⚡teknokultura

Editorial

Generative Justice

Javier de Rivera
Grupo de Investigación Cibersomosaguas
jvr@javierderivera.net

Ron Eglash
Rensselaer Polytechnic Institute
eglash@rpi.edu

Chris Hables Gray
Crown College, Unversity of California, Santa Cruz
chris.hablesgray@stanfordalumni.org

The point is not just to read the webs of knowledge production; the point is to reconfigure what counts as knowledge in the interests of reconstituting the generative forces of embodiment.

Donna Haraway, 1994

Following *Teknokultura*'s aim to publish critical works based on research and theoretical reflection on technology and society, we are glad to present this issue on Generative Justice, a

powerful framework for evolving towards more just and sustainable futures, developed by Ron Eglash and his colleagues in their collaboration between university scholars and underserved communities. We asked Ron to describe the origins of the concept:

Funded by a 6 year NSF grant[1], and working in communities ranging from west African and native american indigenous societies to urban inner cities, we began with local knowledge systems and practices. Societies that were financially poor still had rich artisanal, ecological and expressive forms of value. But the usual "development" approach would be replacing these forms with what are often alienating and destructive technological "advances". How could science and technology be compatible with, and perhaps even enhance, these local forms of value generation? We already had experience in ethnocomputing, the "translation" from indigenous practices to simulations by which local schools could use "heritage algorithms" to teach math and computing without imposing western hegemony. Collaborating with scientists and engineers, we explored similar circular paths for other STEM[2] disciplines. Solar energy could make traditional African dye process more profitable while enhancing its ecological sustainability. New DIY technologies could converge with local "fixer" traditions to create artisanal product lines. Bottom-up collaboration for more just and sustainable technoscience was possible.

As we examined successful instances of local value generation and circulation, the nature of the surrounding economic system, be it socialist or capitalist, seemed irrelevant. Worker self-management blossomed in socialist Prague before the soviet invasion of 1968, but it is also embodied in Argentina's "worker-recovered companies" today. Organic urban agriculture has revitalized areas of Detroit devastated by capitalism, but it also saved Caracas from a food crisis created under Chavez' socialism. What was needed was a theory of value generation that focused on its bottom-up circulation in unalienated form, regardless of the national context.

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[1] DGE-0947980, "Graduate Teaching Fellows in Community Situated Research: The Triple Helix of University, K-12, and Community Knowledge Production." See http://www.3helix.rpi.edu/ for detals.

[2] The acronym used in the US for "Science, Technology, Engineering and Mathematics"--meaning, that is, the whole of all technoscience disciplines.

Thus, unlike classical conceptualizations of justice, Generative Justice does not extend from the principle of authority. Rather, justice emerges from the bottom-up, being co-created by communal relationships based in the mutual recognition of rights[3], needs, and resources.

Generative Justice is about preventing the formation of unfair relations of domination, that is, processes of alienation and extraction of value that create injustice and exploitation for human and non-human beings alike. Instead of developing economic and social systems based on the accumulation of value, the Generative Justice criteria requires the design of systems in which the value produced circulates constantly, and reverts to the benefit of its producers without passing through the gatekeeper of either state or corporation. In this way, we can create social systems that are more sustainable, autoregulated and independent.

This framework shares the Marxian critique of the alienation and expropriation of value from workers, ecosystems and human expression, but it distinguishes itself in the solution. While Marxism trusts the State as a concentrator of power and wealth that would later be distributed equally, Generative Justice advocates for the value not to be concentrated in the first place, but circulated in its unalienated form as it is generated throughout the production processes. This proposal aims to avoid the authoritarian risks associated with any form of power accumulation and secures freedom at the same time as social equality.

Generative Justice is also a concept related to the government of the commons (Ostrom, 1990). However, while the commons often refers to specific and historical forms of social organization, Generative Justice represents an abstract principle that can be applied to a wide range of activities and situations. In this sense, the key of the concept is that it allows us to measure the degree to which the benefits produced by a system of relationships—however its nature—are fairly and equally circulated[4] inside that system.

When applied to food production, Generative Justice envisions humans in a reciprocal relationship with the environment and other living beings. In contrast to the ways in which typical industrial food production pollutes and extracts value (nutrients) from the soil, organic agriculture and permaculture techniques create a generative bond with the environment by giving back some of the value (nutrients, other forms of life) created. So, while generative systems may not have the same productivity levels as we have come to measure them, they are

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[3] Indeed simply using the word "rights" seems to imply top-down authority. Generative justice asks us to reconsider how our political vocabulary and concepts might be revised if we start thinking from the bottom-up.

[4] Their insistence on the term "circulated" rather than "distributed" helps to remind us that the historic commons did not require a tax collector.

more sustainable because of the recirculation of unalienated value that enriches the system and its constituents.

However, Generative Justice is more than an academic framework for designing and measuring sustainable productive systems; instead, it is deeply ingrained in political and social activism, as Chris H. Gray explains it:

Generative Justice comes out of years of nonhierarchical theory and action (praxis) that has been influenced by feminist, anarchist, horizontalist, and don't-put-a-label-on-what-I-do organizing from the last fifty years. Generating Justice also has obvious links to Freirian (Paolo Freire) principles for organizing agency from below and scientific/political advocacy for egalitarian cooperation (Peter Kropotkin) that have a long history in radical democratic projects. This framework also fits nicely in the practices of many contemporary social movements, from the Zapatistas in Chiapas to the pipeline protests of the Sioux.

Besides catalyzing a very powerful and workable approach out of the last half-century of political struggle, Generative Justice also breaks new ground in thinking about systems and social change in a dynamic and nonreductive way. All too often, attempts to think in system terms leads to profound confusion over such issues as agency, let alone rights and justice. But Generative Justice breaks out of these dilemmas by situating justice in systems and in the agency of those who make these systems alive.

As the idea of Generative Justice continues to spread, it will inevitably evolve, regenerating itself into new forms through the self-conscious praxis that is one of its central virtues. Bringing together this excellent collection of work on this powerful set of ideas is one crucial step in bringing the concept of Generative Justice to the wider audience it deserves.

The articles from «Karpeta» present the application of Generative Justice to different fields and areas of study, which offers a broad perspective on the possibilities of the framework to promote fairer and more egalitarian and creative social relationships.

First, in the *Introduction,* Ron Eglash deepens the theoretical description of the concept as he presents several examples of its application: from the farming production of Native American tribes to open technological projects such as Arduino. That is followed by a series of articles, some written by students and faculty who participated in the original research project, as well as scholars who replied to our open solicitation.

In *Anti-Authoritarian Metrics,* David Banks expands the concept of "circulation" in the frame of Generative Justice. He shows how out usual concept of "efficiency" moved from legitimate use in physics ("thermal efficiency") to become a ruthless yet naturalized measure of economies. As a metric more in tune with the frame of Generative Justice, he shows how the principle of "recursivity" can embody the concept of circulation while replacing efficiency as the measure of a non-authoritarian, generative economy.

Moving from theory to practice, Erin Araujo describes an alternative exchange system run by women in Chiapas, renewing the connection between Generative Justice and the indigenous societies which served as an inspiration for this framework (as Eglash points out in his introduction). Continuing the connection with local economies, Sarah Kuhn's article examines the intersection of *Fiber Arts and Generative Justice* in case studies ranging from Navajo weavers to global "craftivists". Using the concept of "basins of attraction" she examines the patterns that tend to distinguish relations of mutualism from those that are extractive and exploitive.

The next two articles move from artisanal production to large scale infrastructure without losing sight of generative principles. In *Community based bioremediation*, Scott Kellogg takes on the issue of polluted soils from industrial activities and its effect on the health of underserved communities. Typical approaches use massive industrial processes of soil removal and replacement. In its place, he describes initiatives whereby the "soft technologies" of bioremediation can break down harmful organics pollutants or even concentrate inorganic toxins for low-impact removal. In a similar spirit, Taylor Dotson and James Wilcox's essay, *Generating Community, Generating Justice?,* asks how the production of electric energy might be used to enhance the ways in which communities can create networks for mutual social identity and support.

Shifting to digital technologies, the next two articles offer different takes on the question of diversity in bottom-up technology production. Christina Dunbar-Hester's *"Freedom from Jobs" or Learning to Love to Labor?* explores the complex intersectionality of women's integration in labor contexts and participation in voluntary projects for software development. Taking a numeric approach, Brian Callahan, Charles Hathaway and Mukkai Krishnamoorthy examine the measurement of diversity in open source systems in *Quantitative Metrics for Generative Justice.* Using a repository in which they could track the race and gender of software contributors, they applied a measure of entropy to determine not simply the percentages of people in each ethnic category, but rather the percentage of code contributed

from each, showing how a generative approach might analyze the problem of hidden forms of discrimination.

The section «Karpeta» closes with the question of diversity in relation to STEM education at the high school level. In *Ethnocomputational creativity in STEAM education*, Audrey Bennett presents a series of projects to encourage STEAM students (STEM plus Art) from underrepresented communities by connecting their works with their ethnic backgrounds. Finally, in a similar scope, Dan Lyles, Michael Lachney, Ellen Foster and Zoe Zatz analyze three cases in which the framework of Generative Justice helps improve education at STEM high school by enabling *Generative contexts*.

In conclusion, Generative Justice promotes the re-circulation of value inside a system, so that all of its elements get the share of the production they need to enrich the interactions as a whole. It requires a change in the mindset that understands wealth as the accumulation of objectified value (i.e. money, properties, "rights"), and to think of it as a common property of social and natural systems that grows in terms of mutual relationships and possibilities. Generative Justice is still a work in progress, a theory that is evolving and seeking new conceptualizations, methodologies, critiques and analysis. With this special issue, we invite readers to explore the possibilities of this framework and to apply it to their areas of work and research.

Referencias

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