Labor Standards

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Introduction: Human Computation and Work

Human computation, as broadly conceived in this handbook, encompasses many activities we might call "labor" or "work." Where an individual makes a conscious decision to perform a task in exchange for money or other compensation, a more traditional employment relationship may arise and, consequently, various labor laws may apply. For example, online work platforms such as Amazon's Mechanical Turk distribute computational tasks to a large pool of workers who can choose to accept and perform those tasks at the advertised pay rate. Despite the novelty of the platform, the workspace, and the payment structure, this is still recognizable as "work."

Not all forms of human computation follow such a clear model for the exchange of labor. Sometimes a group of people will collaborate online to sequence a gene, examine a galaxy, or build a software model, without any expectation of compensation. They are contributing labor in some form, but we might hesitate to call it "employment." Similarly, online gamers perform human computation within the gaming context, either as participants in a "game with a purpose," or simply to enrich their own experience in the virtual environment. They gain some satisfaction, and their labor (if it can be called that) contributes to a greater whole, but their participation somehow seems to fall outside our notion of "work."

The work/non-work distinction matters only insofar as it may help to shape the discussion of what labor standards ought to apply in human computation projects. As used here, "labor standards" refers first and foremost to the legal obligations that attach to an employment relationship. Many countries regulate wages, hours, benefits, and other aspects of work. How those laws might pertain to human computational work, generally speaking, occupies the bulk of this chapter. The variety of different employment laws, across borders and in different jurisdictions, precludes

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drawing firm conclusions about any particular human computation project under any particular law. Instead, this chapter aims to sketch out the features of human computation and employment law that are likely to influence legal authorities and policy makers.

To that end, the discussion below assumes that "labor standards" are primarily relevant to situations in which people consciously decide to exchange their labor for some form of compensation. The people in question act not as collaborators, volunteers, or consumers, but as "workers," in some sense. Of course the categories often overlap especially in online environments such as games or shopping sites where work, recreation and consumption weave together.

One way to separate "work" from "non-work" is to look at the nature of the bargain participants make. For example, on online labor (sometimes called "crowd labor") platforms, firms (or "requesters") offer to trade some amount of compensation for the performance of a task. The product of the labor and its ultimate benefit go to the requester, while the worker receives cash, credit, or some form of virtual currency (discussed in more depth below). This fits the traditional definition of "work," and we can see how labor standards might apply to this bargain.

Online collaborations and games with a purpose, by contrast, are difficult to characterize as "work." They may involve an exchange of labor, but the bargain functions differently. Participants act out of self-interest, altruistic volunteerism, or some combination of the two, but no one anticipates any formal compensation. What participants get instead is personal satisfaction, or future benefits in the form of better software, medicine, government, etc. Labor laws almost always exempt volunteer activities of this kind, so NASA need not worry that it owes minimum wage and overtime to the image-processing volunteers who mapped Mars.[1]

It becomes difficult to draw these distinctions in online environments where work blends with recreation and consumption, as in some social games and shopping websites. Certain games allow gamers to perform small tasks on crowd labor platforms such as Mechanical Turk, in exchange for virtual currency.[2] Those arrangements remain "work," though the participant arrived at the task in pursuit of recreation and performed it to prolong or enhance the recreation. However, an online shopper who performs a survey in exchange for free shipping cannot be described as "working" without overstretching the boundaries of the definition. To remain within a safe definition of work, this chapter assumes that any "labor standards" will apply only to bargains involving a conscious decision to trade labor for compensation, with the benefit clearly conferred upon the recipient of the labor's product.

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[1] Szpir M (2002) Clickworkers on Mars. Am Sci 90(3):226.

[2] See Galante J (2010, June 17) Crowdflower's virtual pay for digital purchases. Bloomberg Businessweek Magazine. http://www.businessweek.com/magazine/content/10_26/b4184041335224.htm. Accessed 31 May 2013; Kit Eaton (2009) Gambit lets you be a mechanical Turk for social game credits. Fast Company. http://www.fastcompany.com/blog/kit-eaton/technomix/gambit-lets-you-be-mechanical-turk-social-game-credits. Accessed 31 May 2013. See also Felstiner A (2012) Regulating in-game work. J Internet Law 16(2):3.

The first section examines the regulatory obstacles and unsettled legal questions that arise when work is distributed in small chunks to a global network of casual laborers. It discusses which employment laws may apply, to whom they apply, and how they might operate in light of alternative compensation models steadily gaining ground in online economies.

The second section, "Voluntary Measures," recognizes that for many the term "labor standards" means more than the minimum obligations an employer must meet to stay on the right side of the law. We have an expectation that when people contribute labor, in exchange for compensation or not, the terms and outcome should meet some threshold level of fairness—particularly with respect to those in subservient positions, with inferior bargaining power, little control, and no prospect of extracting profit. This section offers several suggestions for voluntary measures that online work platforms can take to address emerging ethical issues. Whether covered by labor laws or not, the companies that control online work platforms can act to protect their users' reputations, privacy, and dignitary interests.

The final section identifies and briefly describes some of the opportunities created by online distributed work. Too often regulatory debates come to resemble a battle between meddling authoritarians and their laissez-faire opponents. Assuming that employment law applies to these forms of work, or should apply, this last section emphasizes aspects of the work that legal authorities contemplating regulation may see fit to preserve and encourage.

Obstacles and Open Questions

Jurisdiction and Choice of Law

Though this article discusses labor law in broad terms, systems of labor regulation vary widely from country to country. Given the globality of distributed human computation, the first step of any inquiry may be to determine which legal body has or should have the authority to administer justice. This is called "jurisdiction." The authority with jurisdiction will also need to know which labor laws to apply. Usually the answer is whatever labor laws are in effect in that jurisdiction, but where the employment relationship crosses jurisdictional boundaries in some respect, the authority may face a choice of law.

With different laws in different places, jurisdiction as a threshold question can dramatically affect the rights and obligations of the parties as well as the outcome of any dispute they seek to resolve. In some cases it is quite simple: where an employment relationship exists entirely within a jurisdiction, the authority and applicable laws would readily present themselves. In the United States, for example, if an employer is headquartered and operates within a jurisdiction, the worksite is there, and the employee lives there, the local authority in that jurisdiction decides any employment dispute and determines what laws will govern. Even where an employer is headquartered outside the jurisdiction, or operates in multiple

jurisdictions, the deciding authority may change but the location of the worksite will usually determine the applicable laws. Labor laws developed with this (now sometimes outdated) model of employment in mind.

As employment relationships stretch across borders, disputes become more complex. The European Union has adopted multinational labor standards, which establish baselines in certain regulatory fields such as health and safety.[3] The EU has also issued some guidance on choice of law, aimed at tackling problems that arise when employees perform work outside their normal location.[4] For many years the International Labor Organization has also set broad standards, without much resultant uniformity, even among the member states.

Given the potential for confusion, it is no surprise that the parties often settle jurisdiction and choice of law matters through contract. They may agree to resolve any disputes in a particular forum, according to particular laws. or to submit those disputes to a neutral arbitrator. Such contractual clauses avoid jurisdictional issues, provided that both parties embrace the proposed mechanism. In practice, the party with less power—invariably the employee—is effectively compelled to acquiesce in order to obtain the job, if he or she even knows about the clause at all. Once a dispute arises, the employee may discover that litigating in the chosen forum is prohibitively distant or costly, and also that laws in that forum favor the employer.

Who Is Covered?

Applying any labor standard requires at minimum two parties that the law will recognize as an employer and an employee. "Employer" and "employee" tend to function as terms of art, not as common-sense descriptors. Their purpose is to precisely carve out, from the mass of actors engaged in "labor," just those workers and bosses the law in question seeks to regulate.

Such a seemingly simple issue can quickly grow quite fraught, due in no small part to vagueness in legal definitions.[5] Distinguishing true "employees" from self-employed contractors, who sell their "services" rather than their labor, often proves tricky. In the UK, for example, the law understands "genuinely self-employed" to mean people who run their own businesses and take responsibility for success or failure, have several customers at once, control the details of their work, can hire

[3] See Council Directive 89/391/EEC, June 12, 1989 ("On the introduction of measures to encourage improvements in the safety and health of workers at work"); Council Directive 2003/88/EC, Nov. 4, 2003 ("Working Time").

[4] See Council Directive 96/71/EC, Dec. 16, 1996 ("Posted Workers").

[5] For example, U.S. minimum wage law unhelpfully defines "employee" as "any individual employed by an employer," and defines "employ" as "to suffer or permit to work." 29 U.S.C. §§ 203(e)(1), 203(g). Under U.K. law, employees are workers who have an express or implied contract of employment.

others to replace or assist, and provide their own equipment.[6] In the US, courts and administrative agencies use a panoply of factors, some rather intangible—such as the degree to which the worker exercises independent judgment or serves as an "integral" part of the principal's business.[7] And the factors sometimes change depending on the law at issue.

Identifying the proper employer (or employers) is normally a matter of looking at the sign above the door, or the company name on the paychecks. However, convoluted sub-contracting models, particularly in agriculture and business services, have muddied that water as well. These work arrangements often involve a series of middlemen, some of which exercise a not insignificant amount of control over the work, worksite, and compensation. Those that ultimately receive the fruits of the labor are able to disengage completely from the process.

Legal tests for "employer" and "employee" developed with a traditional employment relationship in mind. Employees had a fixed or at least identifiable worksite, a single employer, and a relatively permanent economic connection to that employer. This labor model has already begun to erode, in various ways, but the migration of work onto online platforms transforms the employment relationship beyond anything the law's original authors could have envisioned. Crowd labor changes the usual cardinality—one employer with many employees—to a many-to-many relationship. The notion of a fixed worksite evaporates in the face of globally networked crowds and proliferating mobile technology. And microtask labor can shrink the duration of an employment relationship into a single transaction, one in a stream of such small exchanges, lasting minutes or even seconds and followed immediately by another.[8] The authors of those original laws never anticipated this. To the extent the original employment law rules survive at all, legal authorities will need to adapt them, or replace them as they become obsolete.

For example, we can fairly easily imagine how to administer minimum wage laws where a single employer has recruited a group of workers, in different locations and with different shifts, to screen photos or perform sentiment analysis. The only thing that would distinguish this form of human computation from any other traditional employment relationship is the human computation aspect. By contrast, if those workers are more distributed, and anonymous, if they have control over what tasks they accept, if they work for multiple (or nested) requesters, if their supervision is replaced with engineered redundancy—in short, if their labor is disintegrated—we still need to know whether the law applies.

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[6] See HM Revenue and Customs (2013) Work out if you're employed or self-employed. http://www.hmrc.gov.uk/working/intro/empstatus.htm. Accessed 31 May 2013.

[7] U.S. Dept. of Labor, Wage and Hour Standards Division (2009) Fact Sheet #13: Employment relationship under the Fair Labor Standards Act. http://www.dol.gov/whd/regs/compliance/whdfs13.pdf. Accessed 31 May 2013.

[8] Pontin J (2007, Mar. 25) Artificial intelligence, with help from the humans. New York Times, p. 35; Felstiner A (2011) Working the crowd: employment and labor law in the Crowdsourcing industry. Berkeley J Employment Labor Law 32:143.

As with jurisdiction, there are no easy answers to that question. Authorities may try to simplify by relaxing existing legal standards. For example, the question of who exerts "control" over the relationship dominates the employee/contractor distinction in US and UK employment law, but perhaps that factor matters less in a distributed work environment. Authorities might also introduce some flexibility into the "employer" definition to account for the convoluted relationships between the multiple online entities that compensate and exert their influence over the "crowd" as it works.[9]

Legal authorities will have to balance expedience, fairness, and inclusion. If they draw the employer/employee definitions in full deference to the painless and uncomplicated application of the law, many workers in the grey areas will effectively lose protection. On the other hand, if the definitions become so inclusive as to disappear, even more than they already have, no one can apply the law or enter a labor market with any certainty. An ideal balance would adapt and replace in service of the original regulation's purpose(s)—with a steady eye toward the protections the original law aimed to provide and the attendant coercions it deemed necessary.

Compensation

Many jurisdictions impose restrictions on compensation and hours, including wage floors, overtime, sick pay, and parental leave. All these require an initial determination of the covered employee's work time and compensation rate. Where employees receive monetary compensation at an hourly rate, the legal questions are fairly simple, even if the employees work unusual schedules in locations spread across the globe. Piece-rate compensation traditionally occurred in textiles and agricultural labor, but now also predominates in online crowd labor. The piece-rate system complicates the math, but leaves the legal questions unchanged. For example, employees performing piecework in the US are still entitled to the hourly minimum wage and overtime, calculated using their total work hours and compensation during the workweek.[10]

Knottier legal problems arise in virtual compensation—that is, compensation in representational forms of currency or other virtual assets. Ten or fifteen years ago the law would perhaps have treated virtual compensation as a hypothetical question, but the recent surge in social networking and online games has made it an undeniable reality. Virtual currency has become a multi-billion dollar industry.[11] Demand for virtual assets continues to grow, and those who cannot afford or choose not to

[9] Felstiner A (2011) at 174–76; Felstiner A (2012) at 11–12.

[10] See U.S. Dept. of Labor (2009) Employment law guide: minimum wage and overtime pay. http://www.dol.gov/compliance/guide/minwage.htm. Accessed 31 May 2013; 29 C.F.R. § 778.111.

[11] Eldon E (2011, Dec. 7) US Virtual Goods Market To Hit $2.9 Billion In 2012, With Facebook games maturing, mobile booming. Techcrunch. http://techcrunch.com/2011/12/07/us-virtual-goods-market-to-hit-2-9-billion-in-2012-with-facebook-games-maturing-mobile-booming/. Accessed 31 May 2013.

buy the currency outright have found bustling labor markets in which to earn it. Many will earn virtual currency to enable some other online pursuit, such as gaming or online shopping. Some, online gamers perform microtasks in exchange for virtual currency, which they can then use to buy virtual goods or execute trades in their game's virtual economy. Crowdflower, a leading microwork vendor, estimates that it makes half of its payments to crowd workers in virtual currency.[12]

The first question is whether an employer can legally pay its employees in virtual currency. Laws generally require employers to pay employees in cash or its equivalent.[13] In the US, federal law actually prohibits employers from compensating employees using scrip, coupons, credits, or similar devices.[14] Virtual currency would seem to fall into one of these categories. Imaginary gold coins or space credits are not cash, or the equivalent of cash. Even where a recipient of virtual assets can immediately redeem those assets for "real money," perhaps on an informal exchange or grey market, the potential liquidity of the virtual asset does not make it equivalent to cash. Thus, virtual compensation likely runs afoul of any law requiring cash payment, and would probably cause further violations in jurisdictions (such as the US) that prohibit payment in scrip.

In the future, virtual currency may permeate real world economies such that it becomes functionally integrated with real currency, at which point legal authorities might see fit to relax the "cash or equivalent" standard. However, even leaving aside specific anti-scrip laws, a question still remains as to whether virtual currency as it exists now can actually qualify as compensation. The issuers of virtual currency have a strong interest in keeping it captive, controlled by the issuer and used exclusively within the system in ways that stimulate the virtual economy and contribute directly or indirectly to the issuer's profits. The issuer has no immediate reason to deal in real currency if gamers and shoppers will happily seek and accept a captive and proprietary virtual version.

One common practice is for the issuer to designate virtual currency as a form of "license," rather than a form of property.[15] In other words, the issuer gives the recipient a right to use the virtual asset, but does not relinquish any claim of ownership over the value that might be derived. By implication, or sometimes by explicit agreement, the issuer retains the right to revoke that license at any time. The issuer may also reserve the right to void the currency, change its value, or alter its permissible uses. Take for example the terms of service that accompany Zynga's popular social networking game, Farmville:

> You understand that while at times you may "earn" "buy" or "purchase" (a) virtual currency, including but not limited to virtual coins, cash, tokens, or points, all for use in the Service; or (b) virtual in-game items (together with virtual currency, "Virtual Items"); these

[12] Mahajan N (2010, Nov. 5) CrowdFlower gets gamers to do real work for virtual pay. Mission Local. http://missionlocal.org/2010/11/crowdflower/. Accessed 31 May 2013.

[13] See 29 C.F.R. § 531.27;

[14] 29 CFR 531.34.

[15] Felstiner A (2012), p. 15–16.

> real world terms are only being used as shorthand. You do not in fact "own" the Virtual Items and the amounts of any Virtual Item do not refer to any credit balance of real currency or its equivalent. Rather, you may purchase a limited license to use the Service, including software programs that occasionally manifest themselves as these items. The purchase and sale of the limited license referred to in these Terms of Service is a completed transaction upon receipt of your direct payment or redemption of a Zynga game card or a third party virtual currency like Facebook Credits. Any "virtual currency" balance shown in your Account does not constitute a real-world balance or reflect any stored value, but instead constitutes a measurement of the extent of your license….
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> …Zynga reserves the right to stop offering and/or supporting the Service or a particular game or part of the Service at any time either permanently or temporarily, at which point your license to use the Service or a part thereof will be automatically terminated or suspended. In such event, Zynga shall not be required to provide refunds, benefits or other compensation to users in connection with such discontinued elements of the Service.[16]

Has someone actually been "paid" when he or she performs work and receives in return a limited license to use a virtual asset, revocable at the payer's will? Not by any current legal or common-sense definition of a "wage." Assuming the worker qualifies as an employee, and the payer as an employer, no amount of "licensing"-type language can erase the employer's obligation to pay for the work in a form of currency that counts. This is because workers generally cannot waive or sign away their right to minimum wage. For virtual compensation to satisfy existing wage and hour laws, employers will need to relinquish some of their control over the currency, at least with respect to that portion earned as wages. Issuers could still retain control over virtual currency gamers acquire through other means, such as by direct purchase, game play, or acceptance of non-work promotional offers (surveys, subscriptions, etc.). However, the issuer would need the ability to distinguish virtual currency earned through work from virtual currency otherwise acquired.

Let us assume for the sake of argument that virtual compensation will satisfy the law. Two further questions arise: (1) how can an employer determine work hours?, and (2) how do we properly value virtual currency? Emerging technology has made the first question fairly simple to answer. Though employers may argue that online work platforms make it impossible to monitor when an employee is actually working, existing systems have made tracking of activity within a virtual workspace as easy—or easier—than supervising employees on the proverbial factory floor. Employers can monitor keystrokes and cursor activity, and can automatically log employees out during inactive periods. Developing technologies are likely to refine and automate remote monitoring, further antiquating the notion of a foreman walking around with a stopwatch and a clipboard. Employers can also set certain quotas, and though an employer must pay an employee for time worked even if the employee fails to meet a quota, employers have no obligation to continue to employ or hire anyone who falls short. To a certain extent, the risk of fraud is a trade-off for the advantages that come with a remote, 24-hour workforce. And as discussed above, even that risk may prove illusory.

[16] Zynga (2012) Terms of service. http://company.zynga.com/ about/legal/terms-of-service. Accessed 31 May 2013.

Valuing virtual currency is not so simple. Wage and hour laws usually take the form of a minimum rate of pay, and virtual currency comes in all names, denominations, and orders of magnitude. Knowing that an employee received (or even that an employer explicitly guaranteed) a minimum "150 gold pieces" per hour of work, for example, tells us nothing about the employer's compliance with wage and hour laws. We need a fair and uniform method of valuing virtual currency—and not just to apply employment laws. The high trade volume of virtual assets engenders difficulty in many areas of law, from tax to tort.[17]

Where a game developer, social network, or crowd work vendor also sells the currency directly, there is already an exchange rate to apply. Authorities would have to implement it carefully given the currency control issues discussed above, and the conflicts of interest inherent when an employer controls the value of the currency with which it pays its workers' wages. But a formal exchange rate would at least offer authorities something to work with. Currency exchanges, whether formal or informal, would give authorities another reference point for valuation. It is also possible that some individual issuer or group of issuers might develop a universal virtual currency, as a way to reduce cross-platform friction and avoid individualized regulatory compliance costs. But the current incentives to keep virtual currencies proprietary make such a scenario unlikely in the near future.

Ensuring that workers receive their legal wage will require of legal authorities some brave estimation and perhaps a few shaky assumptions. Virtual currencies are so versatile and ubiquitous that the law will have to deal with them one way or another.[18]

Voluntary Measures

As human computation is still in its relative infancy, it is appropriate to ask not only what the legal authorities *may* do to enforce existing labor laws, but also what the putative and prospective employers *should* do in the general interest of fairness and decency. These are not all ethical obligations, precisely. But they implicate the ethical concerns inherent in any employment relationship, as well as the particular issues that arise in human computation. In fact, the recommendations below apply to the non-work forms of human computation as much as to compensated work. They also concentrate on aspects of the relationship that implicate labor specifically, and thus issues of privacy, intellectual property, torts, or criminal offenses do not appear though such issues certainly exist in human computation.

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[17] See Camp B (2007) The play's the thing: a theory of taxing virtual worlds. Hastings Law J 59:1; Lederman L (2007) Stranger than fiction: taxing virtual worlds. N.Y.U. Law Rev 82:1620; Seto T (2009) When is a game only a game?: taxing virtual worlds. U. Cincinnati Law Rev 77:1027.

[18] In fact, looking at the wider landscape of virtual economies, it may prove easier to manage legal challenges associated with virtual currency than to confront the legal ramifications of other virtual assets and transactions. After all, modern currency is by nature notional and representative, making for a thin barrier between its virtual and "real" forms

Reputation-Building and Portability

The distributed and disintegrated character of online commerce and online labor exchange has amplified the crucial ways we measure trust and reputation on online platforms.[19] Most stakeholders rely in some way on reputation information when deciding with whom to do business, whether that business is e-commerce or online work. Online work platforms tend to feature worker reputation systems, but workers usually cannot carry their reputations from platform to platform, and the structure of the reputation system may create coercive penalties.

In the human computation arena, especially on distributed work platforms, everyone has incentive to make worker reputations buildable and fair. Those performing the work want their experience and expertise recognized, being otherwise anonymous and indistinguishable by virtue of the distributed work model. Favorable reputations allow workers to beat out other applicants and qualify for more specialized tasks. Meanwhile, those requesting the work have a corresponding interest in being able to identify experienced and qualified workers, because their other methods of doing so—pre-training every worker, or assigning work and assessing its quality at completion—require investments with no guaranteed useable return. Some requesters concerned with quality control will just give up trying to identify "good" workers and build in sufficient redundancy to allow for quality drops, but this method increases waste. Having trustworthy reputation ratings would go a long way in combatting such inefficiencies. And finally, the companies that build the work platforms have an interest in making sure such reputation systems exist and function reliably because a reliable reputation system makes the work platform more attractive to requesters and workers alike.

There is no reason to limit reputation systems to workers. Similar incentives exist with respect to requester reputations. Where deception and exploitation are prevalent, or where labor shortages occur, all fair-dealing stakeholders benefit from a system that would allow workers to consider the reputation of their potential employer before accepting a task. On Amazon's Mechanical Turk, for example, requesters can reject any work deemed unsatisfactory, even if the work actually meets the specifications. Crafty requesters may also use misleading descriptions to lure workers into accepting a task, at which point workers may feel compelled to complete the task in order to avoid the reputation damage that results from abandoning it. A requester reputation system might allow workers to avoid or even weed out unscrupulous requesters. In fact, one such user-generated ratings system for requesters on Amazon Mechanical Turk has existed since 2009.[20]

Reputation systems should allow portability as well. Though reputation has become a dominant force on certain platforms, it tends not to carry from one

[19] See Zittrain J (2008) Ubiquitous human computing 1–2 (Univ. of Oxford Legal Research Paper Series, Paper No. 32, 2008). http://ssrn.com/abstract=1140445. Accessed 31 May 2013.

[20] Irani L, Silberman M (2013) Turkopticon: interrupting worker invisibility in Amazon mechanical Turk. http://www.ics.uci.edu/~lirani/Irani-Silberman-Turkopticon-camready.pdf. Accessed 31 May 2013.

platform to another.[21] Making reputations portable is perhaps a slightly harder sell for certain stakeholders. Those who build the platforms have no obligation to embrace cross-platform reputation systems, and may reject portability mechanisms to preserve the competitive edge they earned by investing in a proprietary system. However, online workers may soon expect to see a reputation system in place, and will have put considerable efforts and resources into cultivating their own reputation on other platforms. Why would they join any platform that forces them to rebuild their reputations from scratch? And why would requesters choose a platform with limited single-platform reputation information over one that supplied a worker's entire cross-platform history? At that point, the platform operators' desire to attract workers and requesters may overcome any incentive to defend a proprietary reputation system.

Transparency

Some employment laws require employers to maintain employment records, and in certain cases make those records available to employees. However, those laws generally apply with respect to employees only, and the required recordkeeping may cover only wages and hours worked. A more comprehensive transparency policy would benefit employees and non-employees, and should encompass not just payment information, but also assignment descriptions, instructions, communications, and any other data related to the work. This would allow employees to keep track of their work for personal and tax purposes, substantiate their claims during disputes, and track their relationships with particular requesters over time. A transparent platform would provide employees not just a dashboard snapshot of their current and past work, but instead a kind of virtual desk and file cabinet.

Disclosures

The question of how much workers should or need to know about the work they perform is hardly unique to human computation. Almost every "real world" industry has succumbed in various ways to subcontracting, with its attendant opacities. These differ in no material way from the opacity created by disintegrating a large process into bite-sized pieces for human computation. In fact, one could argue that the absence of layering and the potential ease of lateral communication among workers actually increase the likelihood that workers will understand the nature and

[21] See Zittrain J (2008) Ubiquitous human computation. Oxford legal studies research paper no. 32, 6; Kumar S, Koster P (2009) Portable reputation: proving ownership of reputations across portals. Paper presented at the 2009 European context of awareness and trust (EuroCAT 2009), 3rd Workshop on combining context with trust, security, and privacy.

consequences of what they do. Nevertheless, at present the people performing work on crowd labor platforms have little expectation of disclosure. This section proposes that, under certain circumstances, the engineers or initiators of a computation project are obligated by the nature of the bargain to disclose the project's purpose(s).

First, if requesters are paying for the work, one might argue that they have also purchased the right to keep close to their proverbial chests any matters outside the scope of the arrangement. The workers have bargained to exchange labor for compensation, and an employer's fulfillment of that bargain does not necessarily include satisfying the workers' curiosity. In Anglo-American contract law, "consideration" is the legal term for what one party promises to another party in exchange for performance of the contractual obligations. The employer's consideration is generally limited to compensation paid to the employee for the work. Any argument for disclosure in addition to compensation would have to rely on vague notions of the worker having also earned an extra-contractual right to knowledge. Yet common decency would seem to require at least that prospective employers not lie, affirmatively or by omission, about what they plan to do with the product of the work. Beyond that, the onus seems to rest on both parties to determine how much knowledge they need and are willing to give in order to feel comfortable executing the bargain.

By contrast, where volunteers perform the computation, the requesters have a heightened obligation to disclose the nature of the project. As discussed above, volunteer labor falls outside the category of "work" precisely because the nature of the bargain involves a clear sense, on the part of the performers, of what they are getting, and to what they are contributing. Participants in a "game with a purpose" should understand or at least have access to that purpose. And those who sign up to scan satellite imagery or analyze online comments should know what their contributions may enable and with whom they may be shared. Otherwise the bargain is far from what it seems, and verges on fraud. This heightened obligation also applies where the engineer of a computation project is also in business performing the same work, and is essentially using volunteers to replace paid labor (dubious ethicality aside, such an arrangement could actually prove illegal). Finally, the disclosure imperative applies even (or perhaps especially) in situations where participants have no idea they are participating at all, such as the tasks users may perform to access a website. Volunteers deserve to fully comprehend the role they agree to play.

Other Dignitary Interests

Loosely defined, a worker's "dignitary interest" means his or her interest in receiving respect, preserving a sense of self, and remaining free from distress, humiliation, and degradation. Employers and requesters have no obligation to consider the dignitary interests of the people who perform human computation on their behalf, but doing so would make online computation platforms more appealing and hospitable.

Promoting dignitary interests can and should take a variety of forms. Where possible, platform designers should maintain the privacy of communications made

through the platform. They should also provide forums for discussion and collaboration, not just to streamline work but to foster community. If disputes arise, workers should have some procedurally fair method to mediate and resolve them. Firms in the human computation industry should endeavor to treat and refer to the performers of that computation as people, with agency, and not as scalable units of commoditized labor. These policies should remain in effect even in internal communications and marketing, as such language and worldview tend to self-propagate.

Finally, though it may contradict the notion of the fungible workforce—a stream of anonymous, interchangeable workers that can be turned on and off like a faucet—designers of online distributed work platforms should attempt to involve workers in governance. They should solicit and respond to opinions, perhaps appoint ombudsmen or advisory committees, and even cede certain areas of decision-making to the collective. Or, at least, those in charge should remain open to the possibility of democratic developments and willing to embrace changes as they emerge. That means not taking retaliatory action to shut down dialogue or dissent, and not necessarily using inherent authority over the "walled garden" to promote a vision of the workforce that best suits the business model. In the long run, this kind of flexibility may lead to a more loyal, engaged community of participants. In the short term, it serves to acknowledge and reward workers' own investment, and recognize that although humans may replace computational processes, they are not computers.

Opportunities

If and when authorities make the legal interventions described above, they need not throw the baby out with the bathwater. It is possible to regulate human computation without destroying it. More important, there are aspects of human computation, unique opportunities it presents, that legal authorities should keep in mind and seek to promote.

First, distributed online work creates low-friction, low-cost avenues for transnational organizing and solidarity. Workers from different countries and circumstances perform labor on the same platforms, connecting directly with the same requesters and competing in the same labor market. This usually drives down wages from the requester's perspective, and many stakeholders count on exactly that outcome, but it also allows for unprecedented coordination. These platforms, at least in theory, eliminate many of the social and institutional barriers that would otherwise prevent workers from organizing up and down on a subcontracted supply chain. Any legal regime that fussily parcels off globally distributed work according to outdated jurisdictional boundaries risks destroying those budding solidarities.

Second, the flatness of distributed work exists in part because the barriers to entry are so low: broadband and a rudimentary laptop will suffice, with perhaps minimal remote or onsite training. We should celebrate the ways that distributed work allows marginalized workers with few opportunities to participate directly in a global and, relatively speaking, lucrative labor market. Non-profits have already

begun using crowd labor to combat poverty.[22] This aspect of distributed work is precious, and deserves consideration in the discussion of whether and how to regulate online labor. For example, establishing basic wage protections will inevitably involve some oversight, and resultant bureaucracy, but authorities should take care not to impose such onerous compliance costs that the middlemen this work model recently banished have a new opening to re-enter the supply chain. There is no good reason to rebuild those institutional and infrastructural barriers.

Third, distributed work offers unique insights into how labor markets function. The more legible these online labor markets are, the more researchers, policymakers, investors, and workers themselves can glean from the mountains of data produced. Some scholars have already embraced work platforms such as Amazon's Mechanical Turk because of its low cost, large sample size, and flexibility.[23] This is not to suggest that online labor markets provide a perfect or even suitable analogue for real world markets in any particular situation, but given the likely growth in online labor of all kinds, the knowledge we gain from emerging work platforms could prove crucial in developing the next generation of online work. For example, understanding what motivates workers and makes transactions more efficient could help non-profits and state agencies encourage participation in areas where poverty, war, or climate have eliminated other sources of income.

Finally, one hopes that authorities will take into account the insight that regulating distributed online work could provide into the regulation of more established industries. We have an opportunity to rethink not just how employment regulations apply to online work, but how they apply generally to the modern economies that only vaguely resemble industrial economies of the past. As we face new legal questions, we also have a chance to re-interrogate the principles and assumptions that undergirded labor law in the now-archaic days of the traditional employment relationship. These new work platforms are but an extreme example of the ways our workplaces have changed, and legal recognition of those changes, across the board, is well past due.

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[22] See, e.g., Samasource (2013) http://www.samasource.org. Accessed 31 May 2013.

[23] See Horton J, Rand D, Zeckhauser R (2011) The online laboratory: conducting experiments in a real world labor market. Experimental Econ 14(3):399–425.