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Law Professor as Artist: Themes and Variations in Keith Aoki's Intellectual Property Scholarship

If we do not take into account the distributive effects of [intellectual property] law and practices, the question is this: *Do we control our institutions and inventions or do they, like Frankenstein's monster, control us?*¹

All things in the universe start from a point and return to a point. One point calls up a new point, and extends into a line. . . . Existence is a point and life is a line, so I am also a point and a line.²

For over a decade before he went to law school, Professor Keith Aoki was an artist: a visual art student and artist in Detroit, highly influenced by the explosive cultural and political energy of the sixties,³ an avant-garde performance artist in New York as well as a rock musician who played and toured in many places. Perhaps his experiences as an artist and musician influenced his decision to

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¹ Keith Aoki, *Distributive and Syncretic Motives in Intellectual Property Law (with Special Reference to Coercion, Agency, and Development)*, 40 U.C. DAVIS L. REV. 717, 801 (2007) (footnote omitted); see also KEITH AOKI, SEED WARS: CONTROVERSIES AND CASES ON PLANT GENETIC RESOURCES AND INTELLECTUAL PROPERTY 128 (2008).

² Lee Ufan, *Marking Infinity: From Point and from Line*, GUGGENHEIM MUSEUM, <http://web.guggenheim.org/exhibitions/leeufan/series/from-point-and-from-line> (follow "Quote") (last visited June 10, 2012).

³ See *Time and Place: Art of Detroit's Cass Corridor*, YOUTUBE (Apr. 26, 2009), <http://www.youtube.com/watch?v=Kc0kkQcla8Q>.

become a serious scholar of intellectual property law, which to a large extent is concerned with expressive and inventive activity. No doubt his art and music influenced his perspectives in this area.

While it may be far-fetched to call legal scholarship artistic, it certainly is a type of creative activity. In both legal scholarship and art, individuals work within a universe of preexisting knowledge and prevailing community norms, while developing distinctive and often recognizable styles. Keith managed to maintain his identity as a visual artist within the text-based tradition of legal scholarship. He literally drew pictures inspired by comic book artists he much admired.⁴ Thus he was *unbound* by traditional practices at the same time that he relied upon them to create new and highly original works that both channeled and reinscribed past creation, inflecting it with current and prophetic dimensions. This intergenerational dynamic process of creation is the abiding concern of intellectual property as a distinct area of law regarding knowledge regulation.

And speaking of knowledge, what do we *know* about Keith Aoki, the intellectual property scholar *qua* legal artist? Surely he was the only one of us who illustrated fair use through graphic art, which showed that even “the most troublesome”⁵ of all of copyright’s many vexing doctrines can be explained with exuberance and even clarity. But although *Bound by Law*⁶ may be his best-known work (judging from the number of downloads—over 500,000 as of the time of this writing⁷—and the existence of mash-ups on YouTube⁸), he actually wrote in a number of different areas of intellectual property. He not only addressed copyright and trademark law, but also became fascinated with the protection of plant genetic resources (PGRs). And it is astounding how quickly Keith responded to the rapidly changing political economy of intellectual property. Global economic disparities bring into sharp relief the distributional justice issues often effaced by the “technical” nature of domestic intellectual property law

⁴ His first law review article in the form of graphic art is *Dead Lines, Break Downs and Troubling the Legal Subject or “Anything You Can Do, I Can Do Meta,”* 73 OR. L. REV. 551 (1994), which he coauthored with Garrett Epps.

⁵ *Dellar v. Samuel Goldwyn, Inc.*, 104 F.2d 661, 662 (2d Cir. 1939).

⁶ KEITH AOKI ET AL., *TALES FROM THE PUBLIC DOMAIN: BOUND BY LAW?* (2006), available at <http://www.law.duke.edu/cspd/comics/zoomcomic.html>.

⁷ Timothy McCormack, *Book Review: Bound by Law? A Tribute to Keith Aoki*, SEATTLEPI.COM (Sept. 22, 2011, 2:25 PM), <http://blog.seattlepi.com/timothymccormack/tag/bound-by-law/>.

⁸ E.g., A.J. Brandt, *Free Culture Remix*, YOUTUBE (Feb. 22, 2007), <http://www.youtube.com/watch?v=uGe3gJx3Gnk>.

and policy. Soon after the 1995 adoption of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)⁹—a treaty that completely rearranged the regulatory landscape of international intellectual property, Keith was on top of it. His brilliant 1996 article, “(Intellectual) Property and Sovereignty: Notes Toward a Cultural Geography of Authorship,”¹⁰ set forth an important intellectual framework for approaching this field.¹¹ Simultaneously, however, Keith was also very much a student of the local community, as shown by his commitment to local government law scholarship¹² and his focus on locally grown food within his work on PGRs. As a Cass Corridor artist in Detroit during his early years, he had been immersed in local community development, and this early commitment continued throughout his legal career, including within his theories of intellectual property.

The area of PGRs in particular is an intricate mix of patent, trade secret, and *sui generis* forms of law. Profound distributional effects are at stake here for the global poor who have insufficient food supply, as well as for smallholder farmers in resource-poor regions who, more often than not, are not fully represented and do not control the regulatory structures within which their activities are situated.¹³

⁹ The Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Annex 1C of the Marrakesh Agreement Establishing the World Trade Organization [hereinafter TRIPS], available at http://www.wto.org/english/docs_e/legal_e/27-trips.pdf.

¹⁰ Keith Aoki, *(Intellectual) Property and Sovereignty: Notes Toward a Cultural Geography of Authorship*, 48 STAN. L. REV. 1293 (1996).

¹¹ See Keith Aoki, *Neocolonialism, Anticommons Property, and Biopiracy in the (Not-So-Brave) New World Order of International Intellectual Property Protection*, 6 IND. J. GLOBAL LEGAL STUD. 11 (1999) [hereinafter Aoki, *Neocolonialism*]; Keith Aoki, *Considering Multiple and Overlapping Sovereignities: Liberalism, Libertarianism, National Sovereignty, “Global” Intellectual Property, and the Internet*, 5 IND. J. GLOBAL LEGAL STUD. 443 (1998) [hereinafter Aoki, *Overlapping Sovereignities*].

¹² See Keith Aoki, *Direct Democracy, Racial Group Agency, Local Government Law, and Residential Racial Segregation: Some Reflections on Radical and Plural Democracy*, 33 CAL. W. L. REV. 185 (1997); Keith Aoki et al., *(In)visible Cities: Three Local Government Models and Immigration Regulation*, 10 OR. REV. INT’L L. 453 (2008); John Shuford, *“The Tale of the Tribe and the Company Town”: What We Can Learn About the Workings of Whiteness in the Pacific Northwest*, 90 OR. L. REV. 1273 (2012).

¹³ Ismail Serageldin, *Sustainable Agriculture for a Food Secure Third World*, 66 SOC. RES. 105, 107–08 (1999) (“How ironical is it that so much hunger pervades rural areas that are the primary food producing areas. The challenge for us is to recognize that these poor farmers, who are producing the bulk of the food in the world, are the ones who have no voice and whom we have to reach. . . . Some 70% of the land, 80 to 90% of the water in the developing countries, and the biodiversity in them, is used by the farmers. . . . It is for this reason that agricultural transformation, if it will be fully effective, must take place at the smallholder level in the developing world. Policymakers and scientists must work in

Food is not only necessary for survival, but also is a basic driver of economic and political power—so taken for granted by many of us that it is often overlooked as a subject of serious scholarship.¹⁴ Keith arrived at this topic through his earlier intellectual property scholarship, particularly his work on open source licensing.

In 2003, the Oregon-based intellectual property law professors, led by Professor Lydia Loren at Lewis & Clark Law School, organized the Pacific Intellectual Property Scholars Conference. This is when I first glimpsed Keith's PGRs project. The following year, Keith organized another conference at the University of Oregon, entitled *Malthus, Mendel, and Monsanto: Intellectual Property and the Law and Politics of Global Food Supply*.¹⁵ At this conference, Professor Madhavi Sunder gave an inspiring keynote speech that would become the basis of the important work coauthored with Professor Anupam Chander, "The Romance of the Public Domain."¹⁶ Oregon Tilth provided a wonderful bounty of organic and local food—years before eating "locally grown" food became the standard it is today. At these and subsequent conferences, Keith steadily supplied more and more illustrations of the various regimes governing PGRs to help the uninitiated make some sense of all of the different governance nodes.¹⁷ This period of his life evidenced much intellectual excitement and energy.

Keith's preoccupation with PGRs led to his writing a book, *Seed Wars: Controversies and Cases on Plant Genetic Resources and Intellectual Property*.¹⁸ He also wrote several prequel and follow-up articles that (sadly) he did not illustrate with his wonderful drawings.

the closet possible partnership with such farmers—farmers with backbreaking work and very little output to show for their harrowing effort.”).

¹⁴ See William H. McNeill, *How the Potato Changed the World's History*, 66 SOC. RES. 67 (1999).

¹⁵ Keith Aoki, *Malthus, Mendel, and Monsanto: Intellectual Property and the Law and Politics of Global Food Supply: An Introduction*, 19 J. ENVTL. L. & LITIG. 397 (2004).

¹⁶ Anupam Chander & Madhavi Sunder, *The Romance of the Public Domain*, 92 CALIF. L. REV. 1331, 1339–61 (2004).

¹⁷ Keith Aoki, Professor, Univ. of Cal. at Davis, King Hall Sch. of Law, Food Forethought: Intergenerational Equity and Global Food Supply—Past, Present, and Future, PowerPoint Presentation at the University of Wisconsin Symposium on Intergenerational Equity and Intellectual Property (Nov. 12–13, 2011) (reproducing charts that document corporate concentration within agricultural industries—Cargill/Monsanto, ConAgra, and Novartis/Archers Daniel Midland—first published in Mary K. Hendrickson & William D. Heffernan, *Opening Spaces Through Relocalization: Locating Potential Resistance in the Weaknesses of the Global Food System*, 42 SOCIOLOGIA RURALIS 347, 351–53 (2002)) (on file with author).

¹⁸ AOKI, *supra* note 1.

To put it mildly, the regulation of PGRs is byzantine; it is characterized by overlapping international regimes¹⁹ as well as multiple and non-mutually exclusive domestic administrative frameworks.²⁰ And it foregrounds profound political issues of the relationship of formal intellectual property systems to human rights (among them, the right to food and farmers' rights),²¹ indigenous rights (encompassing, among other things, traditional knowledge), and sustainable development (including sustainable agriculture and biological diversity). Moreover, to be a serious scholar in this area means one must understand genetic technology, which is definitely not a task for the uninformed gadfly. As an artist, Keith waded into very technical waters, but he managed to master and then to simplify without unduly reducing this tough but important subject. No doubt because of the daunting nature of the enterprise, relatively few other U.S. legal scholars have done so.

This plethora of intellectual engagements was somewhat typical of Keith generally—in his scholarship, he had the capacity, drive, and tenacity to write in several fairly disparate areas of law outside of intellectual property. And in addition to engaging with multiple types of intellectual property, both international and domestic, he transplanted other disciplinary and theoretical insights into this area of law, which is still dominated by liberal utilitarian assumptions and analyses. In his last piece on PGRs, “Food Forethought: Intergenerational Equity and the Global Food Supply,”²² his views were informed by theories about agricultural biotechnology,²³

¹⁹ These international components include the International Undertaking on Plant Genetic Resources for Food and Agriculture (IUPGR); the International Undertaking on Plant Genetic Resources for Food & Agriculture, Res. 8/83 (1983); the International Union for the Protection of New Varieties of Plants (UPOV); the International Union for the Protection of New Varieties of Plants, Acts of 1961, 1978, and 1991; the United Nations Convention on Biological Diversity (CBD), 1992; TRIPS, *supra* note 9, and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR), 2001. These organizations and agreements are described at length in SEED WARS, *supra* note 1, at 69–90.

²⁰ In the U.S. context, these include the Food and Drug Administration, the Environmental Protection Agency, and the Department of Agriculture. Keith Aoki, *Food Forethought: Intergenerational Equity and Global Food Supply—Past, Present, and Future*, 2011 WIS. L. REV. 399, 462–70.

²¹ AOKI, *supra* note 1, at 76–77 (tracing origin and defining farmers' rights).

²² Aoki, *supra* note 20.

²³ *Id.* at 401 n.2; see also STEPHEN B. BRUSH, FARMERS' BOUNTY: LOCATING CROP DIVERSITY IN THE CONTEMPORARY WORLD 28–34 (2004).

economic theory,²⁴ international development theory,²⁵ political theory, as well as legal theory in the form of critical theory,²⁶ property theory,²⁷ theories underlying natural resources law and environmental law,²⁸ and yes, even intellectual property theory.²⁹ One of his many clever wordplays was between “raw” and “cooked” knowledge. Keith adapted this memorable distinction from Claude Levi-Strauss’s work, where it originally dichotomized the “natural” from the “civilized.”³⁰ In intellectual property, Keith used the former to refer to knowledge that has not been added with the type of “value” recognized by the standard doctrines of intellectual property law, and the latter to refer to knowledge with qualities paving the way for its commodification: requirements for patentability, for example, include novelty, non-obviousness, and utility. This is only one of myriad ways in which Keith transformed (to use a fair use term of art)³¹ preexisting metaphors and symbols into his own unique vernacular.

And like a visual artist who goes back to certain topics and reworks them in different variations, Keith’s work is characterized by many enduring themes over the twenty-year period of his intellectual

²⁴ Aoki, *supra* note 20, at 403 n.6; *see also, e.g.*, Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347, 347–50 (1967).

²⁵ Aoki, *supra* note 20, at 406 n.11, 414 nn.32–33; *see also* DOUGLASS C. NORTH & ROBERT PAUL THOMAS, *THE RISE OF THE WESTERN WORLD: A NEW ECONOMIC HISTORY* (1973); MARTHA C. NUSSBAUM, *WOMEN AND HUMAN DEVELOPMENT: THE CAPABILITIES APPROACH* (2000); AMARTYA SEN, *INEQUALITY REEXAMINED* (1992); Martha C. Nussbaum, *Capabilities as Fundamental Entitlements: Sen and Social Justice*, 9 FEMINIST ECON. 33 (2003).

²⁶ Aoki, *supra* note 20, at 422 n.61, 445 n.160; *see also* Robert Westley, *Many Billions Gone: Is It Time to Reconsider the Case for Black Reparations?*, 40 B.C. L. REV. 429 (1999).

²⁷ Aoki, *supra* note 20, at 403 n.6, 406 n.9; *see also* JOHN STUART MILL, *UTILITARIANISM* (George Sher ed., Hackett Publ’g Co. 1979) (1861); ROBERT NOZICK, *ANARCHY, STATE, AND UTOPIA* 152–53 (1974); Carol Rose, *The Comedy of the Commons: Custom, Commerce, and Inherently Public Property*, 53 U. CHI. L. REV. 711 (1986); Amartya Sen, *Utilitarianism and Welfarism*, 76 J. PHIL. 463, 463–64, 468, 471 (1979).

²⁸ Aoki, *supra* note 20, at 403 n.6; *see also* Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968).

²⁹ *See* Aoki, *supra* note 20, at 420 n.57, 430 n.101; Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 SCIENCE 698 (1998).

³⁰ Aoki, *supra* note 20, at 405 n.8; *see also* CLAUDE LEVI-STRAUSS, *THE RAW AND THE COOKED: INTRODUCTION TO A SCIENCE OF MYTHOLOGY* (Harper & Row Publishers trans., 1969) (1964).

³¹ *See* Campbell v. Acuff-Rose Music, Inc., 510 U.S. 569 (1994) (determining whether a parody of the song “Oh, Pretty Woman” was a fair use under the Copyright Act of 1976).

property scholarship.³² In “Food Forethought,” Keith addressed various questions concerning the relationship of intellectual property to intergenerational equity. He discussed the justice-based case for recognition of the contribution of past farmers to the world’s current supply of PGRs and knowledge about PGRs.³³ He noted the decisive shift from public to private agricultural applied research, as well as the impact of private standard setting on access to food markets.³⁴ He reminded us again of the recent and accelerating global concentration of food chains, both vertically and horizontally.³⁵ He described the rise of genetically engineered crops and the hands-off approach to regulation thereof in the United States.³⁶ And he placed all of the above in a global context. Anyone familiar with Keith’s work could trace the iterative progression of these concepts throughout this piece and others. Keith often forecasted an immediate future in which it would be difficult to hold the line against the increasingly dominant norm of PGRs as “sovereign property,”³⁷ hardening the territorial construction of PGRs through the influences of major multilateral treaties.³⁸ Any opposing frames proposed by civil society groups or representatives of social movements in favor of a transnational “food sovereignty of farmers”³⁹ and food security for consumers are much harder to articulate, by contrast. As usual, Keith was well ahead of the curve. Current food writers such as Michael Pollan⁴⁰ and Mark Bittman,⁴¹ and even First Lady Michelle Obama,⁴² are just now raising popular awareness of the various politics of food.

³² Keith’s first documented intellectual property piece was published in 1991 in the *Cardozo Arts and Entertainment Law Journal*. See Keith Aoki, *Contradiction and Context in American Copyright Law*, 9 *CARDOZO ARTS & ENT. L.J.* 303 (1991).

³³ Aoki, *supra* note 20, at 403–22.

³⁴ *Id.* at 438–47.

³⁵ *Id.* at 447–56; see also AOKI, *supra* note 1.

³⁶ Aoki, *supra* note 20, at 456–70.

³⁷ AOKI, *supra* note 1, at 120, 126.

³⁸ *Id.* at 120 (among them, the CBD, the ITPGR, and TRIPS).

³⁹ Aoki, *supra* note 20, at 477.

⁴⁰ MICHAEL POLLAN, *THE OMNIVORE’S DILEMMA: A NATURAL HISTORY OF FOUR MEALS* (2006).

⁴¹ Mark Bittman, *The Bittman Archives*, <http://content.markbittman.com/articles> (last visited June 10, 2012).

⁴² *Learn the Facts, LET’S MOVE!*, <http://www.letsmove.gov> (last visited June 10, 2012).

Keith's proposed centerpiece for an alternative future is what he and others called "Bio-Linux."⁴³ He envisioned this type of governance model for PGRs as comprised of an international movement of farmers who could employ a "commons-based peer production network [to] facilitate[] the sharing of plant genetic information and biotechnological tools."⁴⁴ Bio-Linux would be a type of private ordering for progressive purposes, an open source license for PGRs, modeled along the lines of open source software.⁴⁵ This proposal was built on an emerging understanding of the possible parallels between open source software and open approaches to biological research, articulated also by Drs. Janet Hope,⁴⁶ Richard Jefferson,⁴⁷ Margaret Kipp,⁴⁸ and K. Ravi Srinivas,⁴⁹ among others.⁵⁰

The overarching intellectual property policy tension concerns calibrating the correct balance between private exclusive rights granted through patents or other forms of intellectual property and the public interest in access to knowledge for the purpose of generating new forms of knowledge. Like its software counterpart Linux, Bio-

⁴³ AOKI, *supra* note 1, at 95 & n.165.

⁴⁴ *Id.* at 115.

⁴⁵ *See id.* at 109–22.

⁴⁶ *Id.* at 112 (citing Janet Elizabeth Hope, Open Source Biotechnology (Dec. 2004) (unpublished Ph.D dissertation, Australian National University)); *see also* JANET HOPE, BIOBAZAAR: THE OPEN SOURCE REVOLUTION AND BIOTECHNOLOGY (2008).

⁴⁷ AOKI, *supra* note 1, at 95 n.165 (describing Biological Innovation for Open Society (BIOS)). For more information regarding BIOS, *see Bios Initiative*, BIOS, <http://www.bios.net/daisy/bios/bios.html> (last visited June 10, 2012).

⁴⁸ AOKI, *supra* note 1, at 110 n.62 (citing Margaret E.I. Kipp, *Software and Seeds: Open Source Methods*, FIRST MONDAY (Sept. 2005), <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/rt/printerFriendly/1276/1196>).

⁴⁹ AOKI, *supra* note 1, at 110 n.62 (citing Ravi Srinivas Krishna, *Innovations, Commons and Creativity: Open Source, Bio Linux and Seeds*, WORLD ASS'N FOR CHRISTIAN COMM'N., <http://www.waccglobal.org/en/20031-intellectual-property-rights-and-communication/653-Innovations-commons-and-creativity-Open-Source-Bio-Linux-and-Seeds.html> (last visited June 10, 2012)).

⁵⁰ For example, some scholars have attempted to apply these principles in the pharmaceutical and other biomedical research areas. AOKI, *supra* note 1, at 95 n.165 (citing Stephen M. Maurer et al., *Finding Cures for Tropical Diseases: Is Open Source an Answer?*, 6 MINN. J. L. SCI. & TECH. 169 (2004)); *see also* Peter Lee, *Contracting to Preserve Open Science: Consideration-Based Regulation in Patent Law*, 58 EMORY L.J. 889 (2009) (describing noncommercial licensing in university biomedical technology transfer); Dianne Nicol & Janet Hope, *Cooperative Strategies for Facilitating Use of Patented Inventions in Biotechnology*, in PATENT LAW AND BIOLOGICAL INVENTIONS 85, 100–07 (Matthew Rimmer ed., 2006) (describing open source approach for basic research in biologics); *see generally* Esther van Zimmerman et al., *Patent Pools and Clearinghouses in the Life Sciences*, 29 TRENDS IN BIOTECHNOLOGY 569 (2011) (describing various collaborative research licensing models).

Linux is a licensing method, using the exclusive rights generated by public laws in the form of intellectual property as a platform for generating open access through private contract. It turns the “property” aspect of intellectual “property” inside out: permission to build upon the original creation is conditioned upon agreement to license any subsequent creation to others upon the same open access conditions to which the original licensee is subject. Through this open source licensing mechanism, Bio-Linux thus has the potential to “flip markets in vice into markets for virtue.”⁵¹ This is a marvelously elegant concept and has been spectacularly successful in generating innovation in the digital world, particularly but not exclusively in industrialized countries. Keith hoped that in the area of biological research within and for developing countries, this open source approach to plant breeding might have several salutary effects. This model might counter the suffocating effect of patent lock-ups in agricultural biotechnology, empower farmers as both users and developers of such technology, encourage the development of local plant varieties adapted to specific climate and other conditions, preserve genetic diversity, and spread risks among farmers.⁵²

Keith was also aware of possible limitations to this approach as applied to PGRs.⁵³ He meticulously and repeatedly documented the barriers posed by corporate ownership as well as sovereign control over PGRs. These are critical insights, indeed, and must influence all attempts to address food security and poverty reduction through agricultural means. But although Keith noted the presence of “seed hackers,”⁵⁴ who accessed proprietary seed technology for the purpose of making further innovations, Keith may not have appreciated the full ramifications of this documented social practice. The very existence of these kinds of rural outlaws, creating what have been documented as “stealth seeds”⁵⁵ (a term he would have loved),

⁵¹ Janet Hope et al., *Regulatory Capitalism, Business Models and the Knowledge Economy*, in *REGULATORY CAPITALISM: HOW IT WORKS, IDEAS FOR MAKING IT WORK BETTER* 59 (John Braithwaite ed., 2008).

⁵² See Keith Aoki, “*Free Seeds, Not Free Beer*”: *Participatory Plant Breeding, Open Source Seeds, and Acknowledging User Innovation in Agriculture*, 77 *FORDHAM L. REV.* 2275, 2299–2305 (2009).

⁵³ *Id.* at 2305–08.

⁵⁴ See *id.* at 2301 (citing BORU DOUTHWAITE, *ENABLING INNOVATION: A PRACTICAL GUIDE TO UNDERSTANDING AND FOSTERING TECHNOLOGICAL CHANGE* 206–07 (2002)).

⁵⁵ Ronald J. Herring, *Stealth Seeds: Bioproperty, Biosafety, Biopolitics*, 43 *J. DEV. STUD.* 130 (2007).

suggests that the policy narrative may go beyond the simple binary between private control by corporate interests and the public interest represented symbolically through farmers' rights.

For example, Brazilian and Indian farmers are adapting these stealth seeds for their own use, in defiance of both corporate control of the technology through intellectual property protection and regulatory control by state biosafety protocols. These farmers are arguably engaging in a kind of "biopolitics" based on applied practical science.⁵⁶ Their lived experience with proprietary *Bt* cotton (genetically modified to resist the bollworm pest) has led them to create less expensive unlicensed versions of the seeds.⁵⁷ This is evidence that farmers in widely dispersed locations are exercising a kind of political as well as economic agency with respect to the very transgenic technology that is often reviled by their urban-based NGO or political representatives.

As an adherent of critical geography,⁵⁸ Keith surely appreciated that rural areas in developing countries are spaces with widely varying growing conditions. And even if corporate research and development results in technology of potential value to developed-world climates, the actual act of transmitting that technology effectively is quite time- and labor-intensive.⁵⁹ In a broader sense, the worthy goal of creating a global commons of agricultural biotechnology may fall short without significant commitment of human and other resources to effectively transfer and adapt technology to local needs.⁶⁰ As such, there is a compelling need to experiment under local conditions for solutions that lower inputs and raise outputs. These are also local sites of scientific experimentation often located within global sectors having far less overlap with the circuits of discursive power often originating in the global North than do the original software open source advocates.

Keith realized that "participatory plant breeding"⁶¹ might be a critical key to the food security puzzle, but he envisioned it solely in the form of a transnational farmers' movement manifested through a

⁵⁶ *See id.*

⁵⁷ *Id.* at 134–35.

⁵⁸ *See* Hari M. Osofsky, *The Geography of "Moo Ha Ha": A Tribute to Keith Aoki's Role in Developing Critical Legal Geography*, 90 OR. L. REV. 1233 (2012).

⁵⁹ *Cf.* Margaret Chon, *Sticky Knowledge and Copyright*, 2011 WIS. L. REV. 177, 210.

⁶⁰ Peter Lee, *Transcending the Tacit Dimension: Patents, Relationships, and the Industrial Organization of Technology Transfer*, 100 CALIF. L. REV. (forthcoming 2012).

⁶¹ AOKI, *supra* note 1, at 114; *see also* Aoki, *supra* note 53, at 2286.

peer-production framework. This is a frame originally imagined and executed within digitally dense spaces—and one that presumably resists rather than adapts proprietary, especially transgenic, technology. The existence of stealth seeds, as well as alternative modalities of private regulation fostering collaborative innovation,⁶² show that Bio-Linux is an important but incomplete contribution to the conceptual toolkit. Multiple governance scenarios in addition to peer-produced open source seeds might valorize the decentralized efforts of farmers, while contributing to improvements in agricultural science for all global stakeholders.

The production of global public goods in this context is totally unlike the production of drugs for HIV/AIDS, which is a disease affecting consumers in temperate and tropical countries alike. A phenomenon shared by both global pharmaceuticals and seeds production is the asymmetry of market need compared to the locus of most research and development (R&D). For example, much agricultural biotech research is by and for regions with temperate climates; this is where most of the R&D capacity is located and where most of the relevant (that is, wealthy) markets are located. Markets in developing countries for appropriate agricultural biotechnology (for example, drought-tolerant as well as pest-resistant varieties) may be neglected for this and other reasons,⁶³ just as these markets have been neglected for tropical medicines. Addressing this market failure requires coordination by multilateral stakeholders in concert with decentralized, bottom-up approaches such as peer-production so that technologies other than just those that happen to be appropriate for both rich and poor countries are incentivized.⁶⁴ As Keith highlighted in *Seed Wars* and elsewhere, much early research on PGRs in the United States was funded by the federal government. This early

⁶² Hope et al., *supra* note 52, at 120–22 (describing open source patenting approach to biotechnology patents as one among several to counteract barriers to innovation posed by exclusive rights).

⁶³ Aoki, *supra* note 53, at 2303 (“[C]orporations are reluctant to invest in any field where the market size is too small or the profitability of the venture is not readily apparent.” (footnote omitted)); *see also* ROBERT PAARLBERG, STARVED FOR SCIENCE: HOW BIOTECHNOLOGY IS BEING KEPT OUT OF AFRICA 81–84, 195 (2008) (foregrounding the moral hazard involved in social justice claims made on behalf of the rural poor by NGOs when regulatory risk/benefit assessments may diverge between industrialized and developing regions).

⁶⁴ *But see* Anil Gupta: *Innovation Advocate*, TED.COM, http://www.ted.com/speakers/anil_gupta.html (last visited June 10, 2012) (sourcing technology from the poor to license to the rich).

public investment within industrialized countries such as the United States laid a firm foundation for private advances that are now subject to exclusive rights.⁶⁵ In his numerous talks on this subject, Keith often highlighted the significant role of government entities in supporting agricultural research, and he tirelessly advocated for an expanding public role to address some of the unique needs faced by developing-world regions.

The optimal public-private structure of global agricultural research is a topic far beyond the scope of this Tribute.⁶⁶ Suffice it to say that the debate over regulatory approaches for the production of global public goods where market needs and technology capacity diverge between resource-rich and resource-poor areas is critically important for everyone who has a stake in food consumption, preservation, and innovation—that is to say, all of us. As Keith wrote in his conclusion to “Food Forethought,” “Food is different However, it is far from certain that decision-makers will recognize that the food system is different from other commodities and that it needs different policies and rules . . . so as to ensure that a modicum of distributive equity is included in decisions affecting food production.”⁶⁷ He thus challenged us to build upon his important efforts to make this area more transparent from a legal perspective in order to address the ongoing hunger of millions of people.⁶⁸

⁶⁵ AOKI, *supra* note 1, at 9, 14–16; *see also* Peter Lee, *Toward a Distributive Commons in Patent Law*, 2009 WIS. L. REV. 917, 917 (“[P]ublic institutions, which contribute enormous amounts of ‘scientific capital’—money, labor, and bodily materials—to life sciences research, can effectively leverage these contributions to enhance access to downstream patented technologies.”).

⁶⁶ *See generally* Gregory D. Graff et al., *The Public—Private Structure of Intellectual Property Ownership in Agricultural Biotechnology*, 21 NATURE BIOTECHNOLOGY 989 (2003); Michael J. Madison et al., *Constructing Commons in the Cultural Environment*, 95 CORNELL L. REV. 657 (2010) (describing various forms of participation in commons and pooling arrangements).

⁶⁷ Aoki, *supra* note 20, at 478; *see also* Sakiko Fukuda-Parr, *The Role of Government Policy: For Growth, Sustainability and Equity*, in *THE GENE REVOLUTION: GM CROPS AND UNEQUAL DEVELOPMENT* 227–28 (Sakiko Fukuda-Parr ed., 2007) (“[W]hat are the interests of the stakeholders in the developing countries, of local seed companies, research institutions . . . and last but not least, of the farmers themselves? . . . Alternatively, where are the interest groups for a pro-poor agenda?”).

⁶⁸ Serageldin, *supra* note 13, at 106 (“[I]t is unconscionable and unacceptable—indeed obscene—that millions should continue to be hungry. We must therefore all become the new abolitionists.”).

A picture of one of Keith's early artworks reveals a geometric pattern with a subdued palette of celadon and gray.⁶⁹ This somewhat architectural and even surprisingly formalistic approach to art shows that like most good artists, Keith had a very solid grasp of the basics of his artistic craft. After many variations, Keith remained preoccupied with his signature themes of dignity, fairness, and freedom in all of his scholarship, including his enormous body of intellectual property scholarship.

Intellectual property scholars often state that knowledge is an input to the creation of more knowledge. When I describe Keith's intellectual legacy in the area of intellectual property, I cannot help but also think about his impact upon intergenerational intellectual communities.⁷⁰ Keith was enormously generous to other scholars. During his time at the University of Oregon, he poured a tremendous amount of energy into organizing two 1996 conferences, one of which resulted in our only (to my regret) coauthored piece,⁷¹ on critical race praxis. The other conference was entitled *Innovation and the Information Environment*,⁷² a ground-breaking gathering which included people involved in what is sometimes called "cyberlaw." These included diverse figures from the open source movement (such as Richard Stallman and John Perry Barlow, both of whom are generally acknowledged as among the foundational figures of the Internet), visual artists, law professors, and activists. Keith, the conference maestro, was out in full force at all public events; he remixed various ideas and people well before the term "remixing" gained ascendance in copyright and cyberlaw literature. Like so many other scholars influenced and supported by Keith, I can point to articles that probably would never have seen the light of day but for his steady encouragement and belief in my intellectual vision. I can only hope that the reverse was true as well.⁷³

⁶⁹ See JAMES BOYLE ET AL., LIFE AS THE ART OF KINDNESS: A REMEMBRANCE (2011), available at <http://www.thepublicdomain.org/KeithAokiRemembrance.pdf>.

⁷⁰ Because we both worked in the Pacific Northwest region and had shared scholarly commitments within intellectual property and race scholarship, I have many mental snapshots of him, particularly during his thirteen years at the University of Oregon.

⁷¹ Keith Aoki & Margaret Chon, *Introduction: Critical Race Praxis and Legal Scholarship*, 5 MICH. J. RACE & L. 35 (2000).

⁷² Keith Aoki, Foreword, *Innovation and the Information Environment: Interrogating the Entrepreneur*, 75 OR. L. REV. 1 (1996).

⁷³ It was incredibly gratifying to me as a scholar to discover in *Seed Wars* an elaboration of the early work that Shubha Ghosh and I did in response to the 2000 World Intellectual Property Organization's *Draft Report: Intellectual Property Needs and*

Throughout his many compelling artistic and scholarly personae, I think that Keith was a chastened (to use one of his favorite terms) idealist who had the critical scholar's grasp of how power relations disrupt the surface neutrality of law. He loved to refer to the Promethean folly of Frankenstein's monster, to which the first epigraph of this Tribute alludes. Yet this invention was simultaneously a monster and a being capable of moral reasoning and self-reflection about the complex interaction between utopian science and an imperfect society.⁷⁴ Keith was a being who optimistically believed that justice through intellectual property was possible despite the formal legal system's tendency to support and strengthen the status quo and the tendency of our innovation systems to ignore the needs of the disenfranchised. And as a legal artist, Professor Keith Aoki wielded all the colors and tools in his subversive scholarly paint box to give us some signposts through the bumpy path of "Progress of Science and useful Arts"⁷⁵ to that better place.

Expectations of Traditional Knowledge Holders. See WORLD INTELLECTUAL PROP. ORGS., INTELLECTUAL PROPERTY NEEDS AND EXPECTATIONS OF TRADITIONAL KNOWLEDGE HOLDERS (1999), available at <http://www.wipo.int/tk/en/tk/ffm/report/index.html>. This included our comment's four-part framework (public domain model, commercial use model, trust model, and ownership model), to which Keith added a limited commons model, based upon the work of Carol Rose and Elinor Ostrom. See AOKI, *supra* note 1, at 103–09, 126–28; Shubha Ghosh, *Reflections on the Traditional Knowledge Debate*, 11 CARDOZO J. INT'L & COMP. L. 497 (2004).

⁷⁴ MARY SHELLEY, FRANKENSTEIN OR THE MODERN PROMETHEUS 223 (Maurice Hindle ed., Penguin Books 1992) (1818) ("Yet I seek not a fellow-feeling in my misery. No sympathy may I ever find. When I first sought it, it was the love of virtue, the feelings of happiness and affection with which my whole being overflowed, that I wished to be participated. But now, that virtue has become to me a shadow, and that happiness and affection are turned into bitter and loathing despair, in what should I seek for sympathy?").

⁷⁵ U.S. CONST. art. 1, § 8.