, (2011), http://www.w3.org/2011/track-privacy/; and, COMMENTS OF THE CENTER FOR DIGITAL DEMOCRACY AND U.S. PIRG, IN THE MATTER OF A PRELIMINARY FTC STAFF REPORT ON PROTECTING CONSUMER PRIVACY IN AN ERA OF RAPID CHANGE: A PROPOSED FRAMEWORK FOR BUSINESSES AND POLICYMAKERS (2011), http://www.ftc.gov/os/comments/privacyreportframework/00338-57839.pdf.

information processing the seller desires. (Demand, Demand) occupies second place. Like "prefer collision second" Phoebe, sellers do not "swerve." Why? The question arises because sellers lose money when they refuse to accommodate the privacy preferences of "Demanders." The answer is that the refusal is built into their information processing practices. The processing involves standardized, automated routines designed to meet marketing goals, not to conform to buyers' varying privacy preferences. A seller plays many—often millions—of games with buyers a day, repeatedly day in day out.[48] During any span of time, the seller believes enough buyers will give in—enough to make one-size-fits-all information processing the profit maximizing strategy. So in any particular game of Chicken, the seller's preference ranking is (Demand, Give in) and then (Demand, Demand).

We doubt that sellers have any clear preference between (Give In, Give In) and (Demand, Give In). Both mean pursing information processing policy consistent with a buyer's preferences, and both options are irrelevant to what sellers choose to do. Buyers will either "Demand" or "Give In," and in either case, sellers will opt for "Demand." [49]

3. One-Sided Chicken

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[48] A game theorist might expect that the repeated nature of these pay-with-data exchanges would necessitate the use of the theory of repeated games from game theory, rather than the stage games (i.e., one-shot games) we have been using here. *See, e.g.,* FINK, GATES, AND HUMES, *supra* note 46; OSBORNE AND RUBINSTEIN, *supra* note 10. However, because of the extremely simple structure of One-Sided Chicken and of its one equilibrium, there are no interesting features of repeated One-Sided Chicken that are not already present in the one-shot One-Sided Chicken we consider, so we can restrict our attention to the simpler case of the one-shot game. The same would *not* be true for classic Chicken. *See infra* note 50.

[49] We could put even fewer constraints on preferences, and we would still get the same result for One-Sided Chicken. As long as seller/Pheobe (1) prefers (Demand, Demand) to (Demand Give In) and (2) prefers (Give In, Demand) to (Give In, Give In), then she has a "dominant strategy" and will always play Demand.

Combine buyers' Phil-like preferences with sellers' collision-second-Phoebe-like preferences, and you get a game of One-Sided Chicken in which buyers always lose.[50] This is not to claim that all buyers realize the situation they are in. Some buyers naively assume that the sellers' information processing is more or less in line with the buyers' privacy preferences. Such buyers ignorantly acquiesce to information processing that is almost certainly inconsistent with their preferences; they give in without realizing it. Defense requires knowledge, but as soon as buyers acquire the requisite knowledge, they are defeated. Just as with Phil, that knowledge reduces the buyer's options to two: "Give in, Demand"; and, "Demand, Demand." Since the buyer prefers the first to the second, the buyer always gives in. Buyers are condemned to defenseless ignorance or constant defeat.

How do we escape from One-Sided Chicken to appropriate informational norms? Chicken with cars contains a clue. In the late 1950s B-grade Hollywood youth movie, Phil would introduce broken-hearted Phoebe to just-moved-to-town Tony. They would fall in love, and, in a key dramatic turning point, Phil and Phoebe would play Chicken. Phoebe would see that Tony is also in the car and be the first to swerve. We need a "Tony" to change businesses' preferences. We contend that consumers would become the pay-with-data-exchange equivalent of Tony if they had *close to perfect* tracking prevention technologies. Phoebe swerves because she does not want to lose her beloved Tony. Sellers are "in love with" advertising revenue. We argue that they will "swerve" to avoid losing the revenue they would

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[50] Another related model of website advertising as a game leads to the same (Give In, Demand) outcome: classic Chicken, but with the moves made sequentially rather than simultaneously, with Phoebe/seller making the first move. If in classic Chicken, *first* one player choses a move, with the second player having complete information about which move was chosen, and *only then* the second player chooses his move, then the one equilibrium strategy is for the first player to Demand and the second to Give In. *See e.g.,* FINK, GATES, AND HUMES, *supra* note 46 at 11–12.

lose if buyers prevented data collection for advertising purposes, and we contend

that, in a sufficiently competitive market, the result will be that an informational

norm arises that implements a tradeoff between informational privacy and

competing concerns.

The first step is to introduce and explain norms.

III. Norms, Coordination Norms, Informational Norms

We define norms in general first and then turn to the special case of

coordination norms. Finally, we focus on the type of coordination norm that

concerns us here, informational norms.[51]

A. Norms Generally

We define norms in terms of nearly complete conformity. Thus, a *norm* is a

behavioral regularity in a group, where the regularity exists at least in part because

almost everyone thinks that he or she ought to conform to the regularity.[52] We

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[51] We discuss these matters in detail in RICHARD WARNER AND ROBERT SLOAN, UNAUTHORIZED ACCESS, *supra note 13*. There are earlier discussions in Richard Warner & Robert H. Sloan, *Vulnerable Software: Product-Risk Norms and the Problem of Unauthorized Access*, 2012 U. Ill. J.L. Tech. & Pol'y, 101 (2012); and in Richard Warner & Robert Sloan, *Vulnerable Software*, *supra note 13*. In the text we offer a summary that is as brief as possible.

[52] Our notion of a norm is a standard one in recent law and economics literature, with one exception. We explain conformity to the regularity by appeal to people's beliefs above what they ought to do. The recent literature in contrast explains conformity as the result of self-interested actors avoiding the costs of non-conformity. "One approach assumes that people care only about their (material) well-being, and relies on repeated game models to explain how they cooperate or refrain from violating social norms . . . [A second] approach assumes that people care about something else aside from material goods—esteem, status, conformity, or some such thing. Eric A. Posner, *Introduction*, *in* SOCIAL NORMS, NONLEGAL SANCTIONS, AND THE LAW (Eric A. Posner ed., 2007). Richard McAdams, a proponent of the second approach, notes that "by a norm I mean a decentralized behavioral standard that individuals feel obligated to follow, and generally do follow, . . . [to gain the esteem of others], or because the obligation is internalized, or both." ; Richard McAdams & Eric A. Posner, *The Origin, Development, and Regulation of Norms*, *in* SOCIAL NORMS, NONLEGAL SANCTIONS, AND THE LAW 101, 114 (2007) The emphasis on "feeling obligated" would appear

leave open the question of many have to conform for almost everyone to conform

as well as the question of how to define the group within which conformity occurs

("almost everyone" means "almost everyone in such-and-such group"). An

example: In Jones's small town, everyone goes to a Protestant church on Sunday.

They do so at least in part because each believes he or she ought to.

B. Coordination Norms

Our primary concern is with coordination norms. A coordination norm is a

behavioral regularity in a group, where the regularity exists at least in part because

almost everyone thinks that he or she ought to conform to the regularity, as long

as everyone else does. Driving on the right is a classic example. In the United

States and other "drive on the right" countries, we drive on the right because, and

only as long as, almost everyone else does so. Elevator etiquette is another good

example. The norm is to maximize the distance to your nearest neighbor.[53] The

norm balances two competing interests: using the elevator when it arrives, and not

being overcrowded. We think we ought to conform to achieve this balance—as long

as everyone else does so. There is little point in being a "nearest-neighbor distance

maximizer" if everyone else just stands wherever they like. Contrast the Protestant

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close to our view that people conform because they think they ought to; however, McAdams
explains "feeling obligated" in terms of the costs of non-conformity—thus: "Without
internalization, one obeys the norm to avoid external sanctions. . . . After internalization,
there is yet another cost to violating a norm: guilt. The individual feels psychological
discomfort whether or not others detect her violation." *Id*. at 144. McAdams still conceives
of people as self-interested agents seeking to avoid costs they regard as unacceptable. We
take it to be clear that people are not merely self-interested agents. The assumption that
they are has been extensively and decisively criticized. AMARTYA SEN, THE IDEA OF JUSTICE
(2009).
[53] This is a simplification. The true norm is closer to "maximize the distance from your
nearest neighbor subject to the constraint that you stay within the peripheral vision of at
least one other passenger, and that you have at least one other passenger within your
peripheral vision."

church example. You do not need anyone else to go to the Protestant church on Sunday to achieve the goal of going yourself (you may of course have *other* goals that require others to go—socializing with others, for example).

The same is true of the driving example. The norm balances driving exactly as one wishes, and driving in a way that minimizes accidents. We think we ought to achieve this balance—as long as everyone else does. You would not drive on the right if you expected everybody else to drive on the left. Which side of the road you drive on depends on where you expect others to drive. However, everyone thinks that, for safety and convenience, all drivers should drive *on the same side*. Thus, all drivers share an interest in driving on the same side, and no driver can realize this interest on his or her own; each needs the cooperation of the others. Similarly, in the elevator example, all share an interest in an acceptable tradeoff between being able to use the elevator and avoiding overcrowding, and no one can realize the interest unilaterally. In both cases, everyone conforms to the regularity (driving on the right, maximizing distance from the nearest neighbor) because everyone thinks that, to realize the shared interest, he or she ought to conform, as long as everyone else does. We define coordination norms with reference to this "shared interest/ought, as long as everyone else does" pattern. The "ought" is conditioned on the assumption about everyone else. We will need to refer to such "oughts" frequently, and, to avoid constant repetitions of "as long as everyone else does," we will say, for short, that one thinks one *ought conditionally* to conform.

The definition: a *coordination norm* is a behavioral regularity in a group, where the regularity exists at least in part because almost everyone thinks that, in

order to realize a shared interest, he or she ought conditionally to conform to the regularity.[54]

We focus on the role of coordination norms in mass markets. In such markets, the norms shape *buyers'* demands. A mass market buyer cannot unilaterally ensure that sellers will conform to his or her requirements; coordination norms create collective demands to which profit-motive driven sellers respond. One key question: Who are the parties to demand-unifying norms in mass markets? The answer may seem obvious—buyers and sellers; after all, they need to coordinate so that sellers offer what buyers want to buy; and, if the norms are to allocate risks between buyers and sellers, how could both not be parties to the norm? It is indeed possible to mass market demand-unifying norms as buyer-seller coordination norms;[55] however, it is simpler and more elegant to model them as norms to which the only parties are buyers. The key point is that producers design and sell mass-market products in response to sufficiently large groups of buyers; hence, no mass market buyer can unilaterally ensure, for example, that his or her desired level of privacy will be available; only a sufficiently large collective demand can accomplish that. Coordination via demand unifying norms creates the required collective demand, to which profit-motive driven sellers respond. Since the profit motive is sufficient to ensure the sellers' response, there is no need to see the sellers as a party to the coordination norm. Demand-unifying norms take the

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[54] Our notion has similarities to the notion in STEVEN A. HETCHER, NORMS IN A WIRED WORLD (2004). There are also important affinities between our notion of a coordination norm and the notion of coordination game. The original idea of coordination games and the term "coordination game" comes from DAVID K LEWIS, CONVENTION: A PHILOSOPHICAL STUDY (1969); Lewis' notion of a convention in turn is inspired by THOMAS C. SCHELLING, THE STRATEGY OF CONFLICT (1960). For a more recent treatment, see RUSSELL COOPER, COORDINATION GAMES: COMPLEMENTARITIES AND MACROECONOMICS (1999).
[55] But see *infra* note 60 and accompanying text.

following form: buyers demand that sellers. . . . The reference to sellers may

suggest, contrary to what we said earlier, that both buyers and sellers are parties

to the norm. This is a misimpression. *Buyers* are the only parties the norm—the

only ones who satisfy the definition of the norm. The norm coordinates their

demands, and sellers respond—not because they are parties to the norm, but

because they want to profit by meeting the unified demand.[56]

C. Informational Norms

The informational norms with which we are concerned are coordination

norms that govern the collection, use, and distribution of information.[57] As Helen

Nissenbaum notes, informational norms

> [g]enerally . . . circumscribe the type or nature of information about various
> individuals that, within a given context, is allowable, expected, or even
> demanded to be revealed. In medical contexts, it is appropriate to share
> details of our physical condition or, more specifically, the patient shares
> information about his or her physical condition with the physician but not vice
> versa; among friends we may pour over romantic entanglements (our own
> and those of others); to the bank or our creditors, we reveal financial
> information; with our professors, we discuss our own grades; at work, it is
> appropriate to discuss work-related goals and the details and quality of
> performance.[58]

In commercial contexts, informational norms are generally instances of the

following pattern: buyers demand that the seller collect, use, and distribute

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[56] Helen Nissenbaum, *Privacy as Contextual Integrity*, 79 WASHINGTON LAW REVIEW 119–158, 120–121 (2004).
[57] Not all informational norms are coordination norms. For example, our norm generation process under conditions of perfect competition produces an informational norm that is not a coordination norm. *See infra* Section IV, B. It is only the in real markets that the process produces a coordination norm. *See infra* Section V, B. However, since real markets are our ultimate concern, the informational norms that primarily concern us are coordination norms.
[58] Nissenbaum, *supra* note 56 at 120–121.

information only as is appropriate for that seller's role.[59] The shared interest is that

businesses confine themselves to role-appropriate processing. [60] Relying on the

work of Nissenbaum and others, we assume that consumer/business transactions

occur against a background of informational norms.[61] An example is in order,

however.

Imagine Vicki is shopping in the wine store. The relevant norm is that the

store may process information only in ways appropriately related to the store's role

as a retailer of wine. The norm strikes a balance between privacy and the ends

served by information processing by permitting the processing of only some

information and only for certain purposes. Vicki cannot implement this balance on

her own. A mass-market buyer cannot unilaterally ensure that sellers will conform

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[59] "Role-appropriateness" is determined contextually. Over a wide range of cases, group members share a complex of values that leads them to more or less agree in their particular contextual judgments of appropriateness. "Within each context, the relevant agents, types of information, and transmissions principles combine to shape the governing informational norms." Michael Zimmer, *Privacy on Planet Google: Using the Theory of "Contextual Integrity" to Clarify the Privacy Threats of Google's Quest for the Perfect Search Engine*, 3 J. OF BUS. & TECH. L. 109, 115 (2008). Norms vary from group to group. For simplicity, however, we take the relevant group to be all United States consumers.

[60] This interest in sticking to role-appropriate processing is shared only among buyers, not buyers and sellers; as we emphasized earlier, our mass market coordination norms are *buyer-only* norms. *See supra* note 55 and accompanying text. This is one reason to choose a buyers-only approach to modeling mass market coordination norms. We could still model the norms as having buyers and sellers as parties and make the point about buyers sharing an interest in only role-appropriate information processing, but the price would be considerable complication.

[61] A small sample of this diverse literature includes HELEN NISSENBAUM, *supra* note 23; Jeroen van den Hoven, *Privacy and the Varieties of Informational Wrongdoing, in* READINGS IN CYBER ETHICS 430 (Richard A. Spinello & Herman T. Tavani eds., 2001); Julie E. Cohen, *Examined Lives: Informational Privacy and the Subject As Object*, 52 STAN. L. REV. 1373 (2000); Helen Nissenbaum, *Protecting Privacy in an Information Age: The Problem of Privacy in Public*, 17 LAW AND PHILOSOPHY 559–596 (1998); Paul M. Schwartz, *Privacy and Democracy in Cyberspace*, 52 VAND. L. REV. 1609 (1999); MICHAEL PHILLIPS, BETWEEN UNIVERSALISM AND SKEPTICISM: ETHICS AS SOCIAL ARTIFACT (1994); PIERRE BOURDIEU & LOÏC J. D. WACQUANT, AN INVITATION TO REFLEXIVE SOCIOLOGY (1992); Roger Friedland & Robert R. Alford, *Bringing Society Back In: Symbolic Practices, and Institutional Contradictions, in* THE NEW INSTITUTIONALISM IN ORGANIZATIONAL ANALYSIS 232 (Walter W. Powell & Paul J. DiMaggio eds., 1991); James Rachels, *Why Privacy Is Important*, 4 PHILOSOPHY AND PUBLIC AFFAIRS 323 (1975); MICHAEL WALZER, SPHERES OF JUSTICE: A DEFENSE OF PLURALISM AND EQUALITY (1983).

to his or her requirements; coordination norms create collective demands to which profit-motive driven sellers respond. Informational norms—like coordination norms generally—play a key role in mass-markets by unifying buyers' demands to the point that mass market sellers will meet them. For example, it is a currently a norm that buyers demand personal computers with a graphical interface. However, if almost all buyers demanded a UNIX command line interface, mass-market sellers would meet that demand, and ignore the few that wanted a graphical interface.

D. Value-Optimal Norms

A cornerstone of our analysis is that coordination norms—and hence informational norms—may or may not be *value-optimal*. A coordination norm is value-optimal when, in light of the values of all (or almost all) members of the group in which the norm obtains, the norm is at least as well justified as any alternative.[62] It is the "at least as well justified as any alternative" that make the norm optimal; it means one cannot improve by choosing a better justified norm. There are many optimality notions; Pareto optimality is perhaps the most well-known one.[63] Value-optimality is the notion that we need. A terminological point: In the informational privacy context, we will broaden our use of "value-optimal" to apply both to informational norms *and to tradeoffs* between privacy and competing goals. A tradeoff is value-optimal when it is at least as well justified as any alternative.

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[62] To avoid misunderstanding, we should note that we are not, for example, saying that, when you step into an elevator, you explicitly think about where you ought to stand. Typically, people just unreflectively conform to the norm. The point is that you could justify conformity if you reflected on the norm under ideal conditions (including having sufficient time, sufficient information, lack of bias, and so on).

[63] A situation is Pareto optimal when and only when it is not possible to improve the well-being of any one person without making others worse off.

As we argue below, when value-optimal informational norms govern mass-market transactions, buyers give free and informed consent to acceptable tradeoffs between informational privacy and competing concerns. Our concern here is that, in a number of important cases, rapid advances in information processing technology have outstripped the relatively slow evolution of norms and created novel situations for which we lack relevant value-optimal informational norms. There are two ways in which value-optimal norms may be lacking. One is that relevant norms exist, but they are not value-optimal. The other is that we lack relevant norms altogether. The consequence is the same in each case: we lack any effective mechanism to give free and informed consent; instead, we submit to poor tradeoffs between privacy and competing goals. Behavioral advertising is an instance of the second type of case, the lack the relevant norms altogether. We have discussed the "norms but not value-optimal" cases in detail elsewhere.[64]

Before we turn to the lack of norms for behavioral advertising, it is important to understand what we are missing we lack value-optimal norms. Accordingly, we first explain how value-optimal informational norms ensure free and informed consent to acceptable tradeoffs.

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[64] An example of a norm that is not value-optimal is the "no helmet" norm among pre-1979 National Hockey League players. T. C. Schelling, *Hockey Helmets, Concealed Weapons, and Daylight Saving: A Study of Binary Choices With Externalities*, 17 JOURNAL OF CONFLICT RESOLUTION 381 (1973). In 1979, the league mandated wearing helmets. Prior to that time, not wearing a helmet was a behavioral regularity that existed in part because each player thought he ought to conform, as long as all the others did—primarily to appear tough, and secondarily to have slightly better peripheral vision. However, because of the value they placed on avoiding head injury, virtually all the players regarded the alternative in which they all wore helmets as better justified. However, they remained trapped in the suboptimal norm. We argued elsewhere that the same happens with informational privacy. Our most recent and complete argument is in RICHARD WARNER AND ROBERT SLOAN, *supra* note 13. An earlier, shorter argument is in Richard Warner and Robert Sloan, *supra* note 13.

E. Norms and Consent

We need to answer three questions about exchanges governed by value-optimal informational norms: Why are the tradeoffs the norms implement acceptable? In what sense is consent to the tradeoffs informed? And, in what sense is it free? The first is question is easy. Information processing consistent with a value-optimal norm implements a tradeoff that is acceptable in the sense that it is justified by your values, and there is no alternative that is better justified. The answer to the second question requires a bit more elaboration.

A natural first thought is that informed consent requires awareness of the ways in which the information will be used. This will not do, however.   Current information processing practices store data for very long times for later use in ways that are *unpredictable* at the time you consent to the data collection;[65] so your consent *cannot* be informed if being informed means being aware of how the data will be used. The options are to conclude that consent cannot be informed, or to seek another understanding of what it is for consent to be informed. We choose the latter course. We will regard consent as informed *provided you know that the consent is to practices governed by a value-optimal norm*. To know that is to know that norm-consistent uses of your information—uses now and uses, whatever they may be, in the unpredictable future—will implement tradeoffs between privacy and competing goals that are, in light of your values, at least as well justified as any alternative.

It is more problematic to regard consent as free. Consider Vicki. As a practical matter, she cannot avoid consenting to the norm-imposed tradeoff. Of

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[65] *See* Solove, *supra* note 15.

course, she could simply not buy wine at all, but she enjoys wine and is not willing to give it up, nor is she willing to spend a time and effort investigating the exact information processing practices of the local wine stores. She is already committed to a variety of goals—raising her children, pursuing her career, enjoying her friends, and so on; and the time she is willing to allot to buying wine is relatively small. Going along with norm-permitted information processing is her only viable option. So how can her consent be free?

Aren't constrained choices are the example *par excellence* of unfree choices? When a thief, with a gun to your head, demands, "Your money or your life!", the thief violates your freedom by compelling your choice. The only meaningful option is to hand over your money. There is no gun to the head in informational norm-governed transactions, but options are, in practice, typically reduced to one—conform to the norm. Doesn't the lack of options entail a lack of freedom?

The solution lies in the fact that even a highly constrained choice can still be a free choice. Imagine, for example, that you have your heart set on a vacation in the Cayman Islands; unfortunately, your tight budget appears to make the trip impossible. Your solution is to constrain your choices by opting for an "all inclusive" vacation package which offers airfare, hotel, and food for a single affordable price. In doing so, you *voluntarily* constrain your food options in order to *freely* realize your vacation goal, and, when you eat the hotel food, you do so as an essential means to realizing your vacation goal and hence as something fully justified in light of your values. Your constrained choice is free is the sense that it is a fully justified component of a freely chosen overall plan. Contrast the thief example. Giving the

money to the thief is not a fully justified part of your overall plans; it is an unjustified interference with them.

Similar remarks hold for Vicki's wine store transaction. She allots only a relatively small amount of time to purchasing wine. She wants to purchase suitable wine within that time and return to pursuing her other goals. She knows the store will process some range of personal information, and she wants an acceptable tradeoff between her informational privacy and the various interests served by processing the information. The wine store norm—process personal information only in ways appropriately related to the store's role as a seller of wine—offers her a ready-made tradeoff, and, as long as the norm is value-optimal, the tradeoff is not only justified in light of her values, there is no alternative that is better justified.

We conclude that, when we conform to value-optimal norms, we give free and informed consent to the norm-implemented tradeoffs. When we take value-optimal norms away from mass market buyer/seller exchanges, we lose the background that ensures free and informed consent to acceptable tradeoffs. The problem that concerns us is that relevant value-optimal coordination norms do not exist for pay-with-data exchanges. We first argue for the lack of norms, and we then turn to explaining how to create the necessary value-optimal norms.

F. Lack of Norms for Pay-With-Data Exchanges

Our argument for the lack of norms turns on the definition of coordination norms as regularities to which the parties to the norm coordinate to realize a

shared interest.[66] The shared interest in the case of informational norms is that

sellers limit themselves to role-appropriate information processing.[67] Relevant

informational norms do not exist for pay-with-data exchanges because we lack

widely shared notions of role-appropriate information processing for such

exchanges. An analogy shows why.

Suppose that, unbeknownst to each other, two long-time friends have

become expert chess players. When they begin to play friendly games together,

they at first have no norms that govern how they will use their chess-playing

powers against each other. How should they deal with victory and defeat? Should

the victor be reassuring or taunting? In a losing position, how long should one

struggle hoping for an error before acknowledging defeat and resigning? They lack

shared conceptions of role-appropriate behavior as chess players. As they play,

those conceptions and the associated coordination norms develop, but they do not

exist at first. They arise over time out of repeated interactions.

We are in a similar situation with pay-with-data exchanges. The newly

acquired power is the vastly increased ability to process information, and we lack

relevant shared conceptions of role-appropriateness. They will only evolve over

time through patterns of social and commercial interaction. Instead of shared

conceptions of appropriateness we have the intense controversy that surrounds

behavioral advertising today. As we noted earlier, we are willing trade some

privacy for some of the advantages of permitting extensive information processing,

but we want a better tradeoff than the one the advertising ecosystem currently

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[66] *See supra* Section III, B.
[67] *Id*.

imposes on us.[68] Any adequate response to behavioral advertising must find the proper balance, and as James Rule notes, "we cannot hope to answer [complex balancing questions] until we have a way of ascribing weights to the things being balanced. And, that is exactly where the parties to privacy debates are most dramatically at odds."[69] We lack shared conceptions of role-appropriate information processing in many cases, in particular in pay-with-data exchanges.

IV. Norm Creation in Conditions of Perfect Competition

We explain how to create the needed norms by first explaining how to create them under ideal conditions and then explaining how to approximate the ideal conditions in practice. The ideal conditions are the conditions of perfect competition. We choose perfect competition as the ideal because our focus is on the incentive-shaping effect of coordination norms in mass markets.

A. Perfect Competition

We define competition as perfect when and only when six conditions hold[70]:

1. *Profit-motive driven sellers*. Businesses seek to maximize profit.

2. *Lack of market power*. Neither sellers nor buyers can individually control the price or determine the features of a product or service.[71]

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[68] *See supra* notes 6 and 7 and accompanying text.
[69] JAMES B. RULE, PRIVACY IN PERIL: HOW WE ARE SACRIFICING A FUNDAMENTAL RIGHT IN EXCHANGE FOR SECURITY AND CONVENIENCE 183 (2007).
[70] Our definition follows a standard pattern. *See e.g.*, WALTER NICHOLSON & CHRISTOPHER SNYDER, MICROECONOMIC THEORY: BASIC PRINCIPLES AND EXTENSIONS 415 (2012).
[71] Definitions often substitute the requirement that there be a large number of sellers and buyers; the point, however, is to make the size of the market sufficient to ensure that no one seller or buyer has the power to set prices and determine features.

3. *Homogeneous products and services*. The products and services involved in pay-with-data exchanges are quite diverse, but the homogeneity that matters for us is that they are all pay-with-data exchanges.   The relevant similarity is in the mechanism of the sale, not the items sold. The argument we offer works for all pay-with-data exchanges, no matter what is exchanged, so our references below to "products and services" are to any particular product or service involved in a pay-with-data exchange.

4. *No barriers to entry and exit*. Competitors may costlessly enter and leave the market, and buyers can costlessly switch from one seller to another.

5. *Zero transaction costs.* Buyers and sellers incur no costs in carrying out exchanges.

6. *Perfect information*. The perfect information requirement takes various forms.[72] Minimally, buyers and sellers know all prices. Most generally, all buyers and sellers are assumed know everything relevant to their production and consumption decisions.[73] We will use this broader understanding. For pay-with-data exchanges, we assume the following. (1) If there is at least one value-optimal tradeoff between the benefits of information processing and informational privacy, then buyers know what that tradeoff is (and

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[72] Some definitions of perfect competition omit any mention of perfect information. *See* Scott A. Beaulier & Wm. Stewart Mounts, Jr., ASYMMETRIC INFORMATION ABOUT PERFECT COMPETITION: THE TREATMENT OF PERFECT INFORMATION IN INTRODUCTORY ECONOMICS TEXTBOOKS (2008), www.scottbeaulier.com/Information_Version_2.doc. We include perfect information in our definition because appeals to perfect information (and real world approximations to it) play a central explanatory role for us.
[73] *Id.*

they will prefer it). (2) Buyers know whether or not a seller's information processing practices are consistent with that tradeoff. (3) Sellers know that buyers prefer that tradeoff, and they know that buyers have the knowledge specified in (2).

B. Norm Creation in Perfectly Competitive Markets with a Value-Optimal
    Tradeoff

We assume that initially buyers and sellers play a "seller wins" game of One-Sided Chicken. We assume also the existence of at least one value-optimal tradeoff between the benefits of information processing and information privacy.[74] To see how, under these conditions, a norm among buyers arises, and also how the game between buyers and sellers changes, consider first that the zero barriers to entry and exit assumption ensures that buyers can costlessly switch to sellers who offer the value-optimal tradeoff the buyers prefer. Our perfect information assumptions guarantee that buyers can identify the sellers who offer that tradeoff. Since buyers prefer that tradeoff can identify the sellers who offer it, they will buy from those sellers—if such sellers exist. And they will. Sellers know what tradeoff buyers prefer, and they know that buyers can tell if they offer it. Hence sellers know that the profit-maximizing strategy is to offer that tradeoff. It follows that the sellers

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[74] Such a tradeoff does not have to exist. It could also be the case that every individual finds a different tradeoff to be the one most in accord with his or her values. Another possibility is that our values may not pick out an alternative that is at least as well justified as any alternative. Our evaluative perspectives may sometimes fail to provide complete maps that guide us through the decisions we must make; they may be sketches leaving large areas barely filled in, if filled in at all. *See e. g.*, AMARTYA SEN, *supra* note 52. No value-optimal tradeoff is one possibility; multiple such tradeoffs is another. For example, everybody might find Information Processing Policy A coupled with free use of the *New York Times*'s website and Information Processing Policy B together with a requirement to pay a particular price for use of the *New York Times*'s website to be equally well justified in light of their values, and both at least as good as any other alternative.

will do so (since we assume that they are profit-motive driven). They will offer the value-optimal tradeoff even if they initially did not do so. The combination of zero transaction costs and zero barriers to entry and exit guarantees that modifying their information processing is costless, and the lack of market power guarantees that no one can prevent a seller from beginning to offer the tradeoff. Eventually, all sellers offer the value-optimal tradeoff. The result is that buyers and sellers are no longer locked in a game of one-sided Chicken. Both end up preferring as their first choice, the value-optimal tradeoff.

The consequence is that "buyers demand the value-optimal tradeoff" becomes a behavioral regularity, and furthermore, a regularity buyers conform to because think they ought to do so. Indeed, our assumptions are so strong that demanding the value-optimal tradeoff is a norm but *not* a coordination norm: buyers think they ought to demand the value-optimal tradeoff between information processing and other competing interests independently of other buyers' behavior. It may seem we have departed from our general form for informational norms: namely, "Buyers demand that sellers process information only in role-appropriate ways." However, if a seller, in response to buyer demand, processes information in the buyer-demanded value-optimal ways, that is certainly to process the information in accord with a shared conception of role-appropriateness.[75]

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[75] We can infer role-appropriateness from value-optimality, but the inference does not work the other way around. Informational norms that are not value-optimal are examples of role-appropriate information processing that is not value optimal. We discuss such examples in Richard Warner and Robert Sloan, *supra* note 13 and ; RICHARD WARNER AND SLOAN, *supra* note 13.

V. Norm Creation in Real Markets

We can replicate these results in real markets to the extent real markets sufficiently closely approximate the conditions of perfect competition. We assume for our purposes that the markets sufficiently closely approximate all of the conditions *except for the perfect knowledge condition*. This is by no means to suggest that the other assumptions are not problematic. They certainly are, but that is a different problem requiring analysis in the context of competition and antitrust law. We focus on approximating the perfect information assumption, and we begin with the obstacles in the way of any approximation.

In our "perfect markets" argument, we specified the relevant knowledge by assuming the existence of a value-optimal tradeoff between the benefits of information processing and informational privacy. We assumed that buyers knew which tradeoff that was, and knew whether a seller offered that tradeoff. None of this is true in practice. To begin with, we do not yet agree on what tradeoffs are best justified. Reaching agreement on this is not like finding buried treasure. The buried treasure is there whether we find it or not, but the answers we need about value-optimal tradeoffs are not similarly buried in our values just waiting for us to think long enough and hard enough to find them. We need to invent them. Our values are not closed, complete, consistent systems that guide us through the decisions we must make. They are more or less detailed outlines that may leave large areas barely filled in, and they often incorporate competing, or outright inconsistent, claims and views, whose weight is not fixed in advance of our reasoning about the situations in which we find ourselves. We often need to extend

our values to cover new situations, and rapid advances in information processing technology require us to do so now for website advertising.

To make matters worse, merely creating agreement on a tradeoff may not enough to solve the problem. Contrary to what we assumed in the case of perfect competition, buyers knowing what the tradeoff is may not be enough to guarantee that buyers demand that sellers make that tradeoff available to them. The reason is that *advertisers* are a significant source of revenue for sellers in markets in which buyers provide information and receive advertising in exchange for products and services.[76] As long as buyers are trapped in "seller wins" One-Sided Chicken, large and stable advertising revenues will make sellers unresponsive to demands from small minorities of buyers to change their information processing policies.

In the hypothetical ideal "perfect competition" market, some seller would meet the information processing demands of even a small minority of buyers, because that seller could earn further profit by doing so. However, in the real world, such websites as Facebook, Google, and the half dozen largest news sites all have great market power, and any would-be new competitor faces significant barriers to entry.[77] Furthermore, if there are only a small number of buyers with different information processing demands, then the transaction costs of identifying those buyers might well be too great to make it worthwhile to meet the privacy demands of those buyers.

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[76] Typical sellers we have in mind are such websites as cnn.com, Yahoo!, and Craigslist.
[77] In fact, the game in the hypothetical world of perfectly competitive markets was not strictly speaking One-Sided Chicken. One-Sided Chicken is a one buyer verus one seller game, but in perfectly competitive markets a buyer plays against a multitude of sellers, all lacking market power.

So, in real markets, even if buyers agree on a value-optimal tradeoff, buyers who want use of such websites will still prefer to acquiesce to sellers' information processing practices unless the group of buyers refusing to do business without a change in those practices is large enough to compel the seller to alter its practices. Large enough has to be large enough that the lost business significantly reduces the advertising revenue. This was not a concern in perfectly competitive markets because *every* buyer switches to sellers offering the value-optimal tradeoff.

A. A Norm Generation Process

Our solution assumes that every buyer possesses *close to perfect* "do not track" technologies. A tracking prevention technology would be perfect if it were completely effective in blocking information processing for advertising purposes, completely transparent in its effect, effortless to use, and it permitted the full use of any website a user was visiting.

We begin with a summary of our argument. (1) Buyers will use the "do not track" technologies. (2) This will threaten a dramatic decline in advertising revenue for sellers. (3) Sellers will respond by offering buyers information processing consistent with their preferences. (4) The ultimate result will be a collection of value-optimal norms governing pay-with-data transactions.

1. Buyers will use the technologies. As we noted at the beginning, the vast majority of buyers want more control over their information that current information processing practices allow. We assume that the desire for control is sufficiently strong that buyers would block tracking if they had close to perfect tracking prevention technologies. If this is turns out not to be true, we would

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certainly have to reevaluate the surveys that report buyers' strong objections to current behavioral advertising.

2. Advertising revenue will decline. The result is a loss of advertising revenue. Sellers' advertising revenue is a function of the number of advertisements on their sites and the number of responses to them. The attractiveness of a site as an advertising platform depends on the effectiveness of advertisements on that site. In the online advertising ecosystem, this is a function of the amount and accuracy of the information collected from the site about buyers. When all buyers block the collection of such information, the effectiveness of advertisements declines, and sites lose a good deal of their attractiveness as advertising platforms. Advertisers are more likely to spend their advertising budgets elsewhere—on TV, radio, and print publication advertisements. Thus, it does not matter that advertisers are a significant source of revenue. Sites lose that revenue when they lose their attractiveness as advertising platforms.

3. Sellers will conform more closely to buyers' preferences. Sellers will respond by offering information processing consistent with buyers' preferences. They will, that is, if they can segment buyers into groups of shared preferences, and at least some of the groups are sufficiently large that the expected profit from meeting those groups' preferences is greater than the cost of not doing so. We fully expect buyers to cluster into such groups. Even if they do not initially, sellers will be able to form such groups through advertising. Advertising can powerfully shape buyers' demands. Direct-to-consumer advertising of prescription drugs is an

excellent example. It has increased the demand for such drugs.[78] Website use is similar. Accessing websites for all sorts of purposes is now such an entrenched feature of daily life that not doing so is no longer an option. Accessing websites has a "side effect," however—the collection and commercialization of information about buyers. Advertising that promotes tradeoffs between the benefits and the "side effect" should coalesce buyer demand more or less as well as prescription drug advertising. So sellers will conform to buyers' preferences by shaping those preferences in ways that make conformity profitable. Like Phoebe when she sees Tony in the car, sellers will "swerve" to avoid losing the advertising revenue that they "love."

We contend that norms will arise as a result. This conclusion merits a separate subsection.

B. Norms? Yes. Value-Optimal? Yes, but. . . .

The result will be a number behavioral regularities of the form, "buyers demand such-and-such tradeoff." Eventually, not only will the tradeoffs be value-optimal, but also buyers will believe they are. Recall that currently we are not even close to consensus about how to strike a value-optimal tradeoff between privacy and the benefits of information processing. As advertising unites buyer demand into suitably sized groups, buyers will continue to engage in billions of pay-with-data exchanges daily. Over time, the tradeoffs implemented in the exchanges will cease to be merely accepted; they will become acceptable. We will ultimately

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[78] Meredith B. Rosenthal et al., *Demand Effects of Recent Changes in Prescription Drug Promotion*, 6 *in* FRONTIERS IN HEALTH POLICY RESEARCH 1–26 (David M. Cutler & Alan M. Garber eds., 2003).

recognize the tradeoffs as value-optimal. Our values will have evolved and transformed so that the tradeoffs we regard the tradeoffs as at least as well justified as any alternative. At that point, the regularities will be coordination norms. We will conform to the regularity because we think we ought to (our values dictate that we ought), and the "ought" will be *conditional*. A buyer only thinks he or she ought to conform as long as almost all others do; if almost all others demanded some other tradeoff, the buyer would think he or she ought conditionally to do so too. Sellers would not meet the idiosyncratic demand, so, as long as going without the services is not an acceptable option, the buyer will think he or she ought conditionally to demand the tradeoff.[79]

So isn't this what we want? A way out of One-Sided Chicken that yields value-optimal norms? That depends. We have no doubt that the process will lead to value-optimal norms, but will it be a process that we later regret? What we valued in our youth as a result of the factors that shaped our personalities, we may regret when we are older. The same may happen society-wide. It is possible, for example, that the process leads to the world Daniel Solove dreads, the world in which a permanent, ever-growing, readily searchable trail of information records the trivial to the intimate to the unfortunate details of our lives from childhood on.[80] How can we avoid such regrettable outcomes?

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[79] Buyers may divide into several groups each with a different opinion about what tradeoff is value-optimal. As long as the groups are large enough (and sellers can identify who belongs to what group), different coordination norms may arise for each group.
[80] DANIEL J. SOLOVE, THE FUTURE OF REPUTATION: GOSSIP, RUMOR, AND PRIVACY ON THE INTERNET 17 (2007).

We rely on consumer educational initiatives.[81] They can powerfully shape buyers' preferences. For example, the spread of health information has led, over the last twenty years, to a per capital increase in poultry consumption at the expense of beef consumption.[82] The explanation presumably is that education altered the values about health and enjoyment that guide people's food choices. Our hope is that consumer education will direct value-formation away from regrettable paths.

VI. Prospects for "Do Not Track" Technologies

Our norm generation argument assumes close to perfect tracking prevent technologies. Current technologies are very far from perfect. They are remarkably ineffective, not at all transparent in effect, daunting for average buyers to use, and may interfere with the use of websites.[83] What are the prospects for developing close to perfect technologies? They are not unpromising. At the 2011 W3C Web Tracking and User Privacy Workshop, representatives from BlueKai,[84] Datran

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[81] The Federal Trade Commission's efforts illustrate the type of educational initiatives we have in mind. Since the rise of e-commerce in 1995, "the Commission has conducted a series of public workshops and has issued reports focusing on online data collection practices, industry's self-regulatory efforts, and technological efforts to enhance consumer privacy." FEDERAL TRADE COMMISSION, *supra* note 3.

[82] Henry W. Kinnucan et al., *Effects of Health Information and Generic Advertising on U.S. Meat Demand*, 79 AMERICAN JOURNAL OF AGRICULTURAL ECONOMICS 13 (1997).

[83] GERMAN GOMEZ ET AL., COOKIE BLOCKING AND PRIVACY: FIRST PARTIES REMAIN A RISK (2010), www.truststc.org/reu/10/Reports/GomezG,YalajuJ_paper.pdf; Balachander Krishnamurthy, Konstantin Naryshkin & Craig E. Wills, *Privacy leakage vs. Protection measures: the growing disconnect*, (2011), w2spconf.com/2011/papers/privacyVsProtection.pdf; Ryan Singel, RESEARCHERS EXPOSE CUNNING ONLINE TRACKING SERVICE THAT CAN'T BE DODGED WIRED, EPICCENTER (2011), http://www.wired.com/epicenter/2011/07/undeletable-cookie/; Mika Ayenson et al., *Flash Cookies and Privacy II: Now with HTML5 and ETag Respawning*, SSRN ELIBRARY (2011), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1898390 (last visited Nov 14, 2011).

[84] Omar Tawakol, *Re: Proposal for Browser Based Do-Not-Track Functionality in W3C Tracking and Privacy Workshop* (2011), http://www.w3.org/2011/track-privacy/papers.html.

Media,[85] Intel,[86] and Microsoft[87] not only expressed their willingness to incorporate emerging "do not track" technologies; they emphasized the importance of doing so. Considerable controversy remains, however, over what the technologies should do and how they should do it.[88]

Our norm generation process yields at least a partial criterion of adequacy for "do not track" technologies: they must give buyers enough power to prevent data collection to make the norm generation process work. This is not to say that the *technology alone* must confer such power. Empowering buyers may require legal regulation that requires sellers to accommodate "do not track" technology instead of trying to circumvent it. Our claim conditional: if we can appropriately empower users, relevant value-optimal informational norms will arise.

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[85] Steven Vine, *Position Paper in W3C Web Tracking and User Privacy Workshop* (2011), http://www.w3.org/2011/track-privacy/papers.html.

[86] Narm Gadiraju, *Intel's Interest in W3C Tracking and Privacy Workshop* (2011), http://www.w3.org/2011/track-privacy/papers.html.

[87] Sue Glueck & Craig Shank, *Tracking to Consensus: Coordination of Policy and Technical Standardization in Web Privacy Efforts in W3C Tracking and Privacy Workshop*, (2011), http://www.w3.org/2011/track-privacy/papers.html; Adrian Bateman*, Web Tracking Protection in W3C Tracking and Privacy Workshop* (2011), http://www.w3.org/2011/track-privacy/papers.html.

[88] *See* Vincent Toubiana & Helen Nissenbaum, *Content Based Do Not Track mechanism in W3C Tracking and Privacy Workshop*, (2011), http://www.w3.org/2011/track-privacy/papers.html; Bil Corry & Andy Steingruebl, *Where is the Comprehensive Online Privacy Framework? in W3C Tracking and Privacy Workshop* (2011), http://www.w3.org/2011/track-privacy/papers.html; COMMENTS OF THE CENTER FOR DIGITAL DEMOCRACY AND U.S. PIRG, *supra* note 10; Network Advertising Initiative, *Comments of the Network Advertising Initiative re Preliminary FTC Staff Report on "Protecting Consumer Privacy in an Era of Rapid Change: A Proposed Framework for Businesses and Policymakers," in W3C Tracking and Privacy Workshop* (2011), http://www.w3.org/2011/track-privacy/papers.html.