JURY GLASSES: WEARABLE TECHNOLOGY AND ITS ROLE IN CROWDSOURCING JUSTICE

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ABSTRACT

This Article explores the growing development of wearables and immersive technology within the field of dispute resolution. It provides a hypothetical example of how these existing technologies could be used in combination with data gathering, analytics, and artificial intelligence to transform the justice system. The Article then explores the age-old limitations and biases that exist within the justice system and suggests the use of the newest technology could lessen the impact of these limitations and biases. Finally, the Article suggests a marriage of technology, dispute resolution, and the crowd that may produce outcomes that should be supported by the judiciary by making use of the conceptual framework of polycentric governance. However, this can only occur if safeguards are put in place to ensure an ethical, fair, and just resolution of the issue for all parties concerned.

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INTRODUCTION

From bionic hands, to doctors using Google Glass, to tailored direct marketing powered by the GPS in your smartphone, wearable technology ("wearables") is impacting many aspects of business and our lives. In a world where technology assists us in so many ways, the question beckons as to why we have not moved to embrace this trend in one of our most important social institutions: the justice system. Technology broadly, of course, is increasingly used in courts—from e-discovery to video and remote testimony technology—but this is being done in a limited and sometimes haphazard manner.¹ Still uncommon, for example, is the use of e-­‐juries in which individuals sign up to participate in a mock trial and assist the lawyers in preparation for a real case,² to say nothing of the online social voting movement that is increasingly popular outside of the judicial context.³ Sites like SideTaker⁴ and other similar forums provide a social voting atmosphere for people to submit a disagreement for resolution by a jury of anonymous peers.⁵ And with the growth of online communities boasting ever-

¹ For example, the first use of Fitbit data has recently been used in a personal injury case. See Parmy Olsen, Fitbit Data Now Being Used In The Courtroom, FORBES, (Nov. 16, 2014).
³ It’s not just the number of ‘likes’ that matter, in fact, real world voting has been impacted greatly by social media. See Philip Bump, The (Increasingly) Complicated Relationship Between Facebook And Politics, WASH. POST, (Nov. 17, 2014).
⁴ See SIDETAKER, http://www.sidetaker.com/ (last visited Jan. 22, 2015). SideTaker is a website that allows people to post questions, to submit debatable occurrences, and in general, to ask for people to vote on issues, i.e. to take sides. See id. It is used within this paper, several times, as an example of crowd voting and the potential uses of the crowd in such a manner.
⁵ See id.
faster Internet speeds, crowdsourced online dispute resolution ("CODR") is becoming a reality.6

Yet CODR is not without its problems. The use of widespread social voting has reinforced long-held beliefs that voting can be a popularity contest.7 Crowds, it seems, sometimes have their own guideposts for making decisions, even when faced with clear guidance and rules to the contrary.8 At the same time, though, advancing technology is permitting new opportunities to leverage the wisdom of the crowd. Google Glass, to take one example, is already being used to train medical students, “robo-shrinks” are treating depression, and lifestyle apps are identifying students with depression symptomology from data gathered by their smart phones.9 Wearables will soon provide a wealth of personal information that, when combined with analytics and artificial intelligence, could open up a new world of applications from healthcare to justice.

All of this raises the question as to why the U.S. justice system has not moved more aggressively into using technology at a more rapid rate?10 Wearables, online crowds, and artificial intelligence can and should be put to use in the justice system, which suffers from limited understanding and participation, delays, and wide-

6 See John Gregory, Crowdsourced Online Dispute Resolution, SLAW, (Nov. 05, 2012) http://www.slaw.ca/2012/11/05/crowdsourced-online-dispute-resolution/ (discussing some of the early ODR platforms); Renee Kolar, Crowd Arbitration: Crowdsourced Dispute Resolution I, DISPUTING BLOG (Mar. 24, 2014) http://www.disputingblog.com/crowd-arbitration-crowdsourced-dispute-resolution-part-i/ (discussing the topic of crowdsourcing and some of the opportunities for more wider use of this practice).

7 For example, in November of 2013 a social controversy swept the reality show genre—Bill Engvall, arguably one of the weakest starting contestants on ABC’s Dancing with the Stars, was voted through to the later rounds of the competition despite, some would argue, more talented competition being eliminated. See Ree Hines & Michael Maloney, Bill Engvall Can’t Dance on ‘Dancing With the Stars,’ but Could Groove to Finals, TODAY ENTERTAINMENT (Nov. 18, 2013).


10 Oculus Rift—a 3D immersive technology (to be described in greater detail later) is being used outside the U.S. in criminal courtrooms already. For example, forensic experts at the University of Zurich have designed a ‘holodeck’ environment in which the jury, judges and other members of the court can explore and see in 3D high-resolution detail crime scenes in a truly immersive environment. See Victoria Woollaston, Forensic ‘Holodeck’ Recreates Crimes in 3D: Oculus Rift System Could Help Judges and Jurors Explore Scenes During Trials, MAIL ONLINE (U.K.) (Jan, 12, 2015).
spread biases. Existing technologies could address some of the limitations present in face-to-face brick and mortar courtrooms. For example, one criticism within the peer-based dispute resolution format involves apathy in the form of poor attendance, attempts to subvert participation, and other methods to avoid jury service. Eliminating the need, in some limited circumstances, to be physically present in the courtroom may reduce the impact of such apathy while increasing civic engagement. Criticism surrounding bias and other influences in the decision-making process could also be reduced if technology was allowed to ensure attention, participation, and to mitigate any perceived or real biases. Moreover, the use of CODR could reduce judicial backlogs, temper dispute resolution participant attempts to avoid participation in dispute resolution, promote legal cognizance, and improve community participation, in addition to reducing the prevalence of personal bias in decision making. The time has come to consider a more full use of wearable technology as a tool to improve the provision of justice.

Although this topic raises a diverse range of legal and policy issues for discussion, our focus here is on understanding the legal opportunities and challenges posed by the intersection of wearables and CODR. The legal literature has only barely begun to explore this important topic. In response, this Article explores the growing development of wearables and immersive technology.

11 See discussion, infra Section I(B).
12 See discussion, infra Section I(B)(2)
13 See discussion, infra Section I(B).
14 See discussion, infra Section I(B)(1) & (2).
15 See discussion, infra Section I(B)(2).
16 For example, the use of the term ‘juror’ is intentional but should not be assumed to imply that the technology is—or should be—used in the criminal context. The term is used, for example, intentionally when relevant research references juries. When appropriate the term CODR (Crowd Online Dispute Resolution) and ‘peer based dispute resolution participant’ have also been relied on where applicable. CODR is used to identify issues and concepts within the entire online dispute resolution process, while the later term is used for individuals operating within the CODR environment.
17 Consequently, important related issues such as privacy and cybersecurity are discussed but only as considerations to be addressed prior to the launching of such a CODR platform. The Article is intentionally silent on other issues, such as cost and implementation, as these topics are for future debate. Moreover, some issues that are well researched and commented on in the literature are also intentionally excluded, such as the use of trustmarks within the system. Where appropriate, those issues are noted in footnotes to not replicate prior well-documented research in this area.
18 See Kristin Bergman, Cyborgs in the Courtroom: The Use of Google Glass Recordings in Litigation, 20 RICH. J.L. & TECH. 11 (2014) (exploring the use of wearable technology in the courtroom but ignoring its application to CODR); Omer Tene & Jules Polonetsky, A Theory of
in the CODR context as follows. It provides a hypothetical example of how existing technology could be used in combination with data gathering, analytics and artificial intelligence to transform the justice system. The Article then explores the limitations and biases that exist within the justice system and suggests that the use of the newest technology could lessen the impact of these limitations and biases. Finally, the Article suggests that a marriage of technology, dispute resolution, and the crowd that may produce outcomes should be supported by the judiciary by making use of the conceptual framework of polycentric governance. However, this can only occur if safeguards are put in place to ensure an ethical, fair, and just resolution of the issue for all parties concerned.

I. DISPUTE RESOLUTION IN CYBERSPACE

Online Dispute Resolution ("ODR") has garnered growing academic interest, has become a viable dispute resolution tool to


enhance further and to encourage cross-border sales,\(^{20}\) and is a gathering support across the globe.\(^{21}\) Despite this growth, though, the traditional ODR set-up looks very much like a brick-and-mortar courthouse replicated online. However, faster Internet connections, wearables, and a growing trust in online environments, along with increasing recognition of the ability to rely upon crowd self-policing, could lead to more robust CODR systems, as is discussed further in Part III. This Part begins by providing a basic overview of the technology and an example of how it may be used as a transformative justice tool. It then moves on to explore some of the limitations and biases that currently plague the justice system and suggests that the newest forms of wearable and immersive technology (coupled with analytics, algorithms, and artificial intelligence) could help to address these perennial issues.

### A. Using Technology as a Justice Delivery Tool

For many individuals over the age of twenty-five, it is difficult to imagine the online, interconnected, and highly personalized worlds that are created through the use of the newest technologies. With that state of affairs in mind, this Section uses examples drawn from existing technologies to propose a new format for a technology based justice system, one without the juror attending court in person—or indeed potentially ever stepping into a brick-and-mortar courthouse. The Section concludes by using lessons from data gathering, analytics, and algorithms to ascertain how easy it would be to mitigate some prevailing issues with in-person juries, such as


the difficulty of empaneling a jury of our peers, limited understanding of the law, and the influence of personal bias on judicial outcomes.

1. Wearables, Immersive Worlds and Artificial Intelligence

The term ‘wearable’ is quickly entering the popular English lexicon. Wearable technology, as a general term, means a product that can be worn on the body for an extended period of time.22 But with the increasing popularity of wearables, the term has been used to describe numerous and widely varied products, from watches to highly advanced ‘glasses,’ and everything in-between.23 This suggests that wearable technology is more than a mere smart watch, but instead is a device coupled with sensors and data gathering capabilities contained within an integrated system worn by a person. For many, there are two categories of wearables that have garnered the most attention: (1) wrist-worn wearables, such as the Pebble24 and Apple Watch;25 and (2) immersion wearables, such as Oculus Rift26 and Google Glass.27 The first category is perhaps a
more basic use of wearable technology that allows miniature versions of smartphones to be worn on the person for use in varied applications from health to finance. This is a key aspect of this category of wearables, meaning that the wearable device can combine the abilities of a smartphone with the sensor capabilities of medical devices worn close to the skin. Think of a heart rate monitor that can also know your location because of GPS technology. In contrast, immersive wearables can perform numerous functions, depending on design and the location of the device, beyond passive sensing. For example, the Oculus Rift allows individuals to experience a virtual world through an advanced pair of glasses that essentially projects a new world to the user’s senses. As the individual moves his/her head, the view moves as well, immersing the individual in the environment. Technology such as Google Glass uses a semi-transparent screen to project information in front of the user’s right eye. Think of a wearable watch projecting its screen information in front of your eye, instead of you looking at the watch face, and the dynamic possibilities that could introduce.

While the interactive experience that wearables can already produce is impressive, the majority of the technology that works behind the scenes is built upon already existing platforms, much of which has been tested in smartphones. For example, all of the wearables integrate location information to allow specific, highly personal information to be provided to the user. Google Glass, for example, uses location positions to pinpoint the user’s location and then to display that information in front of the user’s eye on the Google Map program. The ability to use location information in such a manner has been advancing rapidly in recent years. For example, gamers will be familiar with Xbox Kinect, in which an external series of sensors are used to locate the individual and his/her


28 See infra note 42 and accompanying text.
29 See infra note 43 and accompanying text.
movement. The individual’s actions are then replicated in the online environment allowing the user to step inside the virtual world through his/her avatar. The technology uses data gathered from cameras, microphones, and software to turn the user’s body into the video game controller, replicating movement in the virtual environment.

Interactive technologies like Kinect have become so advanced and affordable that they are often used in artificial intelligence (“AI”) laboratories around the world, which has helped lead to the development of advanced AI platforms. For example, Ellie, the world’s first AI psychologist, is a diagnostic tool used to identify depression symptomology. Developed by the Defense Advanced Research Projects Agency (“DARPA”) and researchers at the University of Southern California’s “Institute for Creative Technologies,” Ellie is capable of reading 60 non-verbal cues per second (everything from eye-gaze to face tilt to voice tone), and then uses that information to identify the early warning signs of depression. Another example is Professor Andrew Campbell, who developed the StudentLife app that monitors “things like sleep duration, number of phone conversations per day, length of those

34 AI may be conceptualized as the goal of developing algorithms that can learn, while machine learning is a modern strategy to solving the AI problem using a bottom-up approach. Machine learning attempts to delineate well-defined sub-problems, like classifying a handwritten digit as being either a one or two, and then uses novel techniques within statistics and optimization to create an algorithm that can improve its performance over time. See Nicola Davis, From Online Dating to Driverless Cars, Machine Learning is Everywhere, GUARDIAN (Sept. 18, 2014), http://www.theguardian.com/science/2014/sep/18/machine-learning-artificial-intelligence. In contrast, machine learning and artificial neural networks attempt to move into general artificial intelligence, where learning occurs and then can be generalized to other non-categorizable events/objects. Kristjan Korjus, Ilya Kuzovkin, Ardi Tampuu & Taivo Pungas, Artificial General Intelligence that Plays Atari Video Games: How did DeepMind Do It?, ROBOHUB (Sept. 25, 2014).
36 Ellie combines a video camera to track facial expressions, a Microsoft Kinect movement sensor to track gestures and jerks, and a microphone to capture inflection and tone. See id.
conversations, physical activity, location,” and similar behaviors.\textsuperscript{37} These “data, combined with machine learning algorithms,” have successfully been “used to make inferences about student mental health” status.\textsuperscript{38} The most advanced use of these interactive technologies occurs in the creation of an artificially intelligent computer system. For example, IPsoft has developed a system called ‘Amelia,’\textsuperscript{39} which “can read and understand text, follow processes, solve problems, and learns from experience.”\textsuperscript{40} Some argue that Amelia may be able to replace humans in a wide range of less sophisticated jobs and has already been tested in “manning” “technology help desks, procurement processing, financial trading operations support, and providing expert advice to field engineers.”\textsuperscript{41}

This brief overview has hopefully demonstrated that technology, wearables, advanced data gathering, and analytics—including AI—are all advancing at a rapid rate with applications across myriad sectors and industries. It is time to realize that specific, highly personable, networked technology is about to be ubiquitous in our daily lives. The time has come to use this technology to improve one of our most important, and in some ways the most human, of our institutions—the justice system.

2. CODR Hypothetical

As described above, immersive and wearable technology is advancing at a rapid rate. Yet, it is often hard to imagine how the technology will be used in a fully integrated fashion, especially as a justice tool. Imagine the following scenario: Steven, walking into his office after a long meeting, wants a distraction and decides that he has some free time to review case information regarding a dispute for which he had agreed to be a member of the social jury. Steven,


\textsuperscript{38} See id.

\textsuperscript{39} See Sophie Curtis, Meet Amelia: The Computer That’s After Your Job, Telegraph (Sept. 29, 2014).

\textsuperscript{40} See id.

\textsuperscript{41} See id. Consider the use of AI to perform basic legal tasks and outcome predictions. See Alex Aldridge, Robot Solicitors? Firm and Uni Team up to Apply Artificial Intelligence to Law, Legal Cheek (Jan. 5, 2015)(discussing the newest technology being used to provide organizations with intelligent legal decision support tools).
armed with his Google Glass, logs into a secure, court-based website that uses retina scan to identify him and to direct him to the correct portal. On his Google Glass, screen information is visible describing the case, the names of the key parties, and the total estimated time of commitment. Steven is asked to confirm his willingness to participate in the process and to affirm that no conflicts of interest are present. Shortly after these formalities are completed, a notice pops up telling him that he has not seen the newly uploaded 25-minute video of Mr. Smith testifying. Steven confirms his desire to watch the video. As he begins to watch, analytics behind the scenes monitor Steven’s eye movements and, when Steven looks away for a pre-programmed period of time, a pop-up notice appears asking Steven if he is still watching the video or if he would like to pause the video and return to viewing it later. As Steven watches the video, at pre-determined moments in the testimony a pop-up window appears asking Steven questions about what he has just watched. Steven is currently being asked if he found the last five minutes of Mr. Smith’s testimony to be credible. Steven is unsure as to the legal definition of “credible,” so he highlights the word and the definition and some examples pop up in a text box window. Should Steven want more information, he can click on a link that will take him to a webpage with a more detailed legal definition.

As Steven watches the video, questions are asked about his perception of information, the importance he places on particular facts and the accuracy, consistency and credibility of information, and the person speaking. Analytics running in the background also notice that Steven has begun to focus up and to the left, and since

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42 It is worth noting that this hypothetical can occur without the use of Google Glass. The technology is merely included here to help illustrate the potential of this new and highly publicized platform.

43 Of course, the technology could—and would be designed to—run its own internal conflicts check to ensure that the human contribution is accurate across various existing databases, such as court records, etc.

44 That is not to argue that the trial or courtroom presentations do not occur in person. The historic debate of the Sixth Amendment constitutional guarantee of the right to face ones accuser is well beyond the scope of this Article, but for more information see Matthew J. Tokson, Virtual Confrontation: Is Videoconference Testimony by an Unavailable Witness Constitutional?, 74 U. CHI. L. REV. 4 (2007).

45 See Sarah Silbert, Samsung Demos Smart Scroll, Smart Pause and Air Gesture on Galaxy S 4, ENGADGET, (March 14, 2013) (discussing how the Samsung technology works).

Steven has told the program he is right handed, this shift in visual focus is interpreted by the analytics as possibly indicating Steven is trying to visualize the scene just described by the witness. The program notices the change in focus and asks Steven if he would like to see the diagram presented earlier in the case and if the video should be paused while he considers the information presented, if he would like to see an alternative or wide view of the entire courtroom, showing the defendant’s reaction to the statements, or if he would like to note this particular fact and mark this section of the video. When Steven responds 'no' (or yes), the program follows his line of thinking, adds a note to his connected notepad, marks the video, provides information as needed (through floating pop-up boxes or hyperlinks), and then progresses the video. And, do not forget, the Bluetooth-connected smart watch on Steven’s wrist can monitor heart rate, pulse, temperature, current location, and can gather all kinds of other bits of information, all potentially used by various analytics to pose questions and note responses to the excitement/fear/boredom of Steven as he watches the video or learns more about the legal issues presented to him. The program later will ask Steven to go back through his bookmarks within the video and to note the importance of each fact in light of the overall case. After watching the entire video, Steven is presented with a series of questions, some of which might include ranking the importance of various key facts shared, or assigning credibility scales to the overall testimony.

Steven repeats this process until the entire video testimony collection has been viewed, at which point the system asks Steven questions, some of which will be specific to the cause of action.

47 See, e.g., Richard Bandler and John Grinder, Frogs into Princes: Neuro Linguistic Programming, (1979) (preeminent authors in the field describing NLP).

48 The video perspective here could be switched as needed by the viewer to allow for a fuller view of the courtroom, or a focused view on the defendant. The need to have varied views, especially one that shows the various parties to the case, has been argued as a limitation to the use of video due to the numerous studies and juror reports post case that note the high importance placed on the defendants reaction during trials. For more information, see Laurie L. Levenson, Courtroom Demeanor: The Theater of the Courtroom, 92 MINN. L. REV. 573, 573–88 (2008).


51 The technology described is being used within the current court environment. For example, forensic experts at the University of Zurich have designed a ‘holodeck’ environment in
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Steven will be asked to rank the credibility of witnesses, to put the facts in a timeline, and to consider facts in light of the required legal elements. The automated program, with or without the assistance of a live forum, may answer any terms that are presented. After Steven is comfortable with making a final determination, he will be asked to agree or disagree with each element needed to successfully demonstrate the cause of action against the defendant.

3. Underlying Analytics and Algorithms

Behind the scenes in this hypothetical, analytics have been working continuously; Steven has been monitored for the amount of time he spent on each video, the number of times (if any) he fast-forwarded the video, the number of times he left the webpage to view another page, the number of links he clicked on, the time he spent in the chat forum, and the questions that he asked and answered. In essence, all that Steven has done has been recorded in a searchable database. Of course, Steven’s information and the data that he generates from using the system can be used to create an experience specific to Steven; just like marketing and other directed online information, the system can learn as Steven interacts with the platform and can adjust to Steven’s preferences and conflicts. For example, when Steven logged into the system and asked to be assigned a new case, the platform could have asked Steven questions that would have assisted in his assignment to a case and ensured no conflicts existed. And, more importantly to the overall trust of the online justice system, the data can be used to identify misinformation that Steven provides, either in written form or by identifying behavior that fails to match provided information. The system itself can help ensure an increased level of which the jury, judges, and other members of the court can explore and see in 3D high-resolution detail crime scenes in a truly immersive environment. See Woollaston, supra note 10.


55 The process could be similar to the credit card fraud protection services in which the information provided to the credit card, the location, the shopping habits and similar data points are used to identify misuse. This information could then be fed back to the individuals to allow correction or could be figured as part of the larger data set within the final determination process.
As the system develops and gathers more information, the analytics behind the scenes will begin to report responses that conflict and, more importantly, will begin to flag biases that may be present in the final determination. For example, if Steven responded in the affirmative to the question, “I found the defendant’s manner of dress to be disrespectful of the court process,” the platform could highlight the response as a potential indication of a hidden bias of the dispute resolution participants. Each of these flags—the information gathered concerning a given dispute resolution participant, and the final determinations of the entire pool of dispute resolution participant—could then be fed into the dispute resolution process. The neutral decision maker could assist in adjusting the final outcome based on revealed biases and other extraneous influences. At the end of the process, Steven’s analytical information is used to determine his compensation; full participation without frequent fast forwarding, and correct and timely responses to pop-up window questions could be interpreted as Steven being actively engaged with the process. In real terms to Steven, this means that he receives the highest payout. And of course, Steven is immediately paid—in whatever form he chooses, from Starbucks gift cards, to cash or Bitcoin, to Google play credits—via his Google wallet or Apple Pay.

These analytics hold the potential to provide the public with a hitherto unachievable level of confidence that dispute resolution participant have had the opportunity to understand the legal standards in play, had plenty of time to explore information and ask questions, and perhaps most importantly, will have assurances that the dispute resolution participant has been appropriately compensated for performance, thereby increasing the potential pool of engaged dispute resolution participants. Yet the use of technology in

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56 Many legal commentators highlight the importance of appearance of the defendant—and witnesses—to a juror’s determination of credibility and culpability. See, e.g., F. Lee Bailey & Kenneth J. Fishman, Criminal Trial Techniques §§ 41, 44 (1994) (providing advice on “Successful Courtroom Dressing” and proper body language and appearance for “Defendant as a Witness”). Research supports such attributes as attractiveness and others also impact juries’ perceptions. See, e.g., David L. Wiley, Beauty and the Beast: Physical Appearance Discrimination in American Criminal Trials, 27 St. Mary’s L.J. 193, 211–12 (1995) (“Research suggests that people viewed as facially unattractive are more likely to be perceived as criminal than are facially attractive persons.”); Lawrence J. Smith & Loretta A. Malandro, Courtroom Communication Strategies §§ 1.37–1.38, 1.90 at 148–54 (2011) (discussing studies in which the social attractiveness of the defendant was found to have a measurable impact on the jury).

57 See discussion infra Section 1(B).
this manner, especially tailoring information and creating profiles
in an online environment, will present new issues within the justice
system even as it promises to address old biases, such as dispute
resolution participant participation apathy, information bias, and
visual biases discussed above.\textsuperscript{58} We argue, though, that these po-
tential concerns should not derail the uptake of CODR; the issues
need to be considered, reflected upon, and discussed, as with the
extension of any new advanced technology.

The ability of CODR to exist, and the use of technology in this
manner, should cause the legal community to pause and consider
the possibilities. First, all of the technology described in this hypo-
thetical currently exists. Thus, dismissing this scenario as some-
thing outlandish that could only occur in the distant future is to
miss the point entirely.\textsuperscript{59} Second, many of the reported problems
with biased or inattentive jurors and juries could be accounted for
in the programming and platform.\textsuperscript{60} Third, while much of this may
seem far-fetched and fantasy-like, the truth is that the ODR com-

\textsuperscript{58} See discussion infra Section I(B)(2)
\textsuperscript{59} See discussion infra Section I(A)(3).
\textsuperscript{60} See discussion infra Section I(A)(2) & (3).
\textsuperscript{61} For example, Levenson is an ODR platform that is currently being used by both business
and local government to resolve numerous and varied types of disputes in an online environ-
See also Raymond, Yeah, But Did You See the Gorilla?, supra note 21, at 134–35 (describing the
various existing ODR platforms).
\textsuperscript{62} See Woolaston, supra note 10.
The next sections describe some of the historic dilemmas with the peer-based justice process, including time commitment, pool of your peers, and the limited self-awareness of existing biases. Focusing on those areas that this technology can shape, the next sections will address each issue in turn. The Article will first look at the apathy of individuals in participating in the peer-based dispute resolution process, and will suggest that some of the greatest impact could occur within this area. Unfortunately, we note that the use of the technology will likely also present new dilemmas that will be explored. We then move into an area of technology-based impact that seems necessary but unimaginable to many: the use of technology to provide immediate feedback to an individual and to prompt the individual to consider that feedback. It is this area that is arguably the most intriguing, but it is also the context that prompts the greatest concern among all that have previously engaged in this discussion, namely: how do we ensure no new bias is created when we attempt to introduce new influencers and tools into the system?

B. Old Biases and New Dilemmas

As Professors Daniel R. Cahoy and Min Ding have noted, “it is fair to say that United States juries, or more specifically, ‘petit juries,’ present one of the most interesting and significant challenges for understanding human behavior.”63 Interestingly, this article, written in 2004, captures the sentiment and continuing interest in the process of group decision-making within the justice system now more than a decade later. While much has been written on jury behavior, little has been written on using the newest technology to mitigate longstanding issues in this context. Simply put, it is time that we begin to better embrace technology as a participant in the group decision-making process. A note right up front, though: as jury research and introduction to potential uses of technology are explored, there is no suggestion that criminal juries are on the table for reform. That is not to say that that discussion should not begin, but it is simply too early to rely upon still largely untested technologies in such a fundamental aspect of our society.

More importantly, the use of research examining the jury process and juror bias is merely a starting point for discussion, as the exact design and interaction between individual, platform, and judicial process is still hypothetical at best. Yet the research into the jury process lends us a starting point for discussion as it highlights the current areas of need within the existing system, concerns that oftentimes can be reduced or eliminated through the use of technology. Of course, no one writing in the area would insist that the use of technology will not lead to a new host of issues, but time will tell the full impact of those issues.

The next sections attempt to identify common criticisms within the current brick-and-mortar jury decision-making process. A simple Google search brings into bright focus the main issue—social disinterest in participating in the dispute resolution process. While claims have long been made that jury service is a civic duty that allows people to participate in shaping society unlike any other opportunity presented to them, even voting, most individuals can retell stories of “friends” that have found clever, and not so clever, ways to avoid jury service. And should an individual fail to find a reasonable excuse to avoid jury service, their personal biases, (both known and unknown to the individual), their limitation in understanding legal concepts, their external time commitments, and their unwillingness to engage in the process, all become central issues in the provision of justice. The next Section explores these issues and demonstrates that in many ways, existing technology could be used to overcome some of the most heavily criticized aspects of the peer-based dispute resolution process.

1. A Jury of Your Peers is a Dead Concept

While the jury system is deeply embedded in the U.S. legal system, the fairness of juries has long been under scrutiny. “The jury system is said to create unnecessary delays in litigation, impose unfair social costs on jurors, and be overly expensive.” As Professor James Stribopoulos notes:

65 See infra Section I(B)(2).
Not many people can afford to sit on a jury . . . and as a result, we tend to get people who are either civil servants or employed by large corporations that give employees paid leave . . . or retirees—and not very many other people at all.68

Moreover, as Professor Stephen Penney argues: “[i]t’s a fact that a lot of people don’t wish to serve on juries, and they attempt to find any way to get out of it.”69 The willingness to find a way around and/or ignore a jury summons is a growing issue; for example, in 2011, frustrated by a high number of no-shows in response to jury summons, a Florida judge ordered the absentees to appear in court and explain their absences.70 In Tampa, Florida, some twenty to twenty-five percent of requested jurors simply failed to show up after being summoned for jury duty.71 And of course, when individuals cannot afford to take off work or are penalized, either overtly or indirectly from participation, the potential jury pool is significantly limited.72

While adequate compensation and willingness to schedule court proceedings outside of traditional office hours may solve much of this particular problem, this simple solution seems unlikely in modern brick-and-mortar courtrooms that remain rooted in management based on the status quo. Yet, as described above, technology could reduce many of these barriers.73 By allowing individuals to participate as their schedules allow,74 and by paying people appropriate compensation based on actual participation,75 the decision making process could be modernized to reward the participation of those who would like to contribute76 but who could otherwise not practically accommodate the demands.77

68 See Kazi Stastna, Jury duty: Unfair burden or civic obligation?, CBC NEWS, (Nov. 8, 2011).
69 See id.
70 Mitch Stacy, Tampa Judge Summons Jury Skippers for a Scolding, ASSOCIATED PRESS (Nov. 5, 2011).
71 Id.
73 See supra discussion at section I(A).
74 See supra discussion at section I(B)(2) & (3).
75 See Daniel R. Cahoy & Min Ding, The Stakes Matter: Empirical Evidence of Hypothetical Bias in Case Evaluation and the Curative Power of Economic Incentives, 80 St John’s L. REV. 1275, 1283 (2006) (discussing limitations from incentive misalignment). Of course, one common fear of many is based in the belief that ‘jurors will put in less than the appropriate amount of effort.” Cahoy & Ding, supra note 63, at 35.
76 See Weddell, supra note 67, at 1283–85.
77 See id. at 1285.
The practical inability to participate as a juror is further exasperated by the process itself. Professor Vikram David Amar highlights some of the relevant issues:

1. In search of “impartial” jurors, the selection process seems stacked against the educated, the perceptive, and the well-informed, in favor of persons more easily manipulated by lawyers and judges.  
2. Attorneys exercising their clients’ rights to “strike” candidates from the jury pool slyly and cynically seek to exclude jurors on the basis of race, gender and other supposed indicators of bias.  
3. Courts subject citizens to repeated summonses, intrusive personal questioning, cramped waiting rooms, financial hardships and long and inefficient trials. Unsurprisingly, many citizens—perhaps the majority—struggle mightily (and successfully) to avoid jury duty altogether.  
4. In court, the jury is unfairly subjected to rules that presume jurors are incapable of impartial deliberation, and that provide little help in their understanding points of law or evaluating witness testimony.  
5. The scales of justice seem tipped in favor of rich litigants with high-priced counsel.

Fortunately, unlike in a traditional brick-and-mortar courthouse, some of the issues surrounding the dispute resolution participant selection process can be mitigated by the platform. Many individuals are assumed to be incapable of understanding substantive points of law, civil procedure, or similar details that result in a large amount of exposition to ameliorate any prevailing legal knowledge. In fact, critics of the jury system argue that it leaves a defendant’s fate in the hands of a randomly chosen group of citizens with no special knowledge, who are “at best, twelve people of average ignorance.” CODR technology is suited to assist in reducing the impact of this information gap as information can be provided in real time, with measurable learning occurring as concepts become more obtuse. First, the process described above depends upon a high level of interactive participation. Unlike flat environments that many are familiar with in a traditional online environment, many uses of CODR technology are built upon a fully interactive environment. Within this environment, the system...
responds to inattention and/or inactivity and can even use a simple predictive analytic to determine the most likely reason that the particular individual is no longer attending to the platform. Keep in mind, as described above, the platform is one in which individuals build profiles and earn rewards; thus, the platform will learn about the ways in which dispute resolution participants behave and can consequently adjust processes based upon prior use. The platform would know that you had never encountered a specific legal term and could offer to define the term, as well as provide links to videos and other sources of reliable information. And the system could even be calibrated to recognize a level of dishonesty from the dispute resolution participant. Like online education tools,82 a robust CODR platform could ask questions or otherwise double-check knowledge, all without the dispute resolution participant having to miss key information or embarrass themselves in front of the court and fellow participants.

Most important to the process, the peer-based dispute resolution participant pool could be, in theory, a statistically true representative jury of an individual’s peers.83 Several limitations are created from the jury selection process. Perhaps the easiest—a limited number of people willing to participate—may be reduced by curtailing the reasons to avoid participation, such as compensating people based on their contributions, as described above. However, some of the more troubling issues that arise in peer-based dispute resolution participant selection could also be addressed, such as the selection process itself generally and the use of preemptory challenges in particular. Within the system, preemptory challenges could be eliminated, since: (1) the system would screen for

82 Consider ‘SmartBook.’ See David Lax, A New College Textbook Makes it Impossible to Cram, FAST COMPANY, http://www.fastcompany.com/3035251/most-creative-people/a-new-college-textbook-makes-it-impossible-to-cram?mkt_tok=3RkMMJWWf9wsRogvq7JZKXonjHpfS X76u0qUKG%2FIM%2FOER3OwPULGj4GSSn1%2BSLDwEYGJv0SgFS7LNMbNqzbO OXxY%3D.

83 The Supreme Court in Strauder v. West Virginia, 100 U.S. 303, 306–07 (1879), abrogated on other grounds by Taylor v. Louisiana, 419 U.S. 522 (1975), articulated the right to a jury of one’s peers noting that the “very idea of a jury is that it is a body of men composed of the peers or equals of the person whose rights it is selected or summoned to determine. . . .” A defendant’s right to a jury by his “peers” does not mean he is tried by friends, but rather the jurors and defendant should possess common characteristics. “Commonalities such as race, gender, occupation and socio-economic status, ensure that jurors can empathize with the defendant and take into account common individual experiences, which may be helpful in determining witness credibility, deciding guilt or innocence, and in sentencing decisions.” Weddell, A Jury of Whose Peers?, supra note 67, at 14.
conflict and bias,84 (2) the peer-based dispute resolution participant size could be larger than in traditional systems,85 (3) the peer-based dispute resolution participant could be randomly assigned to participate in cases,86 and (4) the pool could be drawn from a representative segment of the community that best suits the issue at hand.87 While some of these perceptions cannot be fully resolved through the use of technology, many of these concerns may be mitigated through currently available technology and well-integrated platforms. For example, many of the early impartial jury cases focused on the elevation in the quality of discussion when a variety of viewpoints were brought to the table.88 The theory was that although one juror may not be impartial on his or her own, the jury as a whole would be impartial because the biases of each member would be balanced against those of the rest of the group.89 While this perception is likely true in a small-sized group,90 the current online environment suggests that crowd behavior—and inhibitions associated with crowd behavior—take over at a certain point.92 Technology could certainly allow the participants to communicate.

84 The Sixth Amendment’s pronouncement for trials by an “impartial jury,” guarantees that a jury who harbors biases against him or her will not try a defendant. While the Constitution does not set forth any guidelines for impartiality, the Supreme Court has interpreted an “impartial” juror as one who is “indifferent” to the case at hand. Swain v. Alabama, 380 U.S. 202, 219–20 (1965), overruled by Batson v. Kentucky, 476 U.S. 79 (1986); Irvin v. Dowd, 366 U.S. 717, 722–23 (1961) (stating that the Sixth Amendment guarantees defendants the right to be tried by “a panel of impartial, ‘indifferent’ jurors . . . [whose] verdict must be based upon the evidence developed at the trial”). See Donna J. Meyer, A New Peremptory Inclusion to Increase Representativeness and Impartiality in Jury Selection, 45 CASE W. RES. L. REV. 251, 259–60 (1994).

85 Jury Selection and Service Act requires the use of voter registration lists; however, to overcome lack of minority representation on jury venires, many state and municipal government agencies have enacted new jury venire selection procedures. Joan Biskupic, The Push is on for More Diverse Juries: Minorities Sue to Change Systems of Choosing Pool, USA TODAY, Aug. 28, 2001, at A1 (quoting EJI Director Bryan Stevenson).

86 The Jury Selection and Service Act, in an attempt to gain a jury venire that is representative of the community, mandates that qualified citizens be randomly selected for jury service. 28 U.S.C. §§ 1861, 1866 (2006).

87 The Supreme Court has interpreted impartial jury as a jury that is representative of the community. See Taylor v. Louisiana, 419 U.S. 522, 538 (1975).


89 Id. at 101.

90 Id.

91 Id.

92 In fact, Harvard’s Berkman Center for Internet and Society fellow Judith Donath argues for the use of a pseudonymous for our online lives that would then be used to create a “data portraits.” “Data portraits . . . can help members of a community keep track of who the other participants are, showing the roles they play and creating a concise representation of the things they have said and done.” She argues “Communities flourish when their members have stable
and the large number of individuals involved could reduce the impact of a small fraction of partiality in line with the wisdom of the crowds theory discussed in Part III, but one wonders what new issues will arise as we attempt to overcome old biases.

2. Personal Biases Abound

Research has long explored the various biases that exist, both conscious and unconscious, and the manner in which these biases impact every aspect of our life. In fact, there is little doubt that a large portion of our daily lives is managed through our unidentities, and the protection of a pseudonym may free users to debate controversial topics more fully.” Judith Donath, The Social Machine: Designs for Living Online 223 (2014).

Heuristics, or “any guiding principle for transforming information to solve a problem or to form a judgment,” are mental shortcuts or rules of thumb that lead to the formation of one’s biases. See Richard E. Nisbett et al., Improving Inductive Inference, in Judgment Under Uncertainty: Heuristics and Biases 447, (Daniel Kahneman, Paul Slovic & Amos Tversky eds., 1982). Many types of cognitive bias exist such as the confirmation, attribution, and memory biases. See Barbara Koslowski & Mariano Maqueda, What Is Confirmation Bias and When Do People Actually Have It?, 39 MERRILL-PALMER Q. 104, 104 (1993), http://www.jstor.org/discover/10.2307/23087302?uid=3739560&uid=2&uid=4&uid=3739256&sid=21104237847221 (confirmation bias occurs when a person fails to seek out contrary evidence and when such evidence is presented the person does not always accept it); Monty L. Lynn & Richard N. Williams, Belief-Bias and Labor Unions: The Effect of Strong Attitudes on Reasoning, 11 J. ORG. BEHAV. 335, 335 (1990) (attribution bias refers to the interpretation of a cause of action based on the actor’s group membership, e.g., religion or status); Paula T. Hertel & Faith Brozovich, Cognitive Habits and Memory Distortions in Anxiety and Depression, 19 CURRENT DIRECTIONS PSYCHOL. SCI. 155, 155 (2010) (memory bias affects one’s ability to recall a memory). See generally Judgment Under Uncertainty: Heuristics and Biases (Daniel Kahneman, Paul Slovic & Amos Tversky eds., 1982) (a comprehensive collection of thirty-five articles devoted to identifying judgmental heuristics and their effects on biases).

A conscious bias is supported by the theory of social behavior: individuals are “guided solely by their explicit beliefs and their conscious intentions to act.” Anthony G. Greenwald & Linda Hamilton Krieger, Implicit Bias: Scientific Foundations, 94 CALIF. L. REV. 945, 946 (2006) (a conscious intention to act occurs when the actor is aware that he/she is taking a course of action for a particular reason). However, people often are guided by mental processes outside the conscious attentional focus. Id. Thus, an unconscious, or implicit, bias can exist based on the theory that an individual does not always have conscious intentions to act. Id. For example, an employer who decides to promote a white employee over an equally qualified black employee because some customers would feel more comfortable with a white employee is engaging in conscious bias. See Christine Jolls & Cass R. Sunstein, The Law of Implicit Bias, 94 CALIF. L. REV. 969, 970 (2006). The employer’s decision would have been the result of an unconscious bias if the employer made same decision based on a gut feeling that a white employee would be better at the job. Id.

Biases influence your beliefs and inferences and thus your decision-making and psychology. See Martie G. Haselton, Daniel Nettle & Paul W. Andrews, The Evolution of Cognitive Bias, in The Handbook of Evolutionary Psychology, 724 (David M. Buss ed. 2005). Biases may affect how you estimate distance, your prediction of which team will prevail in a baseball game, who you sit next to on a Southwest flight, or whether you think you are qualified for a job. Id.
conscious mind, in which some eleven million bits of information is processed per second.\textsuperscript{96} In fact, “our brains are shaping our decisions long before we become consciously aware of them.”\textsuperscript{97} As demonstrated by Professor Benjamin Libet in 1983, the brain “makes decisions on a subconscious level that people only believe that they consciously drove their actions in hindsight.”\textsuperscript{98} The tendency to be influenced by the unconscious mind has not been unnoticed in the justice system, as Clarence Darrow once said:

Jurymen seldom convict a person they like, or acquit one that they dislike. The main work of a trial lawyer is to make a jury like his client, or, at least, to feel sympathy for him; facts regarding the crime are relatively unimportant.\textsuperscript{99}

Yet the ability of the jury to view the defendant, his reactions, conversations, behaviors, and non-verbal cues has led many to question the influence of such activities on the jury.\textsuperscript{100} Moreover, the uses of video and similar types of technology are not new to the justice system; video testimony, remote testimony,\textsuperscript{101} remote defendants,\textsuperscript{102} remote counsel, and even remote judges exist and have existed for some time.\textsuperscript{103} Some areas of the judiciary have long taken notice of the positive uses of technology; for example, in


\textsuperscript{97} Ed Young, \textit{Unconscious Brain Activity Shapes Our Decisions}, \textit{DISCOVER ONLINE} (Apr. 13, 2008).

\textsuperscript{98} Id. See also C.S. Soon et al., \textit{Unconscious Determinants of Free Decisions in the Human Brain}, \textit{NATURE NEUROSCIENCE} 11, 543 (2008).

\textsuperscript{99} Edwin Hardin Sutherland & Donald R. Cressey, \textit{Criminology} 431 (9th ed. 1974).

\textsuperscript{100} Some have even likened the courtroom to a theater—a dynamic environment in which jurors use all of their senses in determining the verdict. See Laurie L. Levenson, \textit{supra} note 48, at 573–88 (2008); Peter W. Murphy, “There’s No Business Like . . . ?” \textit{Some Thoughts on the Ethics of Acting in the Courtroom}, 44 S. TEX. L. REV. 111 (2002). During a trial, a defendant’s non-testimonial communications may affect a juror’s decision-making. See Levenson, \textit{supra} note 48, at 582–88 (2008) (discussion of \textit{Estelle v. Williams} where the Supreme Court held that a defendant’s appearance during the trial wearing a prison uniform could undermine fairness). However, in certain cases such as a capital trial research shows “that jurors view defendants negatively regardless of whether they testify or remain silent.” Michael E. Antonio & Nicole E. Arone, \textit{Damned if They do, Damned if They Don’t} Jurors’ Reaction to Defendant Testimony or Silence During a Capital Trial, 89 \textit{JUDICATURE} 60 (2005).


\textsuperscript{103} See Friedman, \textit{supra}, note 101.
1996, Professor Diane Hartmus wrote on the use of video trials.\textsuperscript{104} By 2004, Professors Amy Moeves and Scott Moeves discussed many of the newest ODR platforms that integrated technology into the dispute resolution process.\textsuperscript{105} In each of these instances, technology was used to remove obstacles that arise from requiring individuals to appear in person in brick-and-mortar courtrooms. And, in some circumstances, going so far as to allow the entire trial to occur in multiple locations; yet, since these articles were written, and despite major advances in technology and connectivity, only small steps have been taken to use technology in its widest sense across the justice system.

One must ask: “why do we continue to insist on the physical presence of the peer-based dispute resolution participant in the courtroom?” Many academic commentators,\textsuperscript{106} lawyers,\textsuperscript{107} and judicial participants\textsuperscript{108} have noted that an emphasis is being placed on behaviors that are extraneous to the case and the overall discussion and/or outcome, but that often only occur physically. Yet the interpretations of observations can be tainted with hidden—and not so hidden—biases. The American Bar Association ("ABA") has highlighted the fact that the courtroom demeanor of an individual can become a prejudicial factor in his/her conviction and sentencing.\textsuperscript{109} For example, during one particular outcome study, a

\begin{footnotesize}
\begin{enumerate}
\item[107] And even judges, see C. Guthrie, Jeffrey J. Rachlinski, & Andrew J. Wistrich, Inside the Judicial Mind, 86 Cornell L. Rev. 777, 777–830 (2001); Jeffrey J. Rachlinski et al., Does Unconscious Racial Bias Affect Trial Judges? 84 Notre Dame L. Rev. 1195 (2009).
\end{enumerate}
\end{footnotesize}
juror made special mention of the defendant’s behavior, noting that “[he] walks into a room slowly, real cool, like some streetwise punk, a smirk on his face, eyes shifting back and forth, as if he’s on to some thing or in on a big secret.” Unfortunately, the defendant in this particular case had a noted mental retardation issue and the interpretation of the behavior was likely inappropriate in light of this information. Making snap judgments and misinformed assumptions is not uncommon, in fact, some commentators have suggested:

Jurors form their initial impressions during the first four minutes. Their assessment is based primarily on visual perceptions. They tend to accept the visual and nonverbal cues while rejecting the verbal cues.111

Moreover, research has been done examining the impact that a lawyer’s behavior, communication style, opening and closing communication statements, and basic demeanor has on juror perceptions.112 Many commentators113 question if it is not time to attempt to reduce the impact that visual cues have on the jurors’ determination of the final outcome of the dispute. In fact, while previous research showed that parts of the brain automatically respond to a face’s trustworthiness when a face is clearly visible; the newest research demonstrates that the brain is “sensitive to subliminal variation in facial trustworthiness.”114 This means that the human brain tracks “how untrustworthy an unseen face appears as

at 12–14 (discussing the capital murder trials of John Paul Penry) citing Eric Zorn, Questions Persist As Troubled Inmate Faces Execution, CHI. TRIB., (Sept. 21, 1998) (quotation marks omitted).

110 See id. at 1 (quotation marks omitted).

111 SMITH & MALANDRO, supra note 58, § 5.93 at 538. Trial Consultant Donald Vinson claims, “research on the impact of the opening statement consistently reveals that as many as 80 to 90 percent of all jurors have reached their ultimate verdict during or immediately after opening statements.” DONALD E. VISON, JURY TRIALS: THE PSYCHOLOGY OF WINNING STRATEGY 171 (1986) (cited in Valerie P. Hans & Krista Sweigart, Jurors’ Views of Civil Lawyers: Implications for Courtroom Communication, 68 IND. L.J. 1297 (1993)).

112 Hans & Sweigart, supra note 113.

113 See Lederer, supra note 106 (proffers that technology allows jurors to better comprehend evidence that is displayed on individual monitors allowing jurors to read at their own pace while mitigating certain virtual cues of lawyers); Mary R. Rose & Shari Seidman Diamond, Offstage Behavior: Real Jurors’ Scrutiny of Non-Testimonial Conduct, 58 DePaul L. Rev. 311 (2009) (discusses possible uses of a virtual trial and highlights the benefit of virtual trials eliminating juror observations of out-of-court behavior); Mark Spottswood, Live Hearings and Paper Trials, 38 FLA. ST. U. L. REV. 827 (2011) (notes that paper-based trials avoid biases created from visual cues while saving time and money).

well as the overall strength of a face’s trustworthiness signal . . . despite faces not being subjectively seen.”

In other words, we are making decisions and reacting to information based on how someone looks and the tiny facial responses that most of us do not consciously register as observed, and we are using that information to make important decisions about how we interact with our environment.

Technology may be able to help in several ways to mitigate the impact of and to measure how much influence is given to various visual cues. For example, returning to the prior story, let us assume that Steven is presented with video testimony of Mr. X. Mr. X is poorly dressed and speaks with a slight lisp, sometimes causing people to misunderstand him. While on the stand, Attorney Thomas has to ask Mr. X to repeat himself several times; during these moments, the defendant rolls his eyes and leans back in his chair. If you saw this behavior, what would be your impression of the defendant and his actions? Callous, uncaring, insensitive? Maybe, does it matter in the context of your decision about the defendant? It might matter. As lawyers love to say, it depends.

For instance, if this is a crime, his callous, uncaring nature is something that may be considered in the sentencing phase. Or, should it not matter at all?

A key to answering these questions is to understand that technology, particularly wearable technology, can help the peer-based dispute resolution participant identify, react to, and possibly adjust to or make corrections should any of their responses be revealing a hidden bias. The technology is already being used to reveal these underlying biases and to account for them. Traditional courtrooms simply do not have this same ability and while one could argue that discovery and correction for these hidden biases do occur within jury discussions, little research supports the ability of the group to correct for hidden biases. Instead, most research suggests that individuals continue to work hard within the jury group to

115 Id. at 2061.


117 For example, MoodHacker is being used in some places of employment to improve employees overall well-being. The program—in both a mobile app and online behavior-monitoring program—is being used to tracking a person’s emotional mood. See Nina Zipkin, A Fitbit for Your Employees’ Emotional Health? It’s Already Happening, ENTREPRENEUR (Nov. 17, 2014).
maintain and support their own personality\footnote{Jurors often base decisions “on past experience in the form of scripts, schemas, stereotypes, and other cognitive mechanisms as well as personal beliefs and values about what is right, wrong, and fair.” Dennis J. Levine et al., \textit{Jury Decision Making}, 7 \textit{PSYCHOL. PUB. POL’Y & L.} 622, 699 (2001). Thus, regardless of the jury instructions, a juror will consciously or unconsciously rely on his/her cognitive biases. \textit{Id.} See also Marilyn Chandler Ford, \textit{The Role of Extra-legal Factors in Jury Verdicts}, 11 \textit{THE JUST. SYS. J.} 16 (1986); Jacquelin Goldman, Kenneth F. Freundlich & Victoria A. Casey, \textit{Jury Emotional Response and Deliberation Style}, 11 \textit{J. PSYCHIATRY & L.} 319 (1983).} and to refuse to reveal anything other than obvious and apparent bias.\footnote{It is unclear whether a juror is more biased than a jury. \textit{See} Norbert L. Kerr, Keith E. Niedermeier & Martin F. Kaplan, \textit{Bias in Jurors vs Bias in Juries: New Evidence from the SDS Perspective}, 80 \textit{ORGAN. BEHAV. HUM. DECIS. PROCESS.} 70, 82 (1999) (“Although the jury is, in many ways, a remarkably effective decision-making agent, both theory and data now suggest that eliminating sensitivity to irrelevant, immaterial, prejudicial, or otherwise biasing information is not among its invariable virtues.”). However, Kaplan and Miller’s hypothesis that juries process information differently than individual jurors may be valid; jury deliberations may promote the discontinuation of obvious bias by drawing attention to contrary evidence. \textit{Id.}}

Five important aspects of this scenario must be discussed. First and foremost, the monitoring of behavior, the pop-up boxes, the questions, the follow-on questions, and the platform interactions are all conjecture on our part at this stage of the discussion. Social science research and analytics experts will need to consider each step of the system in detail and will need to adjust, to re-adjust, and to monitor the system to this level of advanced interaction. Second, it is important to note that the use of the CODR and the individual dispute resolution participants are not the end of the discussion. Instead, the system is envisioned to have a large pool of dispute resolution participants and to ultimately have a final decision rendered after review by a neutral. Third, many aspects of this system are hidden to the casual observer and thus, the system has real potential to misidentify, highlight, or over-capture behavioral responses. Fourth, this system will be so costly to design and implement, that it will likely need to be a pet project of a private entity and thus, it will likely need to be done by a private alternative dispute resolution (“ADR”) provider. Fifth, even if these other hurdles may be overcome there are still privacy and security concerns that will remain, as is discussed in Part II.

II. A Role for Regulation

Part II builds on the technical background and legal discussions from the proceeding sections and asks what role, if any,
policymakers should play in reshaping the CODR industry. We argue for a relatively light hand here, given the complexity of regulating cyberspace generally, and rely on the conceptual framework of polycentric governance to suggest bottom-up responses, such as the inclusion of neutral auditors, to ensure that CODR is safe, secure, and robust.

A. A Brief Introduction to Regulating Cyberspace

Some have argued that there exists a market failure when it comes to enhancing cybersecurity.\(^{120}\) If this is indeed the case, then it raises the specter of regulating the market to better internalize costs, such as cyber attacks, to shape more accurately firm decision making. Yet, there are more ways of influencing behavior in cyberspace than the heavy hand of black letter law. In fact, that is among the more crude of instruments available. Paths forward include strategies ranging from command and control to self-regulation, including relying on markets to reach a desired outcome,\(^{121}\) such as enhancing cybersecurity. Professor Lessig has identified four total modalities of cyber regulation: architecture, law, the market, and norms, which may be used individually or collectively by policymakers.\(^{122}\) For example, CODR programmers create code that shapes the CODR experience and, in so doing, can help address privacy and security concerns, such as by including two-factor authentication, while social norms could also be created by the group to help incentivize desired behaviors on these platforms, as is explored below. These modalities may be considered part and parcel of a more complex polycentric approach for securing CODR systems.


\(^{121}\) See Andrew W. Murray, The Regulation of Cyberspace: Control in the Online Environment 28 (2006) (comparing how the regulatory strategies modeled by professors Baldwin and Cave, Thatcher, and Lessig might be applied to cyberspace); Robert Baldwin & Martin Cave, Understanding Regulation 34 (1999) (categorizing regulatory strategies based on whether governments use resources to command, to deploy wealth, to harness markets, to inform, to act directly, or to confer protected rights).

B. Wisdom of the Chatrooms: The Role of Polycentric Governance in the CODR Context

Professor Elinor Ostrom was among the early pioneers in developing the field of polycentric governance, which recognizes the multi-level, multi-purpose, multi-functional, and multi-sectorial regulatory relationships at work in complex arenas, including cyberspace. Some commentators define polycentric as analogous to “non-statist law,” while others consider it to be “the enterprise of subjecting human conduct to the governance of external controls whether state or non-state, intended or unintended.” However, such definitions miss several of the unique aspects of polycentric governance as the term is used here, including its emphasis on self-organization and the notion that “diverse organizations” and governments working at “multiple levels” can create policies that “increase levels of cooperation . . . [and] compliance . . .” This framework then, despite its drawbacks that include the risks of fragmentation and gridlock, moves beyond rigid conceptions of state-centric law or voluntary bottom-up measures, and instead is an all-of-the-above approach challenging stakeholders to take targeted action that better address the full range of challenges that imperil CODR platforms, including Sidetaker.

Professor Ostrom created an informative framework of eight design principles for the management of common pool resources, potentially including cyberspace that could help to guide discussion. These include the importance of: (1) “clearly defined bound-

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125 Id. at 47.
126 Elinor Ostrom, A Polycentric Approach for Coping with Climate Change 12–13 (World Bank, Policy Research Working Paper No. 5095, 2009), http://www.iadb.org/intal/intalcdi/pe/2009/04268.pdf (listing four broad characteristics for when cooperation governing the global commons is most likely to occur: “(1) Many of those affected have agreed on the need for changes in behavior and see themselves as jointly sharing responsibility for future outcomes; (2) The reliability and frequency of information about the phenomena of concern are relatively high; (3) Participants know who else has agreed to change behavior and that their conformance is being monitored; and (4) Communication occurs among at least subsets of participants”); Robert O. Keohane & David G. Victor, The Regime Complex for Climate Change, 9 Persp. on Pol. 7, 7–9 (2011).
aries for the user pool . . . and the resource domain;”128 (2) “proportional equivalence between benefits and costs;”129 (3) “collective choice arrangements” ensuring “that the resource users participate in setting . . . rules;”130 (4) “monitoring . . . by the appropriators or by their agents;”131 (5) “graduated sanctions” for rule violators;132 (6) “conflict-resolution mechanisms [that] are readily available, low cost, and legitimate;”133 (7) “minimal recognition of rights to organize;”134 and (8) “governance activities [being] . . . organized in multiple layers of nested enterprises.”135 Of particular salience in the CODR context is the importance of effective dispute resolution along with the imposition of graduated sanctions and generating positive network effects. Platforms such as Sidetaker could encourage the development of crowdsourced, bottom-up frameworks to reach optimal outcomes in line with the wisdom of the crowds literature.

The idea of the wisdom of the crowds dates back more than a century to 1906, when a British scientist named Francis Galton attended a county fair.136 A statistician by training, Galton believed that “[o]nly if power and control stayed in the hands of the select, well-bred few, . . . could a society remain healthy and strong.”137 He was an unlikely champion for the wisdom of the masses, to say the least. Still, it was Galton who, while walking by a weight-judging competition involving an ox, decided to collect the 800 tickets and run a series of statistical tests to see how close the group was to the ox’s actual weight. Much to his surprise, Galton found that “the crowd’s judgment was essentially perfect.”138 After these inauspicious beginnings, as explained by James Surowiecki, “the possibilities of group intelligence . . . were demonstrated by a host of experiments conducted by American sociologists and psychologists

129 Elinor Ostrom, Polycentric Systems: Multilevel Governance Involving a Diversity of Organizations, in GLOBAL ENVIRONMENTAL COMMONS: ANALYTICAL AND POLITICAL CHALLENGES IN BUILDING GOVERNANCE MECHANISMS 105, at 118 tbl. 5.3 (Eric Brousseau et al. eds. 2012) (citing ELINOR Ostrom, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION 90 (1990)).
130 BUCK, supra note 128, at 32.
131 Id.
132 Id.
133 Id.
134 Ostrom, supra note 129, at 118 tbl. 5.3.
135 Id.
137 Id. at xii.
138 Id. at xiii.
between 1920 and the mid-1950s . . .”139 Since then, the same methodology has been applied to a range of problems, many of which are slightly more complicated than guessing an ox’s weight, and include questions of foreign relations, such as the probability of success in US-EU trade negotiations.140

Many of the most successful experiments aimed at harnessing the wisdom of crowds, however, share two common features: (1) the parties do not communicate with one another and (2) although some people will guess better than the group as a whole, typically, individual guesses are all over the map.141 The question for our purposes, though, is what lessons this literature can teach us when coupled with polycentric governance to increase the chances for effective, crowdsourced justice. For one, CODR platforms should be weary of allowing virtual juries to deliberate at each stage of the dispute resolution process. Although there is some evidence that this type of group communication can lead to better outcomes, it has also been shown to lead to sub-optimal results.142 Second, the size of virtual juries should be increased as much as is feasible to take advantage of this phenomenon since, simply put, “[t]he larger the group, the more reliable its judgment will be.”143 Although this would lead to increased cost and could decrease the chance of reaching consensus, such a rethinking would take us far away from the six to twelve jurors standard in many proceedings into a new world of crowdsourced justice.144 Wikipedia’s dispute resolution system is an example of this model in that it encourages disagreement that, in time, gets decided by the crowd.145 Third, in keeping with the polycentric governance literature, it may well be wise for CODR providers to empower virtual juries to set some of their own rules as to conduct and process along with laying out graduated sanctions for violators. Market leaders could help identify and instill such norms, which could then reach the level of industry

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139 Id. at 4.
141 SUROWIECKI, supra note 136, at 5.
142 Id.
143 Id. at 34.
145 See Niva Elkin-Koren, Tailoring Copyright to Social Production, 12.1 THEORETICAL INQUIRIES L. 309, 331 (2011).
standards and perhaps eventually be reinforced through policy.\footnote{146} To consider how such a process may unfold, we turn next and finally to the gaming context and the role of neutral auditors in helping to resolve disputes.

C. A Path Forward: The Need for Neutral Auditors and How it Could Work

We argue that in the field of CODR, regulation can and should exist, but it should be: (1) designed by industry experts that understand and work with the technology, (2) minimally invasive, and (3) should include monitoring and enforcement in line with the polycentric principles discussed above. In the case of CODR platform regulation, the potential model already exists in another technology-based industry—gaming.

Gaming, both in-person and online, has for a long period of time involved the use of advanced “black-box” technology.\footnote{147} In fact, professor Natasha Dow Schull in her article entitled, \textit{Digital Gambling: The Coincidence of Desire and Design}, highlights the various casino environmental details that are based on historic research in the area of psychology, especially within the areas of inducements and conditioning.\footnote{148} Of course, casinos are not alone in using environmental design as a means to influence consumer choice, as it has long been a competitive field shaping retail and shopping.\footnote{149} As more and more research in the gaming community emerged documenting the tricks of the trade employed by casinos, many legislatures took notice of the impact of those tricks on casino patrons.\footnote{150} Perhaps unsurprisingly, regulation ensued that was
designed to protect patrons from themselves (and the casinos’ unyielding hidden influence).

One aspect of casinos, the hidden nature of the internal payout system, the perceived ‘house always wins’ mentality and the technology that underpins much of the environment, provides a wealth of information to draw upon when considering other types of ‘black box’ regulation. One other aspect is relevant to the overall comparison; casinos—just like ODR platform providers—want their technology to remain ‘hidden’ as the technology is the primary competitive advantage in digital environments. Casinos are a useful case study for protecting the propriety aspects of a technology while still ensuring that the black box concerns are reduced as legitimate fears of users. While a full description of casino regulation is beyond this Article, one aspect of the regulation specific to the technology can serve as a useful model; the monitoring and transparency of the technology used in gaming.

Let us consider Nevada, where regulations govern the integrity of gaming devices, including protections for the internal coding, while the software must record—in unalterable form, all information related to the game, such as time, coins in, coins out, and similar information. Outcomes are monitored as well, requiring both authentication of the information and records of alterations to the system, including changes to the payout percentages. In fact, many or most States require casinos to report payout rates, with many States setting a minimum payout


151 See NEVADA, Technical Standards for Gaming Devices and Associated Equipment, Integrity of Gaming Devices (Rev. 8/11), § 1.020 Electrical Interference Immunity (random number generator and random selection process must be impervious to influences from outside the device, including, but not limited to, electro-magnetic interference, electro-static interference, and radio frequency interference).

152 See Nevada Technical Standards for Gaming Devices and Associated Equipment, Integrity Of And Proper Accounting For On-Line Slot Systems And Cashless Wagering Systems, 3.110 Required Meters.

153 See Technical Standards for Gaming Devices and Associated Equipment, Integrity of Gaming Devices (Rev. 8/11), § 1.080 Control Program Requirements.

154 See id. § 1.080(4)(b).

155 See Technical Standards for Gaming Devices and Associated Equipment, Proper Accounting For Gaming Devices, Sec. 2.010 Changes to Payout Percentages.

threshold. Moreover, States require ongoing auditing of gaming operations as a condition of the gaming license. The gaming system’s use of recording interactive information and internal decision making of the device, setting thresholds of payouts, monitoring outcomes, and ensuring a secure system, could be used as a starting point for building regulation—including monitoring and auditing—that would better protect CODR participants.

Similar to the gaming industry, a successful CODR platform will need to ensure that multiple levels of interaction with the platform do not suffer from intentional or unintentional bias within the platform design and outputs. For example, something as simple as the number of characters allowed in a text box can send the wrong message to the individual and can cloud their interaction with the system. Moreover, monitoring will need to be in place to ensure that outcomes are not skewed in the direction of a particular party or outcome. As a result, at a minimum, CODR platforms should be expected to record information (such as the location of the complaint) as well as the main issue at hand, all of the negotiations, automated suggestions or perceivable steps, and the outcome of the dispute. In addition, the CODR provider should be required to follow-up after a period of time, such as thirty days, to gauge attitudes about the platform, as well as receive feedback about the dispute resolution process. Unlike payout thresholds in the gaming industry, the CODR platform should not be expected to set thresholds as related to the number of ‘wins’ by the non-business participant. Instead, monitoring of the system, including outcomes, should uncover skews in responses and outcomes that are misaligned with expected thresholds. Any anomalies discovered by the external auditor should be reported to a central (searchable) database. An independent third party with knowledge of programming language and statistics could serve such an external auditor

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157 For example, Ohio regulates slot machines, requiring the payout to be “not less than eighty-five per cent.” Ohio Revised Code, Title [37] XXXVII Health - Safety – Morals, Chapter 3772: Casino Gaming, 3772.20 Slot machines; minimum and maximum wagers, 128th General Assembly File No.38, HB 519, §1, eff. 9/10/2010.

158 See Ohio Revised Code, Title [37] XXXVII Health—Safety—Morals, Chapter 3772: Casino Gaming, 3772.033 Powers of commission, Sec E.

159 See generally Orna Rabinovich-Einy & Ethan Katsh, Lessons From Online Dispute Resolution For Dispute System Design, in ONLINE DISPUTE RESOLUTION: THEORY AND PRACTICE: A TREATISE ON TECHNOLOGY AND DISPUTE RESOLUTION, supra note 19 (discussing tradition ODR system and platform design); H. Nissenbaum, VALUES IN TECHNICAL DESIGN, in ENCYCLOPEDIA OF SCIENCE TECHNOLOGY AND ETHICS (C. Mitcham, eds., 2005) (discussing integrated values within design).
function. However, the reporting function and all adjustment monitoring should occur through a centralized office associated with a justice system or advisory group. While this process sounds complex conceptually, a central database with a central monitoring agency is being set up in Europe under the Regulation on Online Dispute Resolution for Consumer Disputes.

It is important to keep in mind that, unlike prior ODR calls for regulation, this Article envisions the use of wearable technology as an instrument throughout the entire dispute resolution process. Thus, the level of monitoring, the level of maintenance, and the various and numerous variables that could lead to bias will be far larger than any previously suggested ODR model. It is most important, in such a wide set of variables and inputs, that all interactive sources are considered as sources introducing programming, interaction, and communication biases. For example, the wearable technology will need to behave in a manner comparable to other interactions experienced by the user—or the dispute resolution participants may become frustrated with the interaction, something that may lead to the introduction of a new source of bias. And of course, the wearable device will need to communicate information back to, and remain frequently and immediately updated by, a host; yet another potential source of communication and information bias. These examples, and surely many others, are some of the best reasons to monitor the system from beginning to end, as the sheer novelty of the system will present issues and involve complex multi-dimensional considerations that have previously never before been considered within a justice environment. The information gathered can and should be viewed as a means to a grander meta-goal: the reduction of bias in the justice system.

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160 Currently, there are several independent organizations that audit online casinos, such as PriceWaterhouse Coopers (PwC). At the current time, no entities exist that perform such a function in the ODR world. However, as the industry develops, it is easy to imagine the creation or expansion of existing auditing firms into this area.

161 See generally Regulation Of The European Parliament And Of The Council On Online Dispute Resolution For Consumer Disputes (Regulation On Consumer ODR), Brussels, 29.11.2011 COM (2011) 794 final, 2011/0374 (COD) (English) (2011) (outlining the current Regulation, including explanation).

162 For example, hypothetical bias may be introduced when the mechanism begins to become more disjointed and less ‘real life’ thereby creating a sense of game play. See generally Cahoy & Ding, supra note 75, at 1276.
D. Protecting the System and Those that Use It

Now that the foundation has been laid regarding the origins and scope of CODR as it pertains to the rise of virtual juries, there are two final interconnected issues that must be considered that immediately arise in the minds of most individuals when discussing these topics: privacy and security. For example, in an informal survey of participants in a moderated forum during Cyberweek 2014, individuals identified privacy as a main concern with hosting dispute resolution in the online environment. It is important to note that the participants involved in Cyberweek are individuals interested in ADR, are well versed in the area, and are aware of the online potential and current uses. The desire to ensure a level of privacy within platforms such as the one described above is, of

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163 Privacy is a multi-faceted concept meaning different things to different stakeholders in different parts of the world. It encompasses (among much else) freedom of thought, of bodily integrity, solitude, information integrity, and the protection of reputation and personality. See generally Daniel J. Solove, Conceptualizing Privacy, 90 CALIF. L. REV. 1087 (2002) (advocating a pragmatic approach to conceptualizing privacy). More than 150 years after Warren and Brandeis first presented the right to privacy to U.S. jurists for their consideration in a famous law review article, privacy has become a central player in U.S. law, even as defining privacy in a comparative cultural context remains exceedingly difficult. See Samuel D. Warren & Louis D. Brandeis, The Right to Privacy, 4 HARV. L. REV. 193, 195 (1890) (calling for the common law to protect the privacy of the individual). The task is made more complex still by the rapidly advancing technology discussed in Part I. But to the extent that any agreement has been forthcoming, privacy is generally considered to be that which is asserted by individuals against the demands of a curious and intrusive society. See generally Robert C. Post, The Social Foundations of Privacy: Community and Self in the Common Law Tort, 77 CALIF. L. REV. 957 (1989) (stating that the common law tort of invasion of privacy is predicated by an assumption of the personal harm that comes from violating the social norm). See also Scott J. Shackelford, Fragile Merchandise: A Comparative Analysis of the Privacy Rights of Public Figures, 49 AM. BUS. L.J. 125 (2012) (representing the first publication of an earlier version of this research).

164 Yet enhancing cybersecurity is nearly as difficult as protecting privacy. This starts with the problem of defining “cybersecurity” and “cyber attacks,” which like “privacy” eschew easy classification. For purposes of this Article, though, we use terminology provided by the National Academy of Sciences and the U.S. Cyber Emergency Response Team (“CERT”). According to the U.S. National Academy of Sciences, cyber attacks refer to “deliberate actions to alter, disrupt, deceive, degrade, or destroy computer systems or networks or the information and or programs resident in or transiting these systems or networks.” Nat’l Research Council of the Nat’l Acads., Technology, Policy, Law, and Ethics Regarding U.S. Acquisition and Use of Cyberattack Capabilities 1 (William A. Owens, Kenneth W. Dam, & Herbert S. Lin eds., 2009). Cf. Oona A. Hathaway et al., The Law of Cyber-Attack, 100 CAL. L. REV. 817, 822–32 (2012) (defining cyber attacks as consisting “of any action taken to undermine the functions of a computer network for a political or national security purpose”).

course, more widespread than a small interest group. As highlighted by President Obama on January 13, 2015, “[w]e pioneered the Internet, but we also pioneered the Bill of Rights and a sense that each of us as individuals have a sphere of privacy around us that shouldn’t be breached, whether by our government but also by commercial interests.”

Privacy, and the related concept of confidentiality, arises in the CODR context by the fact that the intimate details of people’s private lives may be exposed depending on the dispute in question and the platform being utilized. Although individual disputants may voluntarily sign up for this infringement on their privacy rights as part of their dispute resolution contract with sites like Sidetaker, the realities of the Internet generally and social media in particular may well expose the intimate details of cases to people far afield even from the virtual jury pool. Were this to happen, the privacy rights of these individuals would be breached bringing in both U.S. and international law depending on the eventual scope of the burgeoning CODR system.

Intimately related to the privacy implications of CODR is the need for enhanced cybersecurity to ensure the accuracy of outcomes; after all, there is no privacy without security. This is an area of vital importance to CODR firms and their clients, given the sensitivity of their operations; namely, providing justice and safeguarding a treasure trove of private data. Yet, enhancing cybersecurity is nearly as difficult as protecting privacy. So far, though, it is not clear that sites like SideTaker, which we use as a

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166 Priya Anand, How The White House Wants to Save Americans from Cybercriminals, MARKETWATCH (Jan. 12, 2015). The proposal has been criticized, see Zack Whittaker, White House Just Endorsed CISPA Measures, Two Years After Veto Threat, ZDNET (Jan. 13, 2015).


168 See SHACKELFORD, supra note 127.
case study, are taking the necessary steps to protect nascent CODR platforms.

SideTaker was founded in September 2008 after a personal dispute went viral.169 The dispute pitted the site’s founder, Justin Marinos, against his then-girlfriend and involved allegations of cheating. An informal poll was taken, and the rest is history.170 Gradually, the site evolved, allowing members to vote on disputes ranging from politics to parenting. As its footprint has grown, though, the question is whether its cybersecurity policies have kept pace with developments. Requests to SideTaker for more information on its cybersecurity practices were not acted upon as of this writing. However, SideTaker’s privacy policy states: “SideTaker.com protects user information with the following security measures: secure servers, firewalls, SSL encryption and other technology and procedures used to protect consumer privacy.”171 Left unspecified are a range of common pitfalls that have brought sole proprietorships and multi-national enterprises to their knees. For example, it is unclear what safeguards the site has taken to protect its physical infrastructure at a time when insecure supply chains are increasingly causing concerns to companies.172 Nor are vulnerabilities in the Domain Name System (“DNS”) addressed, which can cause customers to unwittingly go to the wrong website and enter their credentials. An imperfect fix in the form of a DNS Security Extension (“DNSSEC”) is available, but many companies have not paid to have it installed.173 Other cyber risk mitigation techniques such as the growing use of cyber risk insurance should also be used to protect CODR firms and disputants. This is especially vital to better secure sites like SideTaker on mobile devices,174 which are roughly where PCs were in the 1990s in terms of cybersecurity.

And while both of these issues may seem to be thoughts for a distant future, it is important to remember, as noted authority

170 Id.
173 Shackelford, supra note 127, at 334.
within the ODR area Noam Ebner highlights: “ODR must be marketed, and its technology must be constructed, in such a way that the public will trust it as an efficient and effective way of managing their disputes. This is not something to be taken for granted.”

The public is increasingly concerned about the protection of their information; this concern is at its greatest when highly personal, intimate details of their lives can be revealed with a simple series of clicks. No system intended to improve justice should be designed that fails to recognize the importance of the integrity of the system – too much is at stake for too many. A well-crafted system that no one uses for the fear of data loss is an unused system and should not be considered an improvement on the status quo.

**Conclusion**

This Article has analyzed the impact of wearable technology on the growing CODR movement, and argues for the inclusion of lessons from the field of polycentric governance and the wisdom of the crowd literature to demonstrate the possibility of using technology, especially wearables, in a much more robust manner within the justice system. The use of technology, especially wearables, could reduce the impact of biases that exist within the jury process and could lessen many of the problems associated with the overburdened justice system. However, as technology begins to be relied upon more, new considerations will arise and new regulatory schemes will be needed to ensure that new means are not created to undermine the system. This Article represents a small contribution to what we predict will, in time, be a fast developing field. Further research is required to explore the various ethical, comparative, and international aspects of CODR development and implementation. We hope that this modest effort helps to jumpstart that conversation.

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