ENVIRONMENTAL EQUITY:
ENABLING EXCELLENCE IN MEDIA ART AND SCIENCE
IN UNDER-SERVED COMMUNITIES

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Contents

A. Abstract

Environmental quality, good design, and regard for health information bear much relevance for communities experiencing long term toxic damage and the associated health risks. Recent developments in data visualization, environmentalism, and sustainable arts show citizens' art, citizens' science and community-based innovation in these fields at the center of knowledge production. 'DIY' research, which is both flexible and responsive to community issues and concerns; which uses open platforms and complex collaborations between experts, citizen scientists, artists, and others, is successfully bridging cultural gaps and inequities in the fabric of public learning.

By examining contemporary models, this paper takes under consideration, how media literacy and community media-making, in the context of environmental arts and sciences, might enable underserved communities. Media literacy, community-based media and creative collaborations with scientists and artists are effective platforms from which civic engagement, participation, and direct production of community history are made. Both art and science link citizens' to the value of diverse and very personal sets of data. When coupled with digital literacy and digital media arts skills, the activities of art and science are duly empowered, have greater "reach" and learning benefits.

The research is sourced from new approaches to the arts and sciences where new media is concerned represented in various contemporary projects. (see Sections 1.2, and C) On the one hand, there are new fields of inquiry gathering around "dynamic information" (sentient, environmental, visual). But, this information does little good unless its "innovation" is shared and shaped equitable. The primacy of

"media literacy" as a fundamental component for human emotional health, education and welfare is thus another impetus. Thus,apparent cultural inequities in digital means are touched upon. The primary focus articulates a crucial gap between information and knowledge experienced by so many as a disconnection from vital services, representation, and resources. Under-served communities suffer with respect to these lacks in the arenas of environmental science, communications art, public information and health information. The paper argues that it is essential to balance these inequity; to lift the underserved out of computer "job training" trajectories, and to offer better, more unique, more challenging opportunities for creative thought and community-based learning. For these communities to engage with broader social, political and cultural dialogues where environmental issues are concerned, the "digital divides" holding them back; the digital literacy necessary to perform and the creative collaboration with artists and scientists must be supported.

B. Introduction and Context

A growing concern for many American citizens are environmental issues such as climate change and sea rise which threaten the very sustainability of our planet. The now established "green" movement has manifested in numerous high-quality sustainability strategies for cities and towns under the influence of major organizations such as the US Green Building Council and LEED certification programs in architecture to significant waste management analysis programs for major newspaper manufacturers, to garbage collection agencies and electronics recycling businesses. These are frequently described in local and national press. Across this proactive endeavor, however, basic concerns with equity in environmental protections and public information also arise. It is a simple fact, for instance, across a rural and urban America impacted by Big Agriculture and mining industries, that poor, ethnic minority communities are those most likely to be affected by environmental decline. These communities are also least likely to possess empowered resources for substantive education in or development of political action around environmental art and science. These communities generally also lack engagement with both digital media literacy and information arts.

At the same time, community concerns surrounding the effects of policy, environmental decision making, and proximity to industry upon health and long term quality of resources such as land and water are high. A recent survey conducted by the Public Policy Institute of California on "Californians and the Environment", showed growing concern towards the impact of global warming among ethnic minorities. (Alonso, 2012) The New America Media organization, responding to the fact that "there was a lack of environmental coverage in the ethnic media outlets" gathered together a panel and group of reporters to respond to concerns brought about by introduction of the survey results at the World Affairs Council in San Francisco. (Ibid, 2012a) Panelists agreed that "Latinos, Blacks and Asians" were "often left out of public discourse on environmental issues" in California, at the same time acknowledging the strong role that people of color play as environmentalists across the state. (Ibid, 2012b) Survey results supported this idea through indication that African Americans and Latinos linked action on behalf of climate change with job growth, when asked to respond in telephone interviews. (Ibid, 2012c)

Roger Kim from the Asian Pacific Environmental Network contextualized findings from the survey in remarks about the explosive fire in the Chevron refinery in Richmond, and the asthma and cancer rates that go unexplained for workers and neighboring residents "particularly those in the plant's immediate vicinity—comprised mostly of poor black and Hispanic residents—still urged to "shelter in place." (Burness, 2012; Miller, 2012) Kim linked these facts to the strong sentiments that communities of color have about environmental pollution. Neighborhoods such Bayview Hunters Point and Treasure Island are frequently in the news where excessively high breast cancer rates, radiation, and regular subjection to other post-industrial toxins are concerned. These communities house disproportionate numbers of African Americans, and homeless people. Data on drinking water quality in such neighborhoods and regions,

suggests increased likelihood of health damage to minority populations. (Gross, 2012) Meanwhile, community statistics on environmentally disastrous lead levels from Interstate 5, constructed to avoid higher priced real estate areas, but affecting largely Latino farming communities such as Kettleman's City, are horrific. (Weinstein, 2010; Mother Jones, 2010; Balkin et al 2005, Scott 2010)

During the subsequent panel discussion, consensus was reached that environmental impact is felt most strongly in minority and low income communities, while at the same time there persists a profound "disconnect between emerging policies and the members of these communities" (Alonso, 2012d) For these reasons, it must be a central concern to ensure that American communities of all kinds have access to and knowledge of meaningful information. Moreover, that they are in a position to use information and data to promote community literacy; record, and sustain public response. Under-served communities will be better enabled to join environmental discourse and debates around sustainability in terms of their own needs if they have access to and understanding of that information, are capable of producing their own information and are enabled to foster greater knowledge-making skills on environmental issues through media literacy, artm and science.

1.1 Effective Programs: Bridging Crucial Gaps in Environmental Information and Literacy

Despite advances in networked technologies, wireless infrastructure and mobile communications, even progressive urban areas, show a severe lack in computer literacy and networked technologies for lower income, elderly, immigrant, ethnic minority communities. (Berman, 2007). These "digital" and educational "divides" between whiter, wealthier, more educated communities and older, lower income ethnic minorities reinforce information and literacy inequality when it comes to access and engagement with public information. (More and more of which is going on line)

How can excellent initiatives in education, media literacy and new technologies for underserved communities not only be created but be sustained? In today's highly mediate reality, media literacy is essential to participation in the "digital public." Computer and information is an essential component of a reasonably high degree of participation in education, government, and social well-being. From this perspective, several components of "excellence" must be achieved to satisfy the aforementioned concerns among leaders of ethnic communities about environmental information and are summarized below.

Research Observations Summary

Minority and low income neighborhoods need greater support for education in and development of sustainable media arts programs directed at computer literacy, digital media literacy, and ongoing community-based media arts and sciences. These communities also need creative support for community-based health, environmental arts and science education in which community-concerns are central and actions can be addressed to improve upon existing conditions and link these communities more directly to environmental leadership, sustainability and health initiatives.

1.2 Recent Program Directions (see projects mentioned at end)

a. The greening of school campuses which brings soil science, composting, energy efficiency, and rainwater catchment to young people through art and design around sustainable gardening and community supported agriculture presents rewarding collaborator opportunities for artists, scientists, teachers and students. Curriculum designed to foster creative thinking around art and science and impact state curriculum in the understanding of gardens and process for garden teaching should be implemented. It is also possible to extend this comforting and familiar environmental artform – the garden – to senior and

disabled populations, communities of color who would benefit from low-cost organic food and flowers; and the mentally ill. (see http://www.freefarmstand.org/about/)

b. Citizen scientists using wireless technologies, interpreting and visualizing their own data, along with environmental science and urban sciences in K-12, adult leadership groups, community arts spaces and health organizations create meaningful skill-sets and curriculum and public information applications for communities. Grassrootsmapping.org initially monitored the BP Oil Spill in the Gulf of Mexico for the air using weather balloons and wireless cameras. Citizen scientists also documented much of Katrina's aftermath. The project now provides balloon-based mapping "kits" and public information on how to map, as well as workshops in mapping to the public. Open science platforms encourage creative hacking and community-made documentation on local environmental issues. (See PLOTS)

c. Bilingual, English and Spanish programs for youth through Presidio Parks and Services, Crissy Fields Nature Center and San Francisco Recreation and Parks provide rich resources for communities of color to engage with nature and share urban parklands. Latina environmentalist Maria Jose Alcantra, who grew up in San Francisco's Mission District, a low income ethnic community, says that programs through the Crissy Fields nature center starting at fourteen, "changed her life." She now works to "bridge the gap between the Latinos and the environment" showing "the newcomers and youth from under-served communities" that they do not have to live the stereotype of being out of the environmental "loop." (Alonso, 2012e)

d. Green school buildings designed to produce interest in building functions and systems throughout the day teach young people and adults how close at hand environmental efficiency and impact actually is. Users of these schools, including student and adult populations, can measure and collect data on their own daily energy and water efficiency using systems tools designed into the buildings as accessible tools. The US Green Building Council and LEED organization have partnered to promote this type of initiative nationwide. Note: Critically speaking the majority of these "green" schools are not yet located in under-served communities. However, their value as a model cannot be underestimated.

e. Curriculum strategies linking arts and science projects directly into neighborhoods via digital media, such that participants become engaged in researching and making information about their locales, or studying environmental issues, and where environmental design is learned through the community space from and by the community at large are particularly effective. (see The Living Library)

1.3 Roadblocks and Inhibitors as the Basis for Suggested Actions in the Arts and Sciences

a. Interdisciplinary collaboration which does not remove communities from art and science, but which places them in direct contact with critical processes and disciplines, i.e. experimentation, trial and error, documentation, formulation of questions, execution of ideas is fertile ground for ongoing excellence in community-based, citizen-lead arts and sciences and the deployment of science into public, educational streams, i.e. art spaces, special projects, consultations, and curriculum. However, it is not without significant stumbling blocks. Public funding for collaborative arts and arts education is meager, if not non-existent, in the United States and science education is frequently geared toward the expedient fulfillment of state curriculum standards and proficiency testing, rather than creative exploration of ideas or immersion in relevant and meaningful practice. Educators, in fact, have only so much time to elaborate on curriculum while still being effective in meeting state requirements. Standardized testing routinely fails to include the positive effects of learning outcomes generated without quantifiable "results" and tends to harness student power in the form of wrote learning and multiple choice.

Suggested action: It is suggested that funding bodies, governing research foundations, and art institutions such as the NEA, National Academy of Sciences, and the National Research Foundation work together

with federal technology programs and organizations such as Zero/Divide or the Broadband Technologies Opportunities Program (FCC) as well as with individual artists, scientists and researchers (from within developed collaborative proposals) towards robust funding initiatives for a multitude of collaborative projects wherein the permanent installation of digital communications technologies and their ongoing support and implementation in the arts and sciences, through software development and research, is a significant criteria for the expression of the artwork, development of scientific study, and ongoing media literacy.

b. Race, class, gender and cultural factors which persist in socially stratifying quality educational initiatives in the arts and sciences, including their funding and the effective "reach" of relevant ideas and empowerment into public education, reinforce divisions in participation, comprehension, and skills. What is critical for the implementation of artistic endeavor from which to "learn science" and science projects with which to "do art" is first the addressing of fundamental social and cultural inequalities in ongoing access to resources and related knowledge as the basis of any design/art/science/or engineering initiative.

Suggested action:
It is suggested that national funding bodies, federal technology agencies, state public art granting foundations, research institutes, and international organizations such as UNESCO, because impediments to career paths start young, race, class, and gender imbalances in engineering and science have been widely acknowledged, and lowered participation and performance expectations, particularly in the sciences, among poor and ethnic minority communities abound, devise funding initiatives to stimulate solutions to social and cultural inequalities, particularly "digital divides" in media literacy and media arts "gaps". In this context, projects in support of gender equality or which close an "age-gap" should also be supported.

c. Environmental data means a great deal to those most affected by it. The central concern is how to ensure meaningful and impactful community engagement with information and sustained ability to use it.

Suggested action: It is recommended that specific support for action-based and curriculum-centered public projects targeting economically disadvantaged and ethnic minority communities be funded. Projects in which maps, data visualization, locative and sentient media, critical media literacy and other higher level developments in software and new technologies are deployed will assist in redressing inequalities in information and computer literacy. Stakeholders might be National Endowment for the Arts, Foundation for the Alliance of Community Media, Centers and Institutes for Digital Literacy, and the National Foundation for Educational Research, and National Research Foundation.

C. Quick Summary of Strategies

a. Foundation support at the federal level for localized urban programs which foster the growth of critical media literacy, i.e. access to technologies and curriculum and which support its creative use among under-served communities is suggested.

b. Grants for public education initiatives from major arts and science funding bodies to seed the development of hacker spaces, grassroots technology labs and community-based media arts projects in collaboration with community organizations, lower-performing schools, and local institutions in neighborhoods and districts most affected are suggested.

c. Additional ongoing funding and infrastructural support, pro-rated over several years to install new technologies, computer labs, provide technical support, equipment monitoring, and substantial development of media arts projects geared at "hands on" learning and creative,

critical awareness and use of media, i.e. development in critical media literacy as opposed to "job skills" training are suggested.

d. Development of specific funding support for projects in the arts and sciences targeting under-served communities which utilize the creative ideas of individual artists and scientists for localized collaborations with communities, and from which can be developed community-based research, community history/health production, and community exchange around media representation, media literacy, and media arts in conjunction with environment concerns and their impact upon community resources and community health initiatives are suggested. (See "Tobacco Free"-- http://www.tobaccofree.org/ - Invisible 5,)

D. Conclusions

Questions posed from this brief paper are:

1) How can projects for under-served communities' sustained involvement with environmental arts and science, such that these communities are capable of effective critical engagement with issues of cultural and political relevance to themselves, and, in terms of social and cultural equity, across digital divides and arts and science cultures, be designed?

2) How can higher-tiered arts and science foundational support be developed to ensure that excellence in experimentation, scientific inquiry and method, trial and error, expertise, and literacy in the arts and sciences be directed and supported in communities currently underserved?

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Notes/Resources

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