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ARTICLE

TRACERMARKS: A PROPOSED INFORMATION INTERVENTION

*Margaret Chon**

We can see now that information is what our world runs on:
the blood and the fuel, the vital principle.¹

ABSTRACT

We live in a world of information. But paradoxically, we simultaneously suffer from a scarcity of “smart” information: information that is traceable and therefore reliable, trust-worthy, and ultimately verifiable. Combining the insights of global governance theory with behavioral economics, this Article approaches this challenge from a knowledge governance framework, sets forth various reasons for this unnecessary deficit, and proposes an intervention to address it—tracermarks. Envisioned as a hybrid of trademarks and certifications marks, tracermarks would encourage various stakeholders to disclose,

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1. JAMES GLEICK, *THE INFORMATION: A HISTORY, A THEORY, A FLOOD* 8 (2011).

disseminate, and ultimately make decisions about previously hidden qualities of specific goods and services throughout global value networks. Digital networks have tremendous potential to combine with other kinds of technologies (for example, QR or UPC codes, smart phone apps, and other intermediaries and platforms), and thus to contribute to the production and distribution of smart information about specific goods and services. Improving the capacity for meaningful consumer and producer choices through smart information would also increase net social welfare through innovation, which is a primary public policy goal of intellectual property.

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I. INTRODUCTION: AN ECONOMY OF SCARCITY OF SMART INFORMATION

This Article explores the consequences of several paradoxes of intellectual property (IP). Its primary normative claim is that increasing the traceability and transparency of more objectively verifiable information will greatly benefit consumers, producers, and other stakeholders involved in global transactions involving IP-protected goods and services—thus promoting global social welfare. Its primary goal is to explain why policymakers should move the needle from the frequent default position of nonverifiable

information towards more consistent creation and distribution of what this Article terms smart information—that is, traceable, transparent, and verifiable information. And its primary new suggestion (or legal hack) is a tool called a *tracermark* to assist in this endeavor.

An initial paradox to consider is the increasingly obvious fault line within IP. Distributed networked technologies such as the Internet have created an economy of plenty in many sectors—as opposed to the economy of artificial scarcity upon which IP is typically posited.² A second paradox is that what we consume online often “knows” more about us than we know about it.³ Search engines that we consume without payment are engaged in massive data collection about our buying preferences.⁴ And the so-called Internet of Things means that appliances connected to our bodies and environments can supply information back to the network, often without our knowledge much less consent.⁵ Yet consumers barely know anything about where a product’s component parts originated and under what conditions.⁶ Thus, despite the economy of plenty of information, we are faced with an economy of scarcity of certain kinds of information, manifested by a pervasive information asymmetry. A third paradox examined here is that IP law provides insufficient incentives to create and distribute information that might address these informational asymmetries and scarcities. Although incentivizing and supporting innovation is often viewed as the primary if not sole mandate for IP, the overall legal framework has not evolved much from its origins and corresponding first principles to encourage innovation in the provision of reliable information in a global information economy where components are sourced in multiple jurisdictions. The informational resource infrastructure and distance between producer and consumer can be correspondingly immense.⁷

2. Mark A. Lemley, *IP in a World Without Scarcity*, 90 N.Y.U. L. REV. 466–68 (2015).

3. I am indebted to Christine Farley for this apt observation.

4. Katherine J. Strandburg, *Free Fall: The Online Market’s Consumer Preference Disconnect*, 2013 U. CHI. LEGAL F. 95, 99–100.

5. See Scott R. Peppet, *Regulating the Internet of Things: First Steps Toward Managing Discrimination, Privacy, Security, and Consent*, 93 TEX. L. REV. 85, 99–116 (2014) (discussing various technologies in the Internet of Things and the resulting problems of lack of consumer privacy and consent).

6. Stephanie Clifford, *Some Retailers Reveal Where and How That T-Shirt Is Made*, N.Y. TIMES, May 9, 2013, at A1 (discussing growing consumer demand for information concerning working conditions in the production of clothing).

7. Julie E. Cohen, *Property as Institutions for Resources: Lessons from and for IP*, 94 TEX. L. REV. (forthcoming 2015), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2478051; see also BRETT FRISCHMANN, *INFRASTRUCTURE: THE SOCIAL VALUE OF SHARED RESOURCES* 253 (2012).

Taken together, these paradoxes have contributed to a collective market failure, where many consumers who would prefer to have smart information available typically have to make do with little to none of it—and where many producers who might prefer to provide smart information are insufficiently incentivized to do so. Consumer preferences for underlying qualities of products and services are largely masked by the expression of consumer preferences for trademarks and their associated branding.⁸ While a trademark may function as an adequate proxy for a consumer preference regarding a branding image, it is not a good proxy for the brand's invisible qualities. For example, if a consumer would like to purchase a product such as a laptop that is certifiably sweatshop-free, there is no easy mechanism for him or her to ascertain from the trademark alone that the laptop is in fact free from oppressive labor. This situation of information asymmetry is arguably a violation of consumer civil rights,⁹ and it covers the full gamut of products and services across multiple industry sectors.

If this Article is correct in claiming that increasingly invested and interactive consumers demand smarter information, then the challenge is how to offer it more consistently and reliably throughout these global transnational networks. Importantly, firms would also benefit from smarter information that, for instance, would allow pricing of goods to accurately reflect specific qualities of goods (such as sweatshop-free or other characteristics) as distinguished from mere marketing claims. Enhancing markets for smart information about IP-protected goods and services inevitably will extend and improve markets for these goods and services themselves. Smart information also has huge potential for participation by the least empowered producers (factory workers, for example) to contribute to the quality of overall information provided about a good or service.

This Article relies heavily upon a framework of knowledge governance to re-imagine IP's functions. The term "governance" suggests the possibility of a regulatory apparatus with a broader set of tools than the useful but ultimately limited incentives provided by IP. Throughout this Article, this knowledge governance approach relies on the insights of global governance theorists.¹⁰ One of these insights is that regulation does not occur

8. See Jon D. Hanson & Douglas A. Kysar, *Taking Behavioralism Seriously: The Problem of Market Manipulation*, 74 N.Y.U. L. REV. 630, 747 (1999) (discussing the influence that nonrational phenomena can have over decision-making).

9. Douglas A. Kysar, *Preferences for Processes: The Process/Product Distinction and the Regulation of Consumer Choice*, 118 HARV. L. REV. 525, 610–17 (2004).

10. See, e.g., Gráinne de Búrca, *New Governance and Experimentalism: An Introduction*, 2010 WIS. L. REV. 227, 232 (discussing strategic uncertainty and

solely through hierarchy (top down, command and control government regulation), but also through means such as information circulating through transnational networks.¹¹ Another important global governance insight is that cross-border transactions based upon this type of information are ideally premised on reliable trust mechanisms.¹² And global governance includes a decided turn toward softer forms of regulation—what some have called “bespoke” IP¹³ and what will be occasionally referred to throughout this Article as “legal hacks.” In this context of knowledge governance, the default setting (dumb or smart information) matters.¹⁴

Global governance scholarship also teaches us that a more responsive interface between public and private regulatory frameworks is critical to successful legal interventions in highly dynamic situations, such as those involving rapid technological change.¹⁵ This Article thus proposes a new IP legal innovation, which is termed a “tracermark.” This type of mark is neither a trademark nor a certification mark. It bears some characteristics of both and would occupy the regulatory space between, taking advantage of the current flexibilities within existing public law frameworks. Tracermarks would enable the construction of further platforms (such as possible Wiki-tracers) that in turn would allow smart information about various goods and services to be distributed widely. This Article envisions the emergence of a knowledge governance mechanism consisting of platform intermediaries combined with consumer and producer

interdependence as background conditions precipitating the rise of new governance systems); Tim Bartley, *Global Production and the Puzzle of Rules*, in FRAMING THE GLOBAL: ENTRY POINTS FOR RESEARCH 229, 229–34 (Hilary E. Kahn ed., 2014) [hereinafter Bartley, *Puzzle of Rules*] (reviewing global governance scholarship and positing that rule-making activity proliferates national, intergovernmental, and transnational governance); Tim Bartley, *Transnational Governance As the Layering of Rules: Intersections of Public and Private Standards*, 12 THEORETICAL INQUIRIES L. 517, 520–23 (2011) [hereinafter Bartley, *Layering of Rules*] (urging global governance scholars to address the impact of transnational private regulations vis-à-vis public, domestic regulations).

11. Scott Burris, Peter Drahos & Clifford Shearing, *Nodal Governance*, 30 AUSTL. J. LEGAL PHIL., 2005, at 30, 36–40.

12. See *infra* Part III.

13. Cohen, *supra* note 7, at 42–46.

14. See RICHARD H. THALER & CASS R. SUNSTEIN, *NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS* 83–87 (2008) (theorizing that selecting default choices is preferable to eliminating difficult choices).

15. See de Búrca, *supra* note 10, at 232 (hypothesizing that strategic uncertainty and interdependence create the need for new systems of governance); Charles F. Sabel & Jonathan Zeitlin, *Learning from Difference: The New Architecture of Experimentalist Governance in the EU*, 14 EUR. L.J. 271, 282, 286–89, 307 (2008) (describing how public and private entities work together in an institutional interface to solve issues caused by overlapping regulatory frameworks and commercial demands in the electric power sector).

crowd-sourcing, to create reliable databases of smart information.

Part II of this Article analyzes briefly why the prevailing economic narratives of intellectual property fail to address the problem of lack of provision for smart information. Part III turns to a subset of global governance literature, based upon transaction costs economics, to identify important tools in providing smart information within global value networks. Part IV discusses how IP currently functions in global value networks. Part V surveys specific examples of smart information currently existing in the overall landscape in global knowledge governance. And Part VI concludes with a proposal for a new regulatory tool: a tracermark. The key to this proposal is identifying incentives for moving the information about these global goods and services from information for dummies to information for cosmopolitans in a global marketplace—that is, from mere content to robust, objectively verifiable knowledge.

II. NOBODY'S PERFECT: ECONOMIC CAN-OPENERS OF INTELLECTUAL PROPERTY

IP has been hampered by an incomplete theory of information. It relies on several unexamined assumptions, explicitly or implicitly based upon powerfully efficient models. These assumptions should be familiar to anyone with a passing familiarity with IP, deeply affected as it is by law and economics.

One assumption is that we live in a world of perfect information with zero transaction costs.¹⁶ A second is that information will be disclosed unless there is some sort of boundary around it in the form of a legally enforceable exclusive right.¹⁷ IP policy-makers often refer to this as the public goods problem, based upon the assumption that information is too easily shared and therefore overly appropriable without legal boundaries such

16. This assumption is pervasive so that the joke about the economist's can opener told to me many years ago by my undergraduate economic professor is familiar still. See *On a Desert Island, with Soup*, HARV. U. PRESS: BLOG (Apr. 6, 2012, 12:38 PM), http://harvardpress.typepad.com/hup_publicity/2012/04/on-a-desert-island-with-soup-schlefer-assumptions-economists-make.html.

17. Of course, this premise is derived upon the famous Arrow paradox: “[A] fundamental paradox in the determination of demand for information [is that] its value for the purchaser is not known until he has the information, but then he has in effect acquired it without cost.” Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in NAT'L BUREAU OF ECON. RESEARCH, *THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS* 615 (1962), reprinted in KENNETH J. ARROW, *ESSAYS IN THE THEORY OF RISK-BEARING* 152 (1974).

as copyright and patents.¹⁸ The trademark version is that producers require protection against the “passing off” of their goods as someone else’s, in the form of a legal boundary called a trademark.¹⁹ Thus, the prevailing IP policy framework contends that enforceable IP rights to exclude are essential to both prevent free-riding and promote incentives for innovation.²⁰ And a third largely unexamined assumption is that once these legal boundaries are set, consumers of IP-protected goods then act rationally to maximize their self-interest upon the aforesaid platform of perfect information.²¹

These three assumptions (that information is perfect, that it is easily appropriable, and that consumers are rational actors acting upon perfect information) have dominated IP theory, law, and policy in the late twentieth century. Yet because these assumptions are incomplete snippets of a larger, more complex body of competing economic theories, they miss an enormous amount of what IP needs to address in cross-border transactions.

For example, economists and others have demonstrated that information is not perfect—in fact, far from it. A market for so-called lemons exists because consumers do not always have access to information to make welfare-maximizing choices.²² Not all qualities of a good are readily observable, and these types of goods have come to be known as “credence goods.”²³ Relatedly, a product may not be subject to immediate evaluation by a buyer, yet may be experienced after purchase—these are so-called “experience goods.”²⁴ Whether credence or experience goods, the distance between buyers and sellers along global transactions also contributes to the imperfect information environment in which

18. David W. Barnes, *Congestible Public Property and Impure Public Goods*, 9 NW. J. TECH. & INTELL. PROP. 533, 536–40 (2011).

19. *Id.* at 541–42 (“[S]imultaneous source-indicating use of a mark by a business competitor would diminish the utility derived by the mark owner . . .”).

20. David W. Barnes, *The Incentives/Access Tradeoff*, 9 NW. TECH. & INTELL. PROP. 96, 109–10 (2010).

21. See Daniel L. McFadden, *The New Science of Pleasure* 4 (Nat’l Bureau of Econ. Research, Working Paper No. 18687, 2013), <http://www.nber.org/papers/w18687> (describing the classical economic conception of decision-making as “fundamentally static, with the consumer making a once-and-for-all utility maximizing choice of market goods”).

22. George A. Akerlof, *The Market for “Lemons”: Qualitative Uncertainty and the Market Mechanism*, 84 Q.J. ECON. 488, 489 (1970); Joseph E. Stiglitz, *Information and the Change in the Paradigm in Economics, Part 1*, AM. ECONOMIST, Fall 2003, at 6, 15–16.

23. Ariel Katz, *Beyond Search Costs: The Linguistic and Trust Functions of Trademarks*, 2010 BYU L. REV. 1555, 1562–63.

24. Phillip Nelson, *Information and Consumer Behavior*, 78 J. POL. ECON. 311, 312 (1970) (distinguishing between search goods and experience goods with the examples of a dress, which can be tried on immediately, versus a can of tuna fish, which has to be opened in order for the fish to be evaluated).

these types of goods are evaluated.²⁵ Arguably, information about attributes of credence or experience goods (credence attributes) is smart information that consumers seek but often do not find about their transactions—a type of informational market failure. For example, agricultural economists have identified unmet consumer demand for information about humane sourcing of beef products.²⁶

Thus a new paradox is evident. In this era characterized by plenty of online information, we are faced with a scarcity of information about credence attributes. This scarcity manifests in multiple ways. First, we experience a scarcity of information about the underlying characteristics or processes of IP-protected products, such as information about where components are sourced, and the working conditions of those involved in manufacture.²⁷ Second, the scarcity is evident in the consumers' forced reliance on price or brands (and associated marketing) as the primary indicia of the quality or other characteristics of these IP-protected products.²⁸ A third major type of scarcity is due to the fact that consumers are usually isolated from the more detailed information available to intermediate suppliers and wholesalers who often monitor product quality via contractual and other controls. On a related point, individual consumers lack the leverage that large buyers such as Costco or Wal-Mart can wield to compel production of such information from their suppliers.²⁹ Taken together, these scarcities comprise significant informational gaps.

For a large swathe of goods and services, consumers currently are faced with the choice of either uncertain loyalty toward a particular product's claims, or exit via non-purchase or boycott. There are no consistently meaningful avenues to voice demands

25. Sulin Ba, Andrew Whinston & Hang Zhang, Building Trust in the Electronic Market Through an Economic Incentive Mechanism, 1999 ICIS PROC. 208, 208–09, <http://aisel.aisnet.org/cgi/viewcontent.cgi?article=1098&context=icis1999>.

26. Nicole J. Olynk, Christopher A. Wolf & Glynn T. Tonsor, *Labeling of Credence Attributes in Livestock Production: Verifying Attributes Which Are More than "Meet the Eye,"* 5 J. FOOD L. & POL'Y 181, 187 (2009).

27. See Clifford, *supra* note 6 (discussing growing consumer demand for information concerning working conditions in the production of clothing).

28. See Michael R. Ward & Michael J. Lee, *Internet Shopping, Consumer Search and Product Branding*, 9 J. PRODUCT & BRAND MGMT. 6, 9 (2000) (explaining that consumers' brand reliance often derives from limited information about credence attributes and inherent difficulties in verifying information that is available).

29. See KARINA FERNANDEZ-STARK, PENNY BAMBER & GARY GEREFFI, CTR. ON GLOBALIZATION, GOVERNANCE & COMPETITIVENESS, THE FRUIT AND VEGETABLES GLOBAL VALUE CHAIN: ECONOMIC UPGRADING AND WORKFORCE DEVELOPMENT 8 (2011) (explaining how large supermarket chains "exert significant influence" over the fruit and vegetables section and "dictate how fruit and vegetables are produced, harvested, transported, processed, and stored").

for or to receive this type of information. Arguably, all online purchases are those in which information about a product may not be evaluated directly by a consumer. Perhaps this is no different in kind from the decision to purchase clothing and even homes (in a previous era) through a Sears Roebuck catalogue.³⁰ But the scale and ubiquity of online transactions demands a closer look at the category of credence purchases.

Significantly, a number of scholars have identified a high potential for manipulation, if not outright fraud or misrepresentation around credence and experience goods.³¹ Legal scholar Katherine Strandburg has recently extended this concern to the context of privacy and “free” online advertising.³² Those who consume the informational good of the Google search engine are not informed about the types of private information conveyed to the website intermediary as a result (for example, the consumer’s browsing or purchasing habits, which are collected without permission).³³ In her view, this makes these types of online exchange analogous to the purchase of more typical credence goods such as organic food.³⁴ In the context of aggressive and arguably invasive online advertising paradigms made ubiquitous by Google,³⁵ combined with the vast quantities of goods sold online without prior inspection, this is informational market failure of a grand scale.

In more traditional realms of trademark law, courts have endorsed, albeit weakly and inconsistently, the protection of consumers’ beliefs formed in response to persuasive advertising. Thus the misrepresentation of a product’s credence attributes could potentially be captured within the ambit of actionable unfair competition.³⁶ In *FTC v. Royal Milling*, for example, the U.S. Supreme Court held as misrepresentation the use of the term

30. See JANE SMILEY, *A THOUSAND ACRES* 15–16 (1991) (recalling the purchase of a home from a Sears catalogue by the narrator’s great-grandparents in 1899).

31. See, e.g., THALER & SUNSTEIN, *supra* note 14, at 79–80; Kyle Bagwell, *The Economic Analysis of Advertising*, in 3 *HANDBOOK OF INDUSTRIAL ORGANIZATION* 1701 (Richard Schmalensee & Robert Willig eds., 2007); Michael R. Darby & Edi Karni, *Free Competition and the Optimal Amount of Fraud*, 16 *J.L. & ECON.* 67, 68–72 (1973); J. Shahar Dillbary, *Trademarks As a Media for False Advertising*, 31 *CARDOZO L. REV.* 327, 339–42 (2009) [hereinafter Dillbary, *Trademarks*].

32. Strandburg, *supra* note 4.

33. See *id.* at 142–45.

34. *Id.* at 131.

35. See James Gleick, *How Google Dominates Us*, *N.Y. REV. BOOKS* (Aug. 18, 2011) (book review), <http://nybooks.com/articles/archives/2011/aug/18/how-google-dominates-us/>.

36. See Shahar J. Dillbary, *Famous Trademarks and the Rational Basis for Protecting “Irrational Beliefs,”* 14 *GEO. MASON L. REV.* 605, 614–19 (2007); see also Dillbary, *Trademarks*, *supra* note 31, at 341–64 (explaining that trademark law’s focus on unfair competition between brands creates the potential for abuse of descriptive marks).

“milling” to describe flour not sold directly by grinders, even though the physical characteristics of the flour were no different from flour sold directly from millers.³⁷ Thus the idea of aligning the subjective marketing of a product with its actual objective credence characteristics (as expected by consumers) is not entirely foreign to existing IP legal regimes. However, U.S. trademark law, which is heavily premised on a “passing off” model of misrepresentation, does not reach false, misleading, or deceptive claims made by a firm with respect to its own brands—what legal scholar J. Shahar Dillbary has called intra-brand confusion:

[T]rademark law protects consumers against intra-brand confusion only where the seller is using a descriptive term or a descriptive mark. Such a use is considered to be “false and misleading” under Section 43(a)(1)(B) of the Lanham Act. Trademark law does *not* protect consumers against the seller who uses a non-descriptive term that gains a secondary descriptive meaning to mischaracterize its own product. . . . [T]rademark law does provide a cause of action against Stevita Co. if it decides to use aspartame instead of the plant Stevia but nevertheless affixes the mark Simply-Stevia to its sweetener. Yet, trademark law does *not* protect the consumer who associates “Splenda” with a sweetener made from sugar if Johnson & Johnson decides to replace sugar with aspartame. . . . [C]ourts and commentators are still conceptually captured by traditional inter-brand thinking. Surprisingly, even today, a seller who uses a non-descriptive mark to mischaracterize the nature of its own product in a way that deceives the public is immune from Section 43(a).

This anomaly—protecting consumers against false information conveyed by descriptive terms but not fanciful ones—can be attributed to the focus of the scholarship and the courts on the inter-brand function of trademarks.³⁸

This leads to another informational market failure—that of market manipulation.³⁹ This is the tendency (or perhaps intent) of firms to exploit the cognitive biases of consumers, by taking advantage of their cognitive tendencies to confirm their initial understandings of what a product is, or to minimize cognitive dissonance, for example.⁴⁰ Consumers have come to expect this,

37. See *FTC v. Royal Milling Co.*, 288 U.S. 212, 215–18 (1933).

38. J. Shahar Dillbary, *Getting the Word Out: The Informational Function of Trademark*, 41 ARIZ. ST. L.J. 991, 1025–26 (2009) [hereinafter Dillbary, *Getting the Word Out*] (citations omitted).

39. See generally Hanson & Kysar, *supra* note 8.

40. See *id.* at 637, 646–47, 658, 747–48.

often ruefully acknowledging the ubiquity of corporate hypocrisy and market manipulation.⁴¹

As a result of the hyper-focus on certain economic assumptions, we may have missed a bigger policy picture: that smart information is not as pervasively present within these legal frameworks as demanded by the increasing reach of global markets as well as increasingly savvy consumers. Conceptualizing credence attributes as a type of informational transaction cost not fully internalized provides a strong basis to introduce alternative quality assurance mechanisms through the provision of smart information. This is addressed in the next Part.

III. BUYER BEWARE: TRUST MECHANISMS OF GLOBAL VALUE NETWORKS

This Article approaches global knowledge governance from a particular angle—through what are typically referred to as global supply chains, and what I have elsewhere called global *value networks*.⁴² Various scholars in the areas of international relations, sociology, and transaction costs economics have focused on governance of products comprised of component parts or processes (components) within these value networks.⁴³ Many of those components are supplied from multiple sources typically situated across different legal jurisdictions.⁴⁴ Rather than being

41. See Adam Kirsch, *Why Whole Foods Is Popping up in Novels*, DAILY BEAST (May 10, 2015, 12:01 AM), http://thedailybeast.com/articles/2015/05/10/why-whole-foods-is-popping-up-in-novels.html?via=twitter_page.

42. Margaret Chon, *Slow Logo: Brand Citizenship in Global Value Networks*, 47 U.C. DAVIS L. REV. 935, 941 (2014) [hereinafter Chon, *Slow Logo*]. As I argued there, the term “supply” in “supply chain” in the existing literature does not fully account for the value of intangible components often shaped by IP and the activities of those who are technically not “suppliers” of component parts, such as highly discerning and participatory consumers who are also embedded within these global networks. Nor does the term “chain” within “supply chain” quite describe the myriad directions and scope of global networked transactions. Multiple and nested informational transactions are required in order for these markets to function without a high degree of misrepresentation or fraud. This complex informational environment is not only a feature of the production core but also of the distribution and consumption ends of the network. While different industries have different nodes and relationships between them, the basic issue of creating and maintaining trust mechanisms is constant across otherwise disparate global value networks.

43. See, e.g., GARY GEREFFI & KARINA FERNANDEZ-STARK, CTR. ON GLOBALIZATION, GOVERNANCE & COMPETITIVENESS, *GLOBAL VALUE CHAIN ANALYSIS: A PRIMER* (2011) (explaining dynamics of complex industrial interaction between actors in global production); Gary Gereffi, John Humphrey & Timothy Sturgeon, *The Governance of Global Value Chains*, 12 REV. INT’L POL. ECON. 78 (2005) [hereinafter Gereffi, Humphrey & Sturgeon, *Global Value Chains*] (proposing theoretical underpinnings of global value chains based on different economic considerations).

44. GEREFFI & FERNANDEZ-STARK, *supra* note 43, at 7–8; Gereffi, Humphrey & Sturgeon, *Global Value Chains*, *supra* note 43, at 79–80.

regulated solely through territorially based forms of public law, global value networks are governed by what could be characterized as transnational, private forms of economic regulation.⁴⁵

For example, scholars have identified the degree of standardization (and codification) in global value networks (or “supply chains”) as a key to moving away from a vertically integrated firm to a less hierarchical and more modular product assembly that draws components from other firms.⁴⁶ But of course, outsourcing risks a loss of quality control. Thus standards governing components could be viewed as a type of soft law, typically enforced through private contracts and sometimes incorporated into public law. These standards ensure that suppliers will provide components that comport with intermediate buyers’ (although not necessarily consumers’) expectations of quality.

Where intermediate component goods bear a lower degree of standardization or codification or both, far-flung firms may still have a transactional relationship with each other. In this scenario, “[n]etwork actors . . . control opportunism through . . . repeat transactions, reputation, and social norms . . . embedded in particular geographic locations or social groups.”⁴⁷ These control mechanisms include trust, reputation, and mutual dependence through repeated transactions—abbreviated throughout the rest of this Article as “trust mechanisms.”

Elsewhere I have argued that trust mechanisms should extend to the point where the consumer buys the final product—the proverbial final mile in these global value networks.⁴⁸ Information-generating activity is not fully controlled by a firm’s production, marketing, and distribution efforts. Rather, market information about a product is often co-created by both firm and user. This value-adding (and sometimes value-subtracting) activity by consumers has become increasingly decentralized and distributed in its own right. Consumers of a particular product add tremendous value through communicative activities, whether signaling “like” on a product’s Facebook page, contributing to user

45. TIM BÜTHE & WALTER MATTLI, *THE NEW GLOBAL RULERS: THE PRIVATIZATION OF REGULATION IN THE WORLD ECONOMY* 21–22 (2011); LISBETH SEGERLUND, *MAKING CORPORATE SOCIAL RESPONSIBILITY A GLOBAL CONCERN: NORM CONSTRUCTION IN A GLOBALIZING WORLD* 113–15 (2010) (discussing fair trade labeling and other voluntary standards).

46. See GEREFFI & FERNANDEZ-STARK, *supra* note 43, at 8–11.

47. Gereffi, Humphrey & Sturgeon, *Global Value Chains*, *supra* note 43, at 81; see also Eric L. Lane, *Greenwashing 2.0*, 38 COLUM. J. ENVTL. L. 279, 303–04 (2013) (discussing B2B deceptive practices disrupting the clean energy supply chain).

48. See Chon, *Slow Logo*, *supra* note 42, at 945–48, 953.

reviews, creating “.sucks” websites, or participating in even more active forms of social media.⁴⁹ Social theorists have characterized these activities as neither production nor consumption, but rather as “prosumption”⁵⁰ within an informational network for which I have coined the term “cognitive capitalism.”⁵¹ Others have described this informational activity as the “attention economy, the aesthetic economy[,] and the experience economy.”⁵² Many of these postproduction activities, however, are forced to over-rely on subjective impressions of a good or service (for example, “this product was not exactly what I expected”), and are starved for more objective measures that might appeal to a rational consumer,⁵³ such as smart information about credence attributes.

Where standardization is low, trust mechanisms are often embedded throughout global networks so as to replicate, if partially, the mechanisms analogous to face-to-face interaction in more localized and physical environments to ensure quality.⁵⁴ End consumers may expect a rough correlation between price and quality. But unlike a large brick and mortar retailer such as Wal-Mart, or a digital intermediary such as Amazon, a typical individual consumer does not have the buying power to force the disclosure of varieties of nonprice information that they might be interested in knowing.⁵⁵

The main lesson that can be drawn from this global knowledge governance literature is that the highly decentralized transactions characteristic of global value networks require higher degrees of coordination through standardization. And where lower degrees of standardization are present, other trust mechanisms must be robust. In these networked environments, the role of smart information would be to convey either that a commonly recognized standard or specific trust mechanism is satisfied.

49. See *id.* at 963.

50. George Ritzer & Nathan Jurgenson, *Production, Consumption, Prosumption: The Nature of Capitalism in the Age of the Digital Prosumer*, 10 J. CONSUMER CULTURE 13, 29–30 (2010).

51. Chon, *Slow Logo*, *supra* note 42, at 937; see also Anne Barron, *Intellectual Property and the ‘Open’ (Information) Society*, in THE SAGE HANDBOOK OF INTELLECTUAL PROPERTY 5, 16–17 (Matthew David & Deborah Halbert eds., 2015) (discussing the theory that the digital revolution will lead to new forms of intellectual property law).

52. See Jonathan E. Schroeder, *Brand Culture: Trade Marks, Marketing and Consumption*, in TRADEMARKS AND BRANDS: AN INTERDISCIPLINARY CRITIQUE 161, 161 (Lionel Bently et al. eds., 2008).

53. See David Vaver, *Brand Culture: Trade Marks, Marketing and Consumption’ – Responding Legally to Professor Schroeder’s Paper*, in TRADE MARKS AND BRANDS: AN INTERDISCIPLINARY CRITIQUE 177, 197 (Lionel Bently et al. eds., 2008).

54. See Gereffi, Humphrey & Sturgeon, *Global Value Chains*, *supra* note 43, at 81.

55. See FERNANDEZ-STARK, BAMBER & GEREFFI, *supra* note 29, at 8.

IV. COGNITIVE CAPITALISM: INTELLECTUAL PROPERTY IN GLOBAL VALUE NETWORKS

IP exponentially multiplies the transactions described above in the production of physical goods and services. It complicates the global value network account with additional intangible layers that do not necessarily track the tangible components or completed goods in predictable ways. Just as a physical product will be comprised of various components (for example, a semiconductor chip may be a standardized supply component part of a PC), the IP-protected intangibles add essential value components to many physical and even digital goods. IP may be in the form of trademarks such as “Intel Inside” for a component chip or “Apple” for a tablet, trade dress protection for the outer design of a PC, or semiconductor chip protection for the design of a chip. IP may also be in the form of patent or copyright protection, either of which may be obtained for the software embedded in the hard drive. And in the consumption ends of the global value network, beyond formal completion of a tangible product, other intangible components add value. For example, the formation of intangible business goodwill depends essentially on the activities of firms vis-à-vis sophisticated end consumers.⁵⁶

Legal scholar Julie Cohen describes this component-enhancing function of IP as “post-industrial property”: The intangible expression or value protected by the exclusive rights of IP is often

disaggregated—sliced and diced, fractionated and reused, in ways that land could not be. Clips from news programs and popular audiovisual works appear as featured material or background material in documentary and feature films; public performance rights in popular songs are licensed for synchronization with films, television programs, and advertisements; visual artworks may appear in the promotional materials for arts organizations; and excerpts from creative works of all types routinely appear in so-called user-generated content, such as videos posted on YouTube for the world to see.⁵⁷

Internet intermediaries add to the intangibility of these intangible layers, with its technologies that enable crowd-sourcing, searching, uploading of user-generated content,

56. WORLD INTELLECTUAL PROP. ORG., BRANDS – REPUTATION AND IMAGE IN THE GLOBAL MARKETPLACE 117 (2013), http://wipo.int/edocs/pubdocs/en/intproperty/944/wipo_pub_944_2013.pdf.

57. Cohen, *supra* note 7, at 2–3.

streaming of content, storage in digital lockers, and the like.⁵⁸ The supply-centered narratives of IP, which might be described as hierarchical models of control over IP, symbolically and materially enforced in earlier eras by the printing press or vinyl recording press, are being outsourced willy-nilly towards consumers and their devices.⁵⁹

What characterizes most of these IP-related activities is the lower degree of standardization and codification that intrigues transaction costs economists.⁶⁰ Recall from the previous Part that even in these relatively infelicitous conditions for outsourcing and quality control, firms may still have a transactional relationship with other firms as long as trust mechanisms are relatively robust. These firms can engage less through vertically controlled ways, and more horizontally along network nodes so long as trust mechanisms are present.

Analogously, the transactional environment in IP is complex and is moving away from purely supplier-oriented narratives of production and distribution. Creative activities are shifting away from traditional gatekeepers such as publishers, recording studios, and movie studios.⁶¹ They are moving decisively towards the activities of new information platform-based intermediaries and associated value added by end-users aided and abetted by the Internet and other distributed technologies.⁶²

And in addition to the now familiar online delivery of books, movies, and music, new networked technologies have been jumping over the horizon into our line of view. These include 3D printing, biosynthetic, and robotic technologies. Portending further significant decentralization of production and distribution channels of tangible goods, they add to the challenge of centralized control wielded through the intangible exclusive rights of IP. This phenomenon could be aptly called the Napsterization of things.⁶³

Is it possible for IP to more directly facilitate the production of verifiable knowledge within these global value networks, so that

58. Daniel Gervais, *The Tangled Web of UGC: Making Copyright Sense of User-Generated Content*, 11 VAND. J. ENT. & TECH. L. 841, 846–50 (2009); Edward Lee, *Warming up to User-Generated Content*, 2008 U. ILL. L. REV. 1459, 1460.

59. Tim Wu, *When Code Isn't Law*, 89 VA. L. REV. 679, 712, 716 (2003).

60. Gereffi, Humphrey & Sturgeon, *Global Value Chains*, *supra* note 43.

61. Cohen, *supra* note 7, at 32; Wu, *supra* note 59, at 716.

62. One example of this in the gaming space is Steam, which allows users to create games and make them available to other Internet users. STEAM, <http://store.steampowered.com/> (last visited Nov. 20, 2015).

63. See Deven R. Desai & Gerard N. Magliocca, *Patents, Meet Napster: 3D Printing and the Digitization of Things*, 102 GEO. L.J. 1691, 1692, 1697 (2014) (detailing the “digitization” of tangible things and comparing potential patent and trademark liability for 3D printing intermediaries with the infringement claims raised against Napster).

markets for IP-protected goods and services take place within a more redundant, reliable, and robust informational exchange? In this regard, verifiable knowledge must be distinguished from mere content or marketing claims somehow.⁶⁴ Smart information is already coming into existence outside of IP's public law frameworks, for example, through private standards, certifications, protocols, and even user reviews.⁶⁵ The Internet as well as other distributed technologies offer multiple platforms for smart information, especially if the power of crowd-sourcing through vigilant consumers and nonprofit "watchdog" organizations can be tapped. So while we cannot rely on naturally perfect information, we increasingly have the technological means to sculpt our current information environment so as to construct smarter information.

The widespread copyright industry term "content" suggests some degree of agnosticism as to its own accuracy, reliability, and truth claims. Content includes subjective fantasy, such as *The Hobbit*. Knowledge, by contrast, contains something of objective verifiability in the realm of fact, often generated through institutional means of quality control. From a knowledge (rather than mere content) standpoint, *The Hobbit* is a book written by the author J.R.R. Tolkien.⁶⁶ In order to enjoy the fantasy, we do not need to know or may not care about these facts. However, we do rely upon certain kinds of verifiable information in order to structure markets for copyright-protected goods and to coordinate transactions within these markets such as licensing content. While copyright law largely verifies authorship and ownership, it is not regarded as a vehicle for conveying knowledge (or smart information) about other credence attributes.

One might expect trademark law to meet some of the challenges posed by the informational scarcities regarding credence attributes. After all, one of the rationales for trademarks is to convey a particular consistent quality to the consumers via a mark.⁶⁷ But trademark law also falls short. Assessing a product's

64. Paul A. David & Dominique Foray, *Economic Fundamentals of the Knowledge Society*, 1 POL'Y FUTURES EDUC. 20, 46 n.1 (2003) (distinguishing between "connaissance" and "savoir" in the context of describing tacit knowledge).

65. See Joost Pauwelyn, *Rule-Based Trade 2.0? The Rise of Informal Rules and International Standards and How They May Outcompete WTO Treaties*, 17 J. INT'L ECON. L. 739, 743 (2014).

66. J.R.R. TOLKIEN, *THE HOBBIT, OR THERE AND BACK AGAIN* (Houghton Mifflin Co. 1938) (George Allen & Unwin, the original publisher, was acquired by Houghton Mifflin Co.).

67. Margaret Chon, *Marks of Rectitude*, 77 FORDHAM L. REV. 2311, 2315 (2009) [hereinafter Chon, *Marks of Rectitude*]. See generally Mark P. McKenna, *The Normative Foundations of Trademark Law*, 82 NOTRE DAME L. REV. 1839, 1844 (2007).

quality largely occurs after purchase; even after purchase, consumers will be unable to evaluate many of a good's less than visible qualities such as whether it was manufactured in an environmentally sustainable manner.⁶⁸ Moreover, the conflation of objective quality measures with subjective marketing methods is well-documented.⁶⁹ The use of certification marks allows a consumer to access more objective information about the standards underlying a particular good, yet it is a partial and incomplete solution.⁷⁰ As alluded to above and discussed more below, trademark law only makes actionable false or misleading credence claims under narrow circumstances.⁷¹

Assuming that many consumers are not feckless fools but rather somewhat reasonable and discerning purchasers,⁷² they might desire and even demand smart information about credence attributes such as the sourcing of components. (Are they made in sweatshop conditions? Are they made from metals sourced from conflict-free zones? Will they help developing economies? Are they environmentally sustainable?)⁷³ Consumers could be interested in the specific characteristics of the components (Are they going to last more than a year? Are they easily replaceable if necessary? Will they have certain chemicals that the consumer is allergic to?), or other attributes that are not immediately observable. Typically, an end consumer will not have access to the types of product and process specifications that the intermediate buyer and suppliers rely on in their transactions with each other. So even if one of the attributes of concern to a consumer (sweatshop conditions, for example) is something that is known to one of these

68. See Nelson, *supra* note 24, at 313–14.

69. Ralph S. Brown, Jr., *Advertising and the Public Interest: Legal Protection of Trade Symbols*, 57 YALE L.J. 1165, 1186 (1948).

70. See *infra* text accompanying notes 116–26; see also Chon, *Marks of Rectitude*, *supra* note 67, at 2332 (describing how certification marks can ultimately lead to consumer confusion).

71. Dillbary, *Trademarks*, *supra* note 31, at 341–42.

72. See Barton Beebe, *Search and Persuasion in Trademark Law*, 103 MICH. L. REV. 2020, 2025 (2005) (differentiating between the rational consumer and consumer as fool); Graeme B. Dinwoodie & Dev S. Gangjee, *The Image of the Consumer in European Trade Mark Law* 10, 12 (Univ. of Oxford Legal Research Paper Series, Paper No. 83/2014, 2015), <http://ssrn.com/abstract=2518986> (assessing the Court of Justice of the European Union's articulation of the "average consumer").

73. Daniele Giovannucci, Elizabeth Barham & Richard Pirog, *Defining and Marketing "Local" Foods: Geographical Indications for US Products*, 13 J. WORLD INTELL. PROP. 94, 107–10 (2010); see also OPEN AFRICAN INNOVATION RESEARCH & TRAINING PROJECT, PLACE-BASED BRANDING FOR LOCALLY SPECIFIC PRODUCTS (2014), <http://openair.org.za/images/Briefing-Note-Place-Based-Branding-for-Locally-Specific-Products.pdf> (discussing Nigeria's hand-dyed Abeokuta cloth and the counterfeit products threatening its marketability).

upstream parties, it is usually not transparent to the downstream buyers, including the users. This problem of “dumb information” is so pervasive throughout the value network that it is regarded as a natural and given feature of the current information environment.⁷⁴

Just as significant is that much information exchanged online is via powerful private actors—huge Internet-based intermediaries—primarily to increase their vast informational databases for purposes of lucrative data-mining activities. While it is common to claim that the Internet has dis-intermediated industries, such as the music recording industry, it is equally true that it has created behemoth global digital intermediaries, such as Amazon, Apple, Google, Microsoft, and others outside of the United States. The danger with these current information intermediaries might not be so much the over-decentralized control over information described in this Article, but rather overly centralized and selective control over information gathering and distribution via the practice of tracking consumers on websites through ad clicks.⁷⁵ Secondarily (if at all), this information is used to advance the public interest in access to smart information. Thus an informational market failure of immense proportions exists, either through underproduction or under-distribution of reliable information by stakeholders, combined with possible manipulation and hoarding of relevant information data sets by dominant network actors.⁷⁶

To add to these problems of information production, behavioral science literature points to the likely incentive for firms to engage in market manipulation through systematic exploitation of cognitive biases against consumer interests. As Jon Hanson and Douglas Kysar point out in the context of products liability law:

Other things being equal, it is in the manufacturer’s interest for consumers to have the lowest estimate of product risks possible: The lower the consumer’s risk estimate, the more consumers will be willing to pay for the product, leading to greater sales and increased profits for manufacturers. Generating consumer underestimation of product risks in this manner is simply another means of cost externalization, a practice that manufacturers have every incentive to pursue. Manipulation goes further than just minimizing perceived costs, however. Manufacturers can also attempt to

74. Katz, *supra* note 23, at 1561.

75. Strandburg, *supra* note 4, at 123; Gleick, *supra* note 35.

76. See Mark Scott, *Google Rebuts Europe on Antitrust Charges*, N.Y. TIMES (Aug. 27, 2015), <http://nyti.ms/1K9513d>.

shape consumer views of product benefits. That is, manufacturers may also elevate consumer willingness to pay by manipulating the view that consumers have of a product's benefits (as opposed to its costs). In either case, consumer failure to perceive product attributes accurately can lead to undesirable levels of consumption.⁷⁷

All of this suggests that many more incentives for the creation and distribution of smart information are needed. Smart information can function as partial trust mechanisms for arms-length transactions, especially between consumers and firms, but also among smaller firms that may not be the dominant information intermediaries within a particular value network. Smart information can also involve producers of goods and services in meaningful ways that have not yet been acknowledged. Yet reliable trust mechanisms via smart information are not yet pervasive.

Ostensibly concerned with regulation of knowledge, IP falls short of the task of creating incentives for this type of knowledge. For instance, it has long been observed and more or less accepted as inevitable that trademarks often fall within the realm of subjective marketing rather than objective truth claims.⁷⁸ And of course, because trademarks have evolved to reflect both subjective and objective aspects of goodwill, a consumer will buy a product (and its associated brand image) for reasons having something to do with the quality of the good (e.g., iPads are reliable as well as fun), but not necessarily. Most conflation of marketing information with reliable information are not viewed as actionable fraud as long as they are not overtly deceptive.⁷⁹

Of course, one of trademark's primary functions is as a rough guarantee of the qualities of a good, especially if the consumer can benefit from repeated purchases in order to experience these qualities. In other words, it already possesses some aspects of a trust mechanism for qualities that a consumer can readily experience. However, as analyzed above, typically and increasingly, trademark cannot do this important work with respect to embedded credence (as opposed to experience) attributes.

77. Hanson & Kysar, *supra* note 39, at 724–25; see also Jeremy N. Sheff, *Marks, Morals, and Markets*, 65 STAN. L. REV. 761, 808–09 (2013) (discussing implications of behavioral economics for trademark law). *But see* Rebecca Tushnet, *Gone in Sixty Milliseconds: Trademark Law and Cognitive Science*, 86 TEX. L. REV. 507 (2008) (voicing skepticism of the benefits of cognitive science in dilution litigation).

78. Vaver, *supra* note 53, at 197.

79. See *id.* at 184–85 (analyzing an advertisement for coffee liqueur and concluding that a rational consumer would understand that the product would not “turn him from nerd to knight”).

The scholarship examining “supply chains” offers important insights that could be extended to the larger question of knowledge governance along global value networks involving IP. A global information network of “cognitive capitalism” (in which consumers and producers increasingly do the work of verifying the attributes of products and adding value to them via information exchanges) can and should contain more workable trust mechanisms. The provision of smart information already exists to some extent in the middle production core dominated by business-to-business transactions. The challenge is to bring these information systems to the “last mile” of the networks, towards their distribution and especially consumption ends. The next Part addresses various legal means to do so.

V. KNOWLEDGE GOVERNANCE: SOME LEGAL HACKS

Transactions involving IP-related goods are characterized by connectivity across technological, territorial, and political borders.⁸⁰ As a result, we have decisively entered an era of regulatory complexity, change, and pluralism. As Cohen states, “The heterogeneity of intellectual production is a feature, not a bug,” and thus IP consists of “a heterogeneous, resource-dependent set of legal and institutional forms shaped by the constraints [and possibilities] of evolving technology and political economy.”⁸¹ Therefore global knowledge governance demands attention to multiple, pluralistic forms of cross-border regulation.

This Article suggests that whether through public or private law, it is critical to identify more robust legal means by which to provide smarter information about goods and services in the global economy. The legal hacks or innovations suggested in this Part have the objective of increasing transparency and verifiability of information-embedded goods, so as to create reliable trust mechanisms via smart information. What follows is not meant to be a comprehensive prescription, but rather some starting points and examples.

Of course, public institutions might increase regulation to encourage or mandate disclosure of smart information. This can set a framework for a varied set of private ordering mechanisms such as contract law or tort law, combined with social norms. Public institutions can exert a powerful impact, in their roles not

80. Keith Aoki, *(Intellectual) Property and Sovereignty: Notes Toward a Cultural Geography of Authorship*, 48 STAN. L. REV. 1293, 1304 (1996).

81. Cohen, *supra* note 7, at 10–11, 38.

only as standard-setters but also as conveners and facilitators of information markets. For example, the U.S. government has recognized the need for trust in individual identities, in addition to trusted intermediaries. President Obama authorized the U.S. National Strategy for Trusted Identities in Cyberspace (NSTIC) in 2011. Its purpose is to facilitate “an online environment where individuals and organizations will be able to trust each other because they follow agreed upon standards to obtain and authenticate their digital identities”⁸² In furtherance of this goal, NSTIC is working on a so-called “trust mark” to certify that certain data or identity systems meet certain requirements that allow transactions to be made knowing that the person on the other end is who they say they are.⁸³ While this recent effort does not address the larger knowledge governance issue of trusted information embedded within products (as contrasted with people), it shows that one significant information hold-up cost to government-related transactions relates to verification and trust.

Pursuant to various U.S. statutes, various federal agencies mandate in some manner disclosure of smart information.⁸⁴ For example, under provisions of the 2010 Affordable Care Act, chain restaurants with at least twenty U.S. locations must display calorie information on their menus.⁸⁵ In 2014, the U.S. Food and Drug Administration (FDA) released revised nutrition fact label requirements that mandate that more prominent display of calorie content be displayed, with the goal of implementation by 2017.⁸⁶ These labeling initiatives in the United States and other countries exemplify the recognition that smart information is critical to consumption in global value networks of particular goods and services.⁸⁷ Some states and other local governments within the United States have also demanded more information about supply

82. WHITE HOUSE, NATIONAL STRATEGY FOR TRUSTED IDENTITIES IN CYBERSPACE 2 (2011), https://whitehouse.gov/sites/default/files/rss_viewer/NSTICstrategy_041511.pdf.

83. See *id.* at 24.

84. See, e.g., *Enforcement Policy Statement on U.S. Origin Claims*, FED. TRADE COMM’N (Dec. 1, 1997), <https://ftc.gov/public-statements/1997/12/enforcement-policy-statement-us-origin-claims>. FTC also puts out “Green Guides” to labeling environmentally friendly products. See *Environmentally Friendly Products: FTC’s Green Guides*, FED. TRADE COMM’N, <https://ftc.gov/news-events/media-resources/truth-advertising/green-guides> (last visited Nov. 20, 2015). Other examples include the Textile, Wool, and Fur Acts, 15 U.S.C. §§ 68–70 (2012), (also enforced by the FTC), Tracking Labels for Children’s Products, 15 U.S.C. § 2063, (enforced by the Consumer Product Safety Commission), and the Food Modernization Act, 21 U.S.C. §§ 2201–2252, (enforced by the Food and Drug Administration).

85. See Patient Protection and Affordable Care Act, Pub. L. No. 111-148, § 4205, 124 Stat. 573 (2010) (codified at 21 U.S.C. § 343).

86. Jason P. Block & Christina A. Roberto, *Potential Benefits of Calorie Labeling in Restaurants*, 312 JAMA 887, 887 (2014).

87. Vaver, *supra* note 53, at 195.

chain management within the decentralized global setting described in this Article. For example, California recently passed the Transparency in Supply Chains Act (TSCA), which requires companies to disclose whether their operations are free from human trafficking.⁸⁸ This is an effort to provide consumers with more information about so-called clean supply chains.

Private nonprofit and nongovernmental organizations (NGOs) provide oversight through various means intended to increase the level of consumer awareness about credence attributes. Some of these NGOs may have started as voluntary industry initiatives, or have ties to the for-profit sector. One example of this is Social Accountability International (SAI), which certifies apparel manufacturers for compliance with voluntary industry standards regarding factory safety.⁸⁹ Other NGOs work independently of industries they monitor, as illustrated by a recent report from Oxfam about agricultural sourcing.⁹⁰

Watchdog NGOs may also work hand in glove with public agencies. For example, the California TSCA compels disclosure of certain forms of information by companies that are engaging in the global outsourcing of manufacture and production, specifically whether they engage in audits and can certify to voluntary standards.⁹¹ The statute itself does not compel the audits or the adoption of standards themselves—those auditing and certification activities are still voluntary.⁹² Private NGOs have piggybacked on these initial public disclosure requirements to monitor the degree of compliance by covered firms.⁹³

Finally, some for-profit firms have begun to disclose their sourcing information as part of their marketing strategies.⁹⁴ Some of these companies have even created a brand around being able to trust

88. CAL. CIV. CODE § 1714.43 (West Supp. 2015).

89. Dara O'Rourke, *Multi-Stakeholder Regulation: Privatizing or Socializing Global Labor Standards?*, 34 *WORLD DEV.* 899, 915 app. A (2006) (listing the standards promulgated by Social Accountability International).

90. See OXFAM, *THE BEHIND THE BRANDS SCORECARD METHODOLOGY* (2014), https://oxfam.org/sites/www.oxfam.org/files/file_attachments/btb_methodology_document_final_sept_2014.pdf.

91. § 1714.43(a), (c).

92. See *id.*

93. Bus. & Human Rights Res. Ctr., *85 Firms Still "Silent" on California Transparency in Supply Chains Act*, CORP. SOC. RESP. NEWSWIRE (Feb. 12, 2014, 4:43 PM), http://csrwire.com/press_releases/36712-85-firms-still-silent-on-California-Transparency-in-Supply-Chains-Act.

94. In the apparel industry, the brand PATAGONIA, founded by Yvon Choinard, is viewed widely as an early innovator in this regard. Its current website has what it calls a footprint of its suppliers. PATAGONIA, <http://patagonia.com/us/footprint> (last visited Nov. 20, 2015).

the source and quality of goods—for example, that they are made under fair labor conditions—and have provided means for consumers to evaluate such information.⁹⁵ However, other firms refuse to do so for fear of losing competitive advantage through disclosure of trade secrets, for example.⁹⁶ This concern will have to be addressed,⁹⁷ perhaps through the use of third party verification intermediaries.

Fully private verification systems have been created in the context of online sales, such as the rating systems for sellers operated by eBay⁹⁸ and Amazon. More recently, distributed “sharing economy” service providers such as Airbnb or Uber have had to create robust systems to allow participants to “trust” each other based on digital identities (such as the ownership of a Facebook page) or other kinds of information such as accumulated user reviews.⁹⁹ The success of these online firms in connecting smart information to profoundly physical, face-to-face goods and services illustrates that trust mechanisms are a critical component to knowledge governance infrastructure, whether for public or private entities. As stated earlier, much of the electronic marketplace is comprised of such credence purchases—that is, purchases without previous opportunity to examine the product in detail.

Soft law, such as protocols and standards, potentially combined with certification marks and trademarks, might also facilitate the disclosure of smart information. Some scholars have recently suggested hacks to trademark law to facilitate the provision of trademarks involving collaborative innovation.¹⁰⁰ Others, including me, have examined the role of certification marks, including the need to ensure the accuracy of third party certification, in enhancing smart information.¹⁰¹

95. See, e.g., Max Nisen, *How Nike Solved Its Sweatshop Problem*, BUS. INSIDER (May 9, 2013, 10:00 PM), <http://www.businessinsider.com/how-nike-solved-its-sweatshop-problem-2013-5> (noting that Nike’s leadership in corporate social responsibility has allowed it to transform its reputation).

96. See Deena Shanker, *11 Food Companies That Won’t Tell You Where Their Meat Comes From*, BUZZFEED (Apr. 10, 2014, 1:18 PM), <http://www.buzzfeed.com/deenashanker/companies-that-wont-tell-you-about-their-meat#.qwVjnzB9r> (noting that Kraft does not disclose its suppliers because the company believes the “suppliers that help [Kraft] make [its] quality Oscar Mayer products are a competitive advantage over other brands”).

97. See Elizabeth A. Rowe & Daniel M. Mahfood, *Trade Secrets, Trade, and Extraterritoriality*, 66 ALA. L. REV. 63, 94 (2014) (noting that trade secrets do not confer a monopoly but have the allure of perpetuity).

98. Dillbary, *Getting the Word Out*, *supra* note 38, at 1016–18.

99. Jason Tanz, *How Airbnb and Lyft Finally Got Americans to Trust Each Other*, WIRED (Apr. 23, 2014, 6:30 AM), <http://wired.com/2014/04/trust-in-the-share-economy/>.

100. See generally Yana Welinder & Stephen LaPorte, *Hacking Trademark Law for Collaborative Communities*, 25 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 407 (2014).

101. Chon, *Marks of Rectitude*, *supra* note 67, at 2335–30.

Private regulatory alternatives such as certifications to standards have become de facto forms of oversight over public health and worker safety, more enforceable versions of which have not been implemented via multilateral provisions of the GATT/WTO or through national legislation.¹⁰² One advantage of private over public legal means for tackling the issue of creating smart information is that the question of disguised trade barriers does not rear its head. This approach leaves potential flexibility and policy space for domestic innovations in the provision of smart information about labor and environmental issues. In an ideal world, these domestic changes towards increased labor standards then spread through global networks to become de facto regulatory minima for cross-border business.¹⁰³

With respect to global textile and apparel industries, for example, many developing countries had viewed worker safety standards as barriers to trade in areas in which they had comparative advantage, and therefore chose as a matter of domestic social welfare to reduce treaty-mandated regulation of worker safety.¹⁰⁴ Instead, voluntary codes of conduct and corporate social responsibility initiatives have substituted for government enforcement of health and safety standards, and efforts have been made to extend this information to consumers through certifications, such as the fair trade certification, promulgated by the Fairtrade Organization,¹⁰⁵ and others.¹⁰⁶ The recent media attention to the conditions in Apple factories overseas is an example of increasing awareness of component manufacturing conditions, while it also illustrates the lack of ready information about credence attributes of goods by concerned consumers.¹⁰⁷

The California TSCA is a type of “mandated disclosure or ‘notice,’ [and] works by requiring the provision of facts with the hope that consumers or citizens will use those facts to protect

102. See JOHN BRAITHWAITE & PETER DRAHOS, *GLOBAL BUSINESS REGULATION* 234–36 (2000).

103. *Id.* at 236–37.

104. Tim Bartley, *Certifying Forests and Factories: States, Social Movements, and the Rise of Private Regulation in the Apparel and Forest Products Fields*, 31 *POL. & SOC'Y* 433, 444–54 (2003).

105. See *Standards*, FAIRTRADE INT'L, <http://fairtrade.net/standards.html> (last visited Nov. 20, 2015).

106. Paulette L. Stenzel, *Mainstreaming Fair Trade and Resulting Turmoil: Where Should the Movement Go from Here?*, 37 *WM. & MARY ENVTL. L. & POL'Y REV.* 617, 645–53 (2013) (discussing the proliferation of fair trade certifications and the various companies that employ them).

107. Richard Bilton, *Apple Failing to Protect Chinese Factory Workers*, BBC NEWS (Dec. 18, 2014), <http://bbc.com/news/business-30532463>.

themselves and police the market.”¹⁰⁸ Large markets such as California (which is estimated at 10% of the overall U.S. economy) may pave the way through such initiatives for “trading up” to higher labor standards globally, in the same way that California increased environmental standards nationally through emissions control requirements.¹⁰⁹ Notice provided by public institutions and enforced through decentralized and privatized value networks is a possible alternative to fully state-based interventions. At the same time, these types of regulatory alternatives are not as vulnerable to trade-based legal challenges that more top-down enforceable regulations might be.

Whether via public or private means, the examples above indicate that there is substantial untapped potential to provide distributed smart information channels with regard to many of the credence attributes that will extend markets for IP-embedded goods and create more robust informational markets about them. Smart information is a public good, in the political science sense as well as economics sense of the term. It provides essential infrastructure for additional socially beneficial activities. Information about credence attributes is already being provided, albeit on a smaller scale than may be socially optimal. Thus, we are arguably at the tip of the proverbial iceberg with respect to enhancing smart information whether through public initiatives such as NSTIC, or private such as Airbnb (or even in the form of loose public-private partnerships such as the California statute, which provides a notice function in conjunction with various monitoring NGOs).

VI. TRACERMARKS: A PROPOSED INFORMATION INTERVENTION

The Internet-based information systems described in the previous Part could create and shape smart information relating to the welfare-enhancing awareness of credence qualities that matter, such as sustainability in manufacturing and distribution. However, this Article has yet to address how current IP could expand to include trust mechanisms in addition to the pervasive mechanisms of exclusive rights. This concluding Part posits one of many possible ways to take advantage of existing flexibilities and room for

108. Ryan Calo, *Code, Nudge, or Notice?*, 99 IOWA L. REV. 773, 775 (2014) (citing Omri Ben-Shahar & Carl E. Schneider, *The Failure of Mandated Disclosure*, 159 U. PA. L. REV. 647, 649–50 (2011)); see THALER & SUNSTEIN, *supra* note 14, at 83–87 (discussing the propensity of consumers to select default choices or recommended choices as information complexity increases).

109. DAVID VOGEL, *TRADING UP: CONSUMER AND ENVIRONMENTAL REGULATION IN A GLOBAL ECONOMY* 5–6, 248–70 (1995).

evolution within existing public law frameworks. It focuses on a proposed tool, which is tentatively entitled a *tracermark*. As explained further below, tracermarks would benefit both consumers and producers, and could reduce pervasive information asymmetries and scarcities. By doing so, they arguably would contribute to a meaningful increase in global social welfare.¹¹⁰

Examples of IP legal innovations on opposite ends of the spectrum of private ordering are open source licenses and end-user license agreements (EULAs), which Cohen calls “bespoke entitlements.”¹¹¹ While copyright law has recently included a number of innovative legal mechanisms such as Creative Commons (CC) licenses, EULAs, and open source licenses, which alter the nature and distribution of knowledge in various ways,¹¹² trademark law seems arguably relatively inert by contrast. Yet trademark law has enormous untapped potential for encouraging more distributed and nuanced knowledge governance forms, as well as to increase its objective information-disclosing qualities.

Currently, trademarks are dominated by a search cost rationale, which posits that their primary function is to provide an efficient signal for (rational) consumers to associate a product or service with a particular origin of manufacture or source.¹¹³ Sometimes referred to as trademark’s signaling function, this theory posits that marks serve primarily to decrease consumers’ search costs by providing them with a shorthand reference or symbol upon which they can rely repeatedly.¹¹⁴ While consumer searches (and ensuing satisfaction) can accumulate and eventually contribute to the formation of trust mechanisms via trademarks, this prevailing view falls short of fully addressing the so-called “trust function” of marks.¹¹⁵

Certification marks could fill this trust gap to some extent. In previous work, for example, I have canvassed the role of certification

110. However, some may argue that the creation of desire that drives the consumer economy, and with it environmentally unsustainable economic growth, does not contribute at all to overall social welfare and that it is antithetical to the values purportedly represented by so-called anti-growth marketing. See, e.g., J.B. MacKinnon, *Patagonia’s Anti-Growth Strategy*, NEW YORKER (May 21, 2015), <http://newyorker.com/business/currency/patagonias-anti-growth-strategy>.

111. Cohen, *supra* note 7, at 42–46.

112. *Id.* at 44–45.

113. See Stacey L. Dogan & Mark A. Lemley, *Trademarks and Consumer Search Costs on the Internet*, 41 HOUS. L. REV. 777, 786–88 (2004).

114. See *id.*; William M. Landes & Richard A. Posner, *Trademark Law: An Economic Perspective*, 30 J.L. & ECON. 265, 275–76 (1987).

115. See Katz, *supra* note 23, at 1567–69 (arguing that trademarks cannot reliably fulfill their trust function if search costs cross a certain threshold).

marks in conveying information about certain qualities of a product that are not immediately apparent to a consumer (in the context of fair trade coffee and apparel, for example).¹¹⁶ Although certification marks go beyond the typical search function of trademarks into the realm of credence attributes, they also fall short of providing robustly reliable information because of several key omissions. One enormous weakness of certification marks is that they do not involve consistently reliable trust mechanisms. The certification process, which purports to require adherence to objective standards, is vulnerable to the whims of the certifying bodies, which are often compensated by the very organizations whose products they are certifying. Currently, there is relatively little oversight of the enforcement of standards, and almost no information provided readily to consumers about the standards themselves. Standards are a mandatory part of the application to the national office (USPTO, for example) but only infrequently challenged and even more infrequently used as a basis for cancelling the mark.¹¹⁷

Another challenge with certification marks is that consumers often have difficulty interpreting them.¹¹⁸ Certification marks represent underlying standards, which are not discernable from the face of the mark. In some sectors, they may also proliferate so that multiple and competing marks may exist, resulting in consumer confusion of an entirely different sort than the passing off type of misrepresentation that is the focus of classic trademark law. For example, there are multiple certifying schemes for coffee, including Equal Exchange, Fairtrade International, Rainforest Alliance, and Utz.¹¹⁹ (The university I work for recently announced its own Jesuit brand of certified fair trade coffee called Café Ambiental.)¹²⁰ Thus the consumer may be faced both with too little and too much information, but not with the optimal amount that

116. Chon, *Marks of Rectitude*, *supra* note 67, at 2341–44; JEFFREY BELSON, CERTIFICATION MARKS 5–6 (2002) (“[In Anglo-American law, a] certification mark is statutorily defined as an indication that goods, or services, in connection with which the mark is used, are certified by the proprietor in respect of origin, material, mode of manufacture of goods or performance of services, quality, accuracy or other characteristics.”).

117. *See, e.g.*, *Swiss Watch Int’l, Inc. v. Fed’n of the Swiss Watch Indus.*, 101 U.S.P.Q.2d (BNA) 1731, 1746 (T.T.A.B. 2012) (refusing to cancel the certification “SWISS MADE”).

118. Dev Gangjee has noted this problem as well with geographical indications in the form of the European Protected Designation of Origin. Dev S. Gangjee, *Proving Provenance and Authenticating Authenticity? Geographical Indications Certification and Its Ambiguities*, *WORLD DEV.* 7 (forthcoming 2015), <http://dx.doi.org/10.1016/j.worlddev.2015.04.009> [hereinafter Gangjee, *Proving Provenance*].

119. Chon, *Marks of Rectitude*, *supra* note 67, at 2341–43.

120. *See* Mike Thee, *Coffee with Conscience*, *SEATTLE U. NEWS* (Nov. 24, 2014), <http://seattleu.edu/news/featurearticle.aspx?id=146552>.

would enable access to the relevant differences among credence attributes. Researching the difference between different kinds of fair trade coffee, for example, could take hours—and that work might still not result in the specific information the consumer is wishing for.¹²¹

And furthermore, certification marks carry substantial administrative costs.¹²² Certifications depend upon a separate certifying body, which can be a government, industry association, or NGO. In some sectors, this certifying process may be feasible because the infrastructure and resources may be relatively easy to amass. In others, this requirement poses a substantial barrier to entry. This point is driven home by the recent example of the Ethiopian government's decision to license coffee from the Sidamo region of Ethiopia as a trademark, rather than as a certification mark.¹²³ Part of the reason for this was the prohibitive administrative costs of certifying coffee, even for a national government body.¹²⁴ Moreover, from the perspective of the producers, the additional expense of certification may make it impossible for farm holders to participate in certification schemes, and in other cases, it leads to a net non-increase (or even decrease) in revenue, especially for smallholders.¹²⁵ An additional cost stems from the issue that certification marks themselves require extensive marketing (in addition to any trademark), in order to build consumer recognition. Beyond these issues, many countries do not have certification laws and this lack of uniformity poses another obstacle to cross-border enforcement of standards through certifications.¹²⁶

By contrast, a tracermark could efficiently convey smart information similar to what might be (but is typically not)

121. Several years ago, multiple research assistants compiled a fair trade coffee matrix for these four types of certifications. It took them many hours to summarize their standards for me.

122. See Raluca Dragusanu, Daniele Giovannucci & Nathan Nunn, *The Economics of Fair Trade*, J. ECON. PERSP., Summer 2014, at 217, 227–28.

123. LIGHT YEARS IP, DISTINCTIVE VALUES IN AFRICAN EXPORTS: HOW INTELLECTUAL PROPERTY CAN RAISE EXPORT INCOME AND ALLEVIATE POVERTY 9, 14–15 (2008), <http://slideshare.net/webgoddesscathy/distinctive-values-in-african-exports-how-intellectual-property-can-raise-export-income-and-alleviate-poverty-presentation>; Fiona Rotstein & Andrew Christe, *Blood, Toil, Tears and Sweat: The Battle of Sidamo* 12–15 (Univ. of Melbourne, Legal Studies Research Paper No. 531, 2009), <http://papers.ssrn.com/abstract=1721984>.

124. See Rotstein & Christe, *supra* note 123, at 13–14.

125. CHRISTOPHER CRAMER ET AL., FAIRTRADE, EMPLOYMENT AND POVERTY REDUCTION IN ETHIOPIA AND UGANDA 20–22, 124 (2014), <http://ftepr.org/wp-content/uploads/FTEPR-Final-Report-19-May-2014-FINAL.pdf>.

126. B. Brett Heavner, *World-Wide Certification-Mark Registration: A Certifiable Nightmare*, BLOOMBERG L. REP.: INTELL. PROP., Dec. 14, 2009, at 12, 12–14.

conveyed through a certification mark. “Tracer” is an intentional mash-up of trademark and certification mark, and a tracermark would have some characteristics of both. As a hybrid category, its main purpose would be to provide consumers with smart information so as to be able to trace certain credence attributes of goods and services. Information about underlying attributes would be publicly available to consumers and others through smartphones and other Internet-based technologies. Indeed, the U.S. Secretary of Agriculture recently suggested to Congress that consumers could trace GMO foods this way, stating:

[C]onsumers could just use their phones to scan special bar codes or other symbols on food packages in the grocery store. All sorts of information could pop up, such as whether the food’s ingredients include genetically modified organisms, or GMOs. . . .”Industry could solve that issue in a heartbeat.”¹²⁷

To ensure integrity of the information, the overall data set associated with a particular tracermark might be compiled by multiple stakeholders. Third party information intermediaries or aggregators could collate and compare information provided by different tracermarks, including information added by consumers, producers, and other stakeholders contributing to the value network. Tracermarks themselves or perhaps their aggregators could be viewed as information platforms. For example, if a tracermark was a type of ubiquitous symbol, similar to a bar code or QR code on the surface of a product, one could easily imagine the development of smart phone applications that could scan the information in the label and even eventually answer queries of consumers regarding specific concerns. Or an aggregator could construct a platform (let’s say, called a Wiki-tracer) to allow distributed stakeholders to contribute information regarding sourcing of a product. In addition to the typically indecipherable certification symbols that currently signify adherence to standards regarding electronic components on the bottom of a laptop, for example, a tracermark would allow consumers to understand what some of those symbols mean or to query about other characteristics of the various components’ journeys through the global value network ending in the product. This could include information about labor conditions and other significant attributes.

In order to facilitate meaningful disclosure, the tracermark itself should be symbolically efficient. This would address the

127. Mary Clare Jalonick, *Ag Secretary: Smartphones Could Tell Buyers What’s in Food*, WASH. TIMES (Feb. 26, 2015), <http://www.washingtontimes.com/news/2015/feb/26/vilsack-smart-phones-could-tell-consumers-whats-in/?page=all> (quoting Tom Vilsack, Secretary of Agriculture).

problem of too much or too little information associated with certification marks. For instance, the information platform must have some common public method of simplifying, summarizing, and possibly comparing key credence characteristics. If Starbucks wanted to make sure its private fair trade standards (currently called C.A.F.E., standing for Coffee and Farmer Equity)¹²⁸ are clearly communicated to its coffee-drinking clientele, for example, it would disclose these private standards. Other companies that purport to follow other fair trade standards such as those promulgated by Fairtrade Organization would also disclose their standards. This would then allow competing standards to be compared. Many of the existing fair trade marks applied to agricultural commodities are in fact certification marks, held and administered by certifying entities.¹²⁹ A publicly available matrix would include both tracermarks and certification marks that cover the same attributes. The scope of information associated with a product or service would have to be curated and managed so that it discloses optimal types and amounts of smart information requested by a consumer.

To incentivize disclosure of smart information, consumers might choose to reward companies that disclose attributes that are significant to consumer purchasing decisions, and to penalize companies that do not comply with disclosure through consumer nonpurchases or boycotts. Conceivably, disclosure of smart information could give firms a competitive advantage within this realm of greater choice. This competition for customers over credence attributes is already evident. For example, Whole Foods has recently followed in the footsteps of Wal-Mart in announcing more transparent sourcing information about its products in the United States.¹³⁰ A step beyond simple disclosure might be provided by links from the smart information platform to a separate purchasing platform. This is illustrated already by the rating systems of the Environmental Working Group (EWG), which evaluates consumer products for harmful chemicals. Recommended products are linked to Amazon's website for ready

128. See *Ethical Sourcing: Coffee*, STARBUCKS, <http://starbucks.com/responsibility/sourcing/coffee> (last visited Nov. 20, 2015).

129. See, e.g., *The Fairtrade Marks*, FAIRTRADE INT'L, <http://www.fairtrade.net/the-fairtrade-marks.html> (last visited Nov. 20, 2015) (conditioning use of the fairtrade mark on prior written approval from the Fairtrade organization).

130. Alison Griswold, *Whole Foods Desperately Wants Customers to Feel Warm and Fuzzy Again*, SLATE: MONEYBOX (Oct. 20, 2014, 5:39 PM), http://slate.com/blogs/moneybox/2014/10/20/whole_foods_ad_campaign_can_values_matter_marketing_erase_the_whole_paycheck.html.

purchase.¹³¹ These recent examples show that episodic efforts in the private sector are already underway to ramp up the provision of smart information.

From the public sector, another interesting recent example comes from the state of Washington, which recently enacted a seed-to-sale framework for legalized marijuana. The Washington State Liquor Cannabis (formerly Control) Board (WSLCB) oversees all production, processing, and sale of recreational marijuana.¹³² The WSLCB implemented the BioTrack THC tracking system to track marijuana through the supply chain.¹³³ This system uses a series of unique sixteen-digit barcodes to track marijuana plants.¹³⁴ The WSLCB also requires that each batch of marijuana harvested be tested by a third party independent laboratory facility for a variety of defects such as mold, mildew, and pesticides. If a retail customer requests the results of the lab testing, the retailer must disclose the information.¹³⁵ Other provisions of the WAC include not labeling marijuana products as “organic” unless independently certified by the U.S. Department of Agriculture in accordance with the Organic Foods Production Act. And all labels must include the lot number and Unified Business Identifier of the producer.¹³⁶ A white paper written during the early stages of drafting the WSLCB’s rules suggested that “[i]t would be in the interest of consumers . . . to require lab results be posted on a website It would also be beneficial to

131. A recent example that I have used personally is: *EWG’s Guide to Sunscreens*, ENVTL. WORKING GROUP, <http://ewg.org/sunscreen/> (last visited Nov. 20, 2015). Ultimately, however, I used the information provided by the website to then purchase the product at a local food coop.

132. Initiative Measure No. 502 authorizes the state liquor control board to regulate and tax marijuana for persons twenty-one years of age and older and adds a new threshold for driving under the influence of marijuana. Initiative Measure No. 502 § 1 (Wash. 2011), http://sos.wa.gov/_assets/elections/initiatives/i502.pdf.

133. The WSLCB states:

[L]icensed marijuana producers, processors, and retailers are free to employ their own inventory tracking software solutions as long as it allows for the collection and submission of the specific information and reports required by the WSLCB’s seed-to-sale inventory tracking rules for Licensees. Licensees are required to submit specific information and reports to the WSLCB. To ensure compliance with Washington State regulations, the traceability system provides functionality to assist with analysis of information, auditing operations, and enforcement by the WSLCB.

Traceability System, WASH. ST. LIQUOR & CANNABIS BD., http://liq.wa.gov/mj2015/traceability_system (last visited Nov. 20, 2015).

134. Anna Staver, *How Do Washington, Colorado Track Their Pot?*, STATESMAN J. (Salem) (Nov. 20, 2014, 5:22 PM), <http://statesmanjournal.com/story/news/politics/2014/11/20/washington-colorado-track-pot/70013080/>.

135. WASH. ADMIN. CODE § 314-55-105(3) (2015).

136. *Id.* § 314-55-105(4)–(5).

post publicly the producer's use of pesticides, herbicides, and fungicides, as required to be posted on the label."¹³⁷ However, this suggestion has not yet been implemented.

In addition, any tracermark system has to anticipate possible manipulation by market actors and Internet trolls. In many of the currently popular consumer ratings systems, such as Yelp, TripAdvisor, and Angie's List, the problem of fake reviews has become pervasive.¹³⁸ Impartiality in the construction of trust mechanisms is a critical soft spot (coinciding with the weak point within certification systems). One possible solution could be multiple certifiers, which would then compete and possibly check each other to provide more reliable information. As Jeanne Fromer has pointed out, information theory "suggests that noise in a message transmission can be reduced, if not entirely overcome, by introducing redundancy into the message . . . [which] make[s] it more likely that consumers will gain access to the transmitted knowledge."¹³⁹ Another answer might be the existence of a meta-certifier that evaluates reliability across certifying platforms. Yet another might be to combine the certification platform with consumer crowd-sourcing so as to discourage producer manipulation. Even assuming that self-interested firms could be excluded effectively, however, consumers may not be in the best position to assess credence attributes or to anticipate other consumers' concerns and interests.¹⁴⁰ Verifiability of stated compliance to standards would continue to present a thorny issue.

Tracermarks are situated between a regular trademark (in which, as described above, there is often no formal liability whatsoever for false, misleading, or deceptive claims about the qualities of a good) and a certification mark (which in theory is open to revocation or invalidity based upon failure to conform to standards). This suggests that careful thought needs to be given to any liability structure for incomplete or fraudulent information. This proposal must contend with the pervasive and deeply

137. Memorandum from BOTEC Analysis Corp. to Randy Simmons, Deputy Dir., Wash. State Liquor Control Bd. 7 (June 17, 2013), http://lcb.wa.gov/publications/Marijuana/I-502/small_business_impact_statement/botec_white_paper_2.pdf.

138. Michael Luca & Georgios Zervas, *Fake It Till You Make It: Reputation, Competition, and Yelp Review Fraud* 7–8 (Harvard Bus. Sch., NOM Unit Working Paper No. 14-006, 2015), <http://papers.ssrn.com/abstract=2293164>.

139. Jeanne C. Fromer, *An Information Theory of Copyright Law*, 64 EMORY L.J. 71, 90 (2014).

140. See *Amazon vs. B&N vs. Goodreads: Rating the Ratings*, NEW DORK REV. BOOKS (June 20, 2011), <http://thenewdorkreviewofbooks.com/2011/06/amazon-vs-b-vs-goodreads-rating-ratings.html> (comparing the differences in ratings of five novels from Amazon, Barnes & Noble, and Goodreads, and admitting the blogs' own shortcomings in evaluating books).

embedded marketing norms to deliberately conflate objective with subjective measures of quality through lifestyle marketing as opposed to informational marketing, as well as the potential for firm liability for disclosure under unfair competition laws or other private enforcement actions. This last possible disincentive could be addressed by making the tracermark independent of any of the firms involved with manufacture and distribution or providing safe harbors for certain kinds of disclosures related to a tracermark, or both.¹⁴¹ In addition, provisions to address possible disclosures of trade secrets or other forms of competitive disadvantage would be necessary.

While the scope of coverage of geographical indications (GIs) is tiny compared to the overall trademark domain, it is worth discussing briefly because it provides a significant potential wedge to normalize the provision of information about provenance of products more generally. Systems involving tracing adherence to standards are also more developed in GI law, and could provide a possible (if not perfect) model for traceability for tracermarks.¹⁴² The central concern in GI law is whether the “quality, reputation or other characteristic of a good is essentially attributable to its geographic origin.”¹⁴³ The oft-cited example is “champagne” as a GI applied to sparkling wine from the Champagne region of France.¹⁴⁴

While the concept of GIs as a type of IP is not deeply embedded within U.S. IP norms, Daniel Gervais has nonetheless noted:

[A]s consumers of wine, food and other “geographically determined” products understand information conveyed by food and wine labels better, they will also expect those labels to be accurate *when the information conveyed is perceived as denoting a geographical origin*. Geographic certification mark infringement should be subject to a dynamic legal test, for which a threshold might be crossed when the consumer

141. Cf. Dillbary, *Trademarks*, *supra* note 31, at 360–61 (parsing the 1988 amendments so that “the preamble and section 43(a)(1)(B) would read as follows: Any person who . . . uses in commerce any trademark . . . which . . . in commercial advertising . . . misrepresents the nature, characteristics, qualities, or geographic origin of his or her . . . goods . . . shall be liable in a civil action” (alterations in original)).

142. *But see* BELSON, *supra* note 116, at 5–6. I am indebted to Dev Gangjee for his insights here.

143. Agreement on Trade-Related Aspects of Intellectual Property Rights art. 22, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299.

144. Daniel Gervais, *A Cognac After Spanish Champagne? Geographical Indications As Certification Marks*, in *INTELLECTUAL PROPERTY AT THE EDGE* 130, 139 (Rochelle Cooper Dreyfuss & Jane C. Ginsburg eds., 2014).

search costs increase because the consumer is better informed about what a wine label conveys and finds information now perceived as geographical in nature confusing or inaccurate.¹⁴⁵

Legal scholar Dev Gangjee has recently dived deeply into the processes of specifying and complying with individual product specifications. He has found, for example, that even the most coveted and well-known GIs such as Stilton Cheese in the United Kingdom or Prosciutto di Parma in Italy sometimes source some of their raw materials (milk and pork, respectively) outside of the geographic region associated with them. According to him, these sourcing practices “could cast doubts on the reliability of the certification system.”¹⁴⁶ To return to the Ethiopian Sidamo coffee example, it has been observed that:

As important as branding and delivering a high quality and distinctive product is ensuring the transparency of the relevant supply chain. Only if products are traceable to their origin can consumers be assured that they are receiving the trademarked product they have purchased, and only then can the exporters demand that producers receive premium prices.

The [Ethiopian Coffee Exchange], organised as an independent public-private enterprise, offers an innovative model for providing such an open and transparent market. Its provision of market information and quality control coupled with a trading platform represents an essential service to the producers and exporters of the Ethiopian Trademarking and Licensing Initiative. By creating a transparent trading system, it eliminates the need for a track and trace system designed specifically for the trademarked coffee.¹⁴⁷

At the heart of this type of IP is the verification of the provenance of a GI-protected product, essentially its credence attributes associated with a particular region. But this form of governance has to be accompanied by vigorous trust mechanisms in order to work the way it is intended to work—otherwise, the GIs can become just another marketing tool for fuzzy subjective claims about the product. As Irene Calboli has pointed out, the current legal framework leaves open the possibility for opportunistic behavior by large firms that may exploit the trust consumers have

145. *Id.*

146. Gangjee, *Proving Provenance*, *supra* note 118, at 7.

147. KATE BIRD ET AL., OVERSEAS DEV. INST., ETHIOPIAN TRADEMARK AND LICENSING INITIATIVE: SUPPORTING A BETTER DEAL FOR COFFEE PRODUCERS THROUGH AID FOR TRADE 13 (2009), <http://odi.org/resources/docs/5946.pdf>.

about these products, without corresponding smart information with which to evaluate whether they are in fact locally produced.¹⁴⁸ While the traditional rationale for GIs is producer focused, in contrast to trademark law, which centers on preventing consumer deception, tracermarks would have the same function in either domain: the success of GI-protected goods may depend on whether attributes can be traced more rigorously in the postproduction value network, to the consumer's satisfaction.

Overall the tracermark proposal is rooted in the insight that technical specifications and standards do not obviate public regulation per se, but rather complement and extend public initiatives. Transparency of this interface is an important criterion of good global governance. The operation of these global value networks can benefit greatly from wider social participation and oversight. As Tim Bartley has cogently observed from his work on sustainable forestry and apparel manufacturing in Indonesia, attention to how standards embedded in codes of conduct are implemented on the ground can make the critical difference in whether they operate as intended. Whether public or private, rules "on the books" can deviate greatly from rules "in action."¹⁴⁹ From a knowledge governance perspective, tracermarks involve multiple stakeholders in the implementation and sharing of "rules"—that is, the credence attributes now embedded in standards. Because of this heightened involvement by diverse stakeholders, tracermarks thus have a greater potential to hew to objective information, facilitating greater adherence to standards "in action." They might also allow relatively disempowered stakeholders, such as factory workers, within the value network to have more direct connection to consumers, who then could make choices based upon the information provided on the ground.¹⁵⁰

148. Irene Calboli, In *Territorio Veritas: Bringing Geographical Coherence into the Definition of Geographical Indications of Origin Under TRIPs*, 6 WIPO J. 57, 66–67 (2014); see also Delphine Marie-Vivien et al., *Trademarks, Geographical Indications and Environmental Labelling to Promote Biodiversity: The Case of Agroforestry Coffee in India*, 32 DEV. POL'Y REV. 379, 383–84 (2014) (arguing against descriptively termed trademarks that fail to provide a guaranteed link between a product and the product's origin).

149. Bartley, *Puzzle of Rules*, *supra* note 10, at 232; Bartley, *Layering of Rules*, *supra* note 10.

150. See *Laborlink Services*, GOOD WORLD SOLUTIONS, <http://goodworldsolutions.org/services/> (last visited Nov. 20, 2015) and *Transparent Supply Chains for Corporate Brands: A Voice for Global Workers*, LABORVOICES, <http://laborvoices.com> (last visited Nov. 20, 2015) for examples of websites that allow workers to report conditions in their factories. Other initiatives involve matching employers who give living wages to workers who seek them. See *How to Become a Living Wage Employer*, LIVING WAGE FOUND., <http://www.livingwage.org.uk/how-become-living-wage-employer> (last visited Nov. 20, 2015); see also David Welsh, Opinion, *Fair Trade for the Global Garment Industry*, N.Y.

This proposal bears some similarity to emerging proposals for regulatory redesign, some of which are premised on behavioral economics and others that are skeptical of behaviorism as a panacea. For instance, tracermarks are one example of the concept of “mapping” and structuring of complex choices, advocated by economist Richard Thaler and legal scholar Cass Sunstein.¹⁵¹ According to these behaviorists, the presentation of information in particular ways allows less than completely rational actors to make different choices than they would without such information.¹⁵² A trivial example is Netflix, which allows customers to “search movies by actor, director, genre, and more, and if they rate the movies they have watched, they can also get recommendations based on the preferences of other movie lovers with similar tastes, a method called ‘collaborative filtering.’”¹⁵³ The tracermark concept also resembles the suggestions for regulatory reform by those critical of behavioral approaches, such as legal scholars Omri Ben-Shahar and Carl Schneider, who are skeptical of ubiquitous disclosure requirements, which they claim few people read and even fewer understand. Rather than mandated disclosure (or notice), they recommend relying instead on intermediaries (including aggregators and savvy consumers) for the provision of comprehensible information relevant to decision-making.¹⁵⁴

Thus tracermarks in combination with information intermediaries and crowd-sourcing are potential legal hacks that could have profound consequences on ability to govern via information rather than by mandate. One possible advantage of this approach is that it would not necessarily involve amendments to existing public law, whether treaty law or domestic law, but can utilize the flexibilities in existing IP legal regimes. The platform could arise through the initiatives of existing private intermediaries (whether for-profit or not-for-profit) should they choose to invest in smart information systems. This is already starting to happen in some sectors.

TIMES (May 20, 2015), <http://nytimes.com/2015/05/21/opinion/fair-trade-for-the-global-garment-industry.html>.

151. See THALER & SUNSTEIN, *supra* note 14, at 91–97.

152. *Id.*

153. *Id.* at 96.

154. OMRI BEN-SHAHAR & CARL E. SCHNEIDER, MORE THAN YOU WANTED TO KNOW: THE FAILURE OF MANDATED DISCLOSURE 185–90 (2014).

VII. CONCLUSION: INFORMATION—FROM DUMB TO SMARTER?

Some claim that IP is becoming largely irrelevant as the Internet has undermined the logic of false scarcity on which it is premised.¹⁵⁵ One of my core arguments here is the opposite: We are indeed still faced with scarcity. This scarcity is of a different kind than the one IP typically addresses. IP has not accounted for much of innovation and creativity around extending markets for objective information, although its core concern is encouraging innovation in general.

Verifiable knowledge is what this Article has referred to as “smart information.” Skeptics might ask whether the new “can-opener” or untested assumption in this project is the presumed demand for smart information. Do consumers really care about credence attributes, or do they mostly want to minimize the time it takes them to shop for items? Are consumers largely satisfied with the reliance on price and marketing to give them relevant information? No doubt, consumers are acclimated to the current default norms of lack of reliable access to information about credence attributes. Similarly, firms offering products and services are used to operating within a communicative environment dominated by marketing rather than objective information about credence attributes. This Article has provided some evidence that many consumers would embrace a much larger market of smart information than currently available. Firms might participate more consistently if the infrastructure were in place and if they perceived competitive advantage from doing so; some large players are moving in this direction already. Ideally, as well, the least empowered producers such as musicians and other creative workers, factory workers and farmers would contribute to information in the value network, which would allow them to communicate more directly with the consumers who may care about their working conditions. This proposal thus has the potential to shorten the ethical and communicative distance between consumers and the most distant and typically disconnected network nodes.

This Article identifies the general lack of attention to innovate for smart information, which is one factor that stymies the

155. Lemley, *supra* note 2, at 507 (“The Internet certainly undermines the logic of IP as an incentive to commercialize works once they are created, but it may also undermine the classic theory of IP as an incentive to create. Once creation is cheap enough, people may do it without the need for any IP incentive. This suggests that we should pay more attention to alternative means of encouraging production, rather than assuming the superiority of IP. IP will continue to exist in a post-scarcity economy, but it is likely to recede in importance as a driver of creation.” (citations omitted)).

development of new markets for IP-protected goods. While information may not be perfect, it can be made smarter than it currently is, especially if aided and abetted by the very Internet-based institutions and intermediaries that are transforming the way we consume IP-protected goods and services. And what's good for information may also be good for IP.