FIBER OPTIC VINES ON THE THIRD WALL:

CULTIVATING NATURAL MEDIA IN THE DIGITAL AGE

by

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Eric Louis Bendick

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GLOSSARY

Convergence – In <u>Convergence Culture</u>, Henry Jenkins uses the term convergence to explain "the flow of content across multiple media platforms, the cooperation between multiple media industries, and the migratory behavior of media audiences." Herein, Jenkins points to a contemporary historical moment defined by a unique set of practices, protocols, discourse, and applications brought on by a larger shift from analog to digital cultural production.

Heteroglossia – A condition of tolerance for hybridity, difference, paradox, and cross-pollination brought on by a state of media convergence where unlikely or unusual pairings become possible through networked relationships. In this document, heteroglossia refers to the potential for non-normative or unconventional viewpoints and formal devices to reach audiences through the use of alternative distribution strategies.

Indie – An abbreviation of the term 'independent' which refers specifically to the community of media content producers operating outside of larger commercial networks. The term originally described independent underground music and the alternative rock scene which often features unsigned musicians. Recently, the term has been appropriated and applied by large music labels and movie studios in marketing efforts to describe content that is non-Blockbuster, niche, or acquisitions that were independently-financed.

Intervention – A concept expressed by Greg Mitman in <u>Reel Nature</u> which advocates a particular type of engaged, empowered, and informed stewardship in re-defining and re-conceptualizing our relationships with the natural world.

Interactivity – The nuts and bolts of a designed graphic-user-interface which enables participatory behavior for users, especially within the context of gaming, social networks, and peer-production. Interactivity specifies the technical means of user behavior within a particular framework but does not specify how such behavior may be refined, organized, or expressed within a given group or user-community.

Interdependence – With respect to the environmental sciences, interdependence reflects the growing understanding within ecology that all life is connected through natural systems and that changes and/or disruptions in natural systems will have consequences for a wide host of organisms including mankind.

Knowledge Community – A particular form of social network identified by Pierre Lévy as "defined through voluntary, temporary, and tactical affiliations, reaffirmed through common intellectual enterprises and emotional investments . . . held together through the mutual production and reciprocal exchange of knowledge." Knowledge communities

play an important role in the production, sharing, filtering, mastering, and disseminating of a wide variety of information affiliated with both peer and professional media content.

Nonmarket – A term used extensively by Yochai Benkler in <u>Wealth of Networks</u> which characterizes production outside the domain of private enterprise. Nonmarket content is often produced by networked peer communities without monetary compensation. Successful examples of nonmarket production include 'open source software' products such as *Linux* and *Creative Commons* media including film, audio, and illustration.

Open source – A description of design and production and development which offers transparent access to the 'kernel' or fabric of a product's source. The term is closely linked to peer-production in open-source software whereby the source code is freely shared, transmitted, and copied openly in order to further innovation in the public sphere. The philosophy of open source has migrated from software into business, media production, and many other spheres to solicit the *wisdom of crowds* – a type of open feedback loop in which consumers inform producers about their needs and preferences, possibly resulting in new ideas, applications, or refinement of existing products.

Participatory / Participation – The terms participatory and participation are used with slightly different etymologies within the scope of this document. 'Participatory' refers to a series of practices and social protocols which determine user behavior on the Internet. Such practices may include peer-production, sampling, re-distribution, feedback, and commenting all of which involve a transfer of media authorship to the consumer. 'Participation' is used specifically in this document in relationship to an 'ethic' of behavior which derives from Caroline Merchant's notion of a responsible, sustainable stewardship of the Earth in post-Edenic contemporary society. Merchant's concept is derived from an increasing awareness of interdependence between the human and natural world therefore we should seek to balance our behavior between conservation and exploitation.

Peer-production – The contemporary understanding of 'peer-production' refers to often networked social groups working together on collective media projects. These projects frequently include blogs, wikis, podcasts, and other multimedia components. Peer-production is frequently 'nonmarket' or without direct economic compensation but also may be appropriated as 'user-generated' within a for-profit architecture that may share or disseminate such content for shared revenue.

Podcasting – A unique media distribution mode and format which is characterized by serial publishing of digital media (both audio and video) within an 'RSS feed enclosure' XML coding protocol which enables subscription, portability, and automatic download through a widespread network of 'feed readers' embedded within websites, applications, and media players. Podcasting enables new media content producers to self-syndicate their content with little overhead or hardware resources. The popularization of podcasting accelerated in 2005 when built-in support from Apple's iTunes Music Store

was introduced leading to an explosion in both amateur and professional podcast syndication.

Rhizome – A metaphorical term introduced by Giles Deleuze and Félix Guattari which described a new type of research which stressed hermeneutic flexibility. Much like the Internet, the rhizome is characterized by 'nodes,' "any point of a rhizome can be connected to anything other, and . . . a rhizome ceaselessly establishes connections between semiotic chains, organizations of power, and circumstances relative to the arts, sciences, and social struggles." These descriptive qualities enable an analysis of techno-organic metaphorical language and association regarding the non-hierarchical and hybrid nature of the Internet. Also, a rhizomic information economy behaves in fundamentally different ways from the industrial information economy and therefore has a profound influence on production, distribution, and rights-management of digital media.

Seeder – An individual in an Internet-based digital peer-to-peer content sharing community such as *the Pirate Bay* or *Bittorent* who provides initial content (often copyrighted music, films, and television) or one who allows others to download such content that they themselves have acquired via other seeders. For technical reasons, the more available seeders of a particular content item will result in faster and faster download speeds for the peer-to-peer community.

Social Networking – The use of social structures consisting of nodes (individuals or organizations) that may be connected through a variety of interdependent linkages i.e. friendship, ideas, finances, kinship, etc. The practice and popular understanding of 'social networking' is associated with web portals *MySpace*, *Facebook*, *Friendster*, and other leading 'Web 2.0' sites which enables the formation of social groups and networks of individuals based on voluntary affinity relationships. Media projects may make use of social networks for marketing, distribution, production, criticism, financing, and other key functions.

Sustainability – A phrase meaning the perpetual maintenance of a process or state. In the context of environmental issues, sustainability applies to Earth's ecosystems in their ability to maintain basic ecological processes and functions. 'Sustainable use' of the planet or any natural resource must allow renewable resources to be replenished faster than the rate at which they are used by humankind. Media projects or agents emphasizing sustainability frequently bridge environmental science with social and economic factors.

Transmedia – According to Henry Jenkins, a transmedia project is any media production which "unfolds across multiple media platforms with each new text making a distinctive and valuable contribution to the whole." Transmedia projects may include coordinated film, print, radio, and web projects all of which may widen marketshare and provide multiple 'access points' to media content, thereby funneling viewers through varied portals into a common project.

ABSTRACT

Twenty-thousand years ago, the earliest known depictions of natural forms were inscribed by primitive man onto the surface of the *"third wall"* . . . be it cave, grotto, overhang, or alcove. Today the myriad representations of our natural world, along with the expanding cosmic narratives of 'natural history' that animate and describe such characters within an ornate epistemological framework (part-science: evolution, thermodynamics, ecology, and part-social criticism: environmental justice, sustainability, conservation) proliferate in ever-increasing mobile permutations; not only in our textbooks and living rooms, but also in our cars, on billboards, Jumbotrons, laptops, cell phones, and portable media players.

Throughout history, changes in representational 'mode' (across and through new technical mediums) have ushered in significant narrative metamorphoses, formal innovations, and accompanied revolutionary transitions in symbolic language. The focus of this paper is to assess the implications of recent technological shifts, especially those characterized by the widespread contemporary adoption of digital technologies and the emergence of vast, interconnected networks of computing power, on the representation, production, and distribution of 'natural world' (both science and social) new media content.

Through a detailed survey of popular case-studies, analytical research, and data trends, this paper will analyze new media models both from *within* and *without* as they relate to digital publishing, non-linear content creation, social networking, and the increasingly permeable interface between consumer and producer in our contemporary mediascape.

Finally, this paper applies formative research to prescribe a more general use of 'best practices' in new technology which may facilitate a more progressive and participatory moment in post-industrial 'natural world' media-making, in concert with peers and fans, corporations and collectives, and open to interpretation, cross-pollination, and synergistic hybridity. It is no exaggeration to remark that this technological transformation will forever change the way we learn, evaluate, and participate in a global dialogue whose subject is none other than *the globe itself*. As our ancestors surely harnessed the power of the 'third wall' to communicate in both personal and broad strokes, so this essay seeks to re-imagine the 'digital third wall' as a place of increasing ubiquity, intimacy, contention, and epistemological power throughout the evolving realms of scientific and social natural representation.

INTRODUCTION

The transition from a paradigm in crisis to a new one from which a new tradition of normal science can emerge is far from a cumulative process, one achieved by an articulation or extension of the old paradigm. Rather it is a reconstruction of the field from new fundamentals, a reconstruction that changes some of the field's most elementary theoretical generalizations as well as many of its paradigm methods and applications.
        -Thomas Kuhn, <u>The Structure of Scientific Revolutions</u>

Very few individuals living in the industrial information economy could, in any realistic sense, decide to build a new Library of Alexandria of global reach, or to start an encyclopedia. As collaboration among far-flung individuals becomes more common, the idea of doing things that require cooperation with others becomes much more attainable, and the range of projects individuals can choose qualitatively increases.
        –Yochai Benkler, <u>The Wealth of Networks</u>

My cyborg myth is about transgressed boundaries, potent fusions, and dangerous possibilities which progressive people might explore as one part of needed political work.
        -Donna Haraway, <u>The Cyborg Manifesto</u>

We only know nature because we intervene. The critical issue is not how to remain separate, but how to act with integrity in our relationships with wildlife and the natural world.
        -Gregg Mitman, <u>Reel Nature</u>

The following paper is the product of a long academic survey of the trajectory of New Media and Science/Environmental Studies beginning in 2001 with a Brown University undergraduate seminar entitled 'The Archaeology of New Media' taught by Media Studies professor Wendy Chun. The conversations begun in that class and my concurrent initiation into the world of *HTML*, web publishing, and multimedia along with parallel consideration of the conceptual frameworks behind such new media applications has been an instrumental and ongoing source of reflection, inspiration, and guidance throughout my research. In 2004, I began my candidacy for a degree in Science and Natural History Filmmaking at Montana State University whereupon this formative research took an interesting turn: I began to apply this knowledge of web publishing and distribution as *Series Producer* of an experimental multiplatform media project dubbed *"TERRA: The Nature of Our World."* During my tenure, I helped to found the *TERRA podcast series* and companion website at *www.lifeonterra.com*. Though isolated examples of science and nature video content existed in various online formats prior to our launch, the *TERRA series*, commencing in October 2005, is credited as "the first Natural History video podcast"[1] on the web. As Co-Founder of the series, I had the unique opportunity to witness the rapid evolution of podcasting from a modest community of several hundred 'early adopters' into a global marketplace of over 125,000 podcasts available today through Apple's iTunes Store.[2] As podcasting has become increasingly mainstream, it has become increasingly attractive to established brands within the professional realm of science and nature content production. Presently, *Discovery Communications*, *National Geographic*, *PBS-NOVA*, and *PBS-Nature* are all

active and prolific players in the podcasting community. As of March 2009, *TERRA*

series programming has been viewed over eight million times on the web. [3]

My work with *TERRA* has offered me a unique perspective at the nexus of both

theory and application and on the hinge of new and old media (three seasons of *TERRA*

have also aired weekly on *KUSM-TV Montana PBS*) to witness and participate in an

accelerated moment of 'media convergence' that will be explored in detail in this paper.

I share the notion (along with Henry Jenkins) that this period of 'convergence' is about a

new negotiation and articulation of contested spaces and spheres within mass media.

Furthermore, I understand the emergence of 'participation' and 'engagement' to be the

standard-bearers of what constitute 'truly new' characteristics of lean-forward modern

media. As a self-described participant engaged in this ongoing transition, it has been my

privilege to consider the way in which communication paradigms have been shaped,

processed, and reinvented from the inside out for the digital age.

Throughout my involvement, *TERRA* served as an applied 'experimental media

laboratory' and a dynamic template through which I could work through leading edge

questions about new media which were for the most part unwritten and undiagnosed

within academic circles. The close relationship between 'open-source' theoretical ideas

and proprietary 'commercial' strategies is one of the precise hallmarks of working within

this new media marketplace.   Interestingly enough, my experience suggests that, as

TERRA enjoyed more success, as measured by increased viewership and brand

recognition, it became more constrained by conventional rules of 'proprietary brand

management' – i.e. marketing, demographics, consolidation and funding (indeed, this

trend was also true of 'podcasting' across the board). Therefore, in order to tap the *ad hoc* intelligence of a new media 'start-up' case-study, the majority of my *TERRA*-specific analysis will emanate from launch (2005) through re-design (2006) and finally, to recognition (Webby award 2007). Nonetheless, it is interesting to note that new trends and functions have continued to evolve since this time (specifically, in modes of participation) and that these emergent qualities prove to be the crucial assets for digital media producers who are currently at the 'start-up' phase.

I owe a significant debt to knowledge gleaned from numerous conferences (notably the *2006/07 South by Southwest Interactive Festivals* and the *2008 International Union for Conservation of Nature Congress*), awards ceremonies (including the *2007 Webby Awards*), and other academic and commercial symposia (*the 2008 Jackson Hole Symposium*). Much of my research has been adapted from presentations that I have both given and heard at such conferences pertaining to podcasting, web video, viral video, social networking and Web 2.0. Invitations to present my findings at several such meetings including the *National Science Foundation's 2006 EPSCoR Workshops* have actively refined and challenged many of these ideas and helped me to focus my work more acutely within the frame of applied science, environmental activism, and grassroots media disciplines. Though 'virtual communities' often armed me with detailed technical knowledge, I am particularly thankful for the flesh-and-blood intellectual support and fellowship of many professors and administrators within the Graduate Program in Science & Natural History Filmmaking at *Montana State University* who have been

crucial in anchoring my thoughts within the rich context of nature and science studies, media theory, and the historical and material realities of documentary film production.

Finally, I must square the intent of this paper beyond merely the frame of new media modes and reconcile my ideas concretely within 'the what' of contemporary environmental, natural resource, and scientific/social criticism and policy. Within this vein, it is necessary to go beyond mere descriptions of discursive architectures in order to examine the potential of new media to offer fundamentally unique engagement practices. Borrowing a term from Greg Mittman, I will call such practices 'interventions.' [4] In fact, 'interventions' signify a willingness to go beyond mere science and natural history literacy (as much media has conventionally done) and instead cultivate new political agents and politicized communities capable of flexing new techniques to stake out advocacy positions speaking *for* the natural world. These networked positions may offer synergistic policy responses brought on by urgent considerations of scientific consensus: i.e. climate change and the dire consequences of abiding by the *status quo*. In this sense, the power of new media may eventually ultimately transform its technical scope, overrunning the braided course of its multimedia 'channels,' and merge into larger currents of popular narrative arcs, justifying new protagonists, establishing new reciprocities, and extending once-alien concepts like 'sustainability' to an American media enterprise that has been shy to extend its archetypal range beyond a narrow band of closely-guarded 'safe' content. It is my abiding hope that the future drivers of environmental new media, and by this, I mean the public itself, will transcend the undue

influence of corporations, advertisers, gatekeepers, sociologists, and lawyers to moderate

and co-create their own platforms of negotiated common sense.

KUDZU
"The fiber optic vine that ate analog"

In The Structure of Scientific Revolutions, Thomas Kuhn outlines a trend for historical moments of paradigm-shift in the sciences.[5] These shifts or 'revolutions,' and the consequential reorganization of empirical data that accompany such moments, are analogous to the dramatic changes arising out of a bedrock shift from analog to digital culture in the late 20th and early 21st century: "A reconstruction that changes . . . the field's most elementary theoretical generalizations as well as many of its paradigm methods and applications."[6] In the twilight of the analog age, there is no more apparent sign of this transition than in the contemporary language we use to signify the products of this new manifestation of digital production: is it a "film," "movie," "video," "vid," "pod," "podcast," "vodcast," or "vlog?" In reality, the digital age has cast asunder some of the most foundational precepts common to an understanding of "film" as an analog medium (an original emulsion on celluloid) and, as such, demands that we rigorously seek out new intellectual formulas capable of adapting to the particular facticity (both pros and cons) of digital reproduction. This newfound situation does not imply that old media institutions themselves are dead. On the contrary, old media is rapidly 'becoming digitized' as new media through a process and a project of convergence outlined by Henry Jenkins in Convergence Culture:

> By convergence, I mean the flow of content across multiple media platforms, the cooperation between multiple media industries, and the migratory behavior of media audiences . . . . convergence represents a cultural shift as consumers are encouraged to seek out new information and make connections among dispersed media content.[7]

In other words, our descriptive language for new media content is having a difficult time keeping up with all of the modes through which digital communication enables. As we shall see, some of these modes represent opportunities for 'outside' or 'underrepresented' voices to be seen and heard, while others often centralize and encourage mainstream viewpoints at the expense of heteroglossia.

Within this seismic technological shift Donna Haraway's *Cyborg Manifesto* seeks out points (or modes) of resistance that have the capacity to challenge the "Informatics of Domination" (authoritative discursive practices which limit autonomy).[8] The re-organization of information according to an, as yet, undefined, digital ontology, for Haraway, allows for a new spatial and hermeneutic freedom anchored by gestures of hybridity, affinity condensation, and potential community consolidation.[9] The prevailing question, herein, is to what degree this 'experimental lab' of new media, which is at once democratic and corporatized, both liminal and centralized, and makes strange bedfellows of hackers and PR firms, precipitates new possibilities for a different kind of mediated 'intervention with nature.' In other words, is the digital opportunity, that identified by Gregg Mitman as the enabler of 'new relationships with the natural world,'[10] granting its newly-constructed 'participants,' be they cyborgs, users, producers, or consumers, more or less autonomy? At this historic juncture, we may have a unique ability to interrogate to what extent these technologies and projects offer us lasting participatory strategies and best practices that, as Caroline Merchant artfully prescribes, galvanize a "partnership ethic holding that the greatest good for the human and nonhuman communities is in their mutual living interdependence."[11] After all, *intervention* can mean many things,

participation can take many forms, *interdependence* does not necessitate equality, and

technologies alone cannot forge *partnerships*. The application of the principle of

'greatest good' helps to clarify such abstractions by envisioning a sphere for negotiating a

common ethical baseline. Because, as Jenkins clearly articulates, convergence, and its

constituents (producers and consumers), are in for a dizzying and uncertain ride:

> We are entering an era of prolonged transition and
> transformation in the way media operates. Convergence describes
> the process by which we will sort through those options . . . .
> Media producers will only find their way through their current
> problems by renegotiating their relationship with their consumers.
> Audiences, empowered by these new technologies, occupying a
> space at the intersection between old and new media, are
> demanding the right to participate within this culture. Producers
> who fail to make their peace with this new participatory culture
> will face declining goodwill and diminished revenues. The
> resulting struggles and compromises will define the public culture
> of the future. [12]

Such critics hypothesize a 21st century digital public culture with the potential to act as a

forum for 'intervention agents' seeking out the 'greatest good,' harnessed equally by

scientists, environmental activists, artists, and fans in a dynamic field characterized by

convergence and participation. Nonetheless, without the institutional models and case-

studies of the industrial information age, progressive content producers at the dawn of the

digital will be required to understand and leverage new capacities (many of which are

outside the parameters and assumptions of media training) including: (a) the effects and

opportunities for destabilizing existing media hierarchies, (b) the potential for

representation of non-normative or radical perspectives and positions in media

discourses, (c) the ability for media to develop and facilitate long-term interventions

which may change our relationships with the natural world, and (d) the forging of flesh-

and-blood interdisciplinary participation and partnerships that catalyze institutional and policy-driven change.

If we interrogate the *TERRA* podcast along with its contemporaries on these fronts as a prototype for mapping out certain tendencies of convergence-era media, we should be able to extrapolate some larger principles for media producers. First of all, it is clearly visible through analysis of *TERRA* that digital cultural production is unbounded and increasingly malleable along multiple platforms. *TERRA* was originally conceived as a traditional broadcast series for *KUSM-TV Montana PBS*. During its first season, the producers deemed it appropriate for piloting on the web. Because of the easily transmissible 'envelope' of digital content, less than one month later *TERRA* had been reformatted as a publicly accessible weekly 'podcast.' [13] 'Podcasting' harnesses a standardized XML-markup code called RSS 2.0 (otherwise known as Really Simple Syndication) and provides a subscription-based, on-demand delivery channel or 'feed' capable of disseminating any series of digital files as 'enclosures' to any networked destination. Note that this system is uniquely capable of delivering across ordinarily specific media boundaries: audio, video, still images, and even raw data are equally transmissible. Also, the newly-adapted *TERRA* podcast was abruptly endowed with a number of advantages in comparison to local television distribution: (1) global access (anywhere), (2) media player portability (any device), (3) on-demand (anytime), multimedia (any format), and (4) subscription (any new episode automatically downloads). And most revolutionary, this dynamic new global network was available at a tiny fraction of the overhead costs associated with even local television - costs such as

skilled labor, satellite communications hardware and high-end production suites -

overhead requiring constant fundraising or advertising. The first podcast season of

TERRA was produced weekly from a narration booth on the *Montana State University*

campus and was distributed throughout the world, free-of-charge, with no advertising or

underwriting, to over one million viewers. [14] Herein, Yochai Benkler, in his watershed

analysis of the new information economy is critical here:

> The most advanced economies in the world today have made
> two parallel shifts . . . the first move, in the making for more than a
> century, is to an economy centered on information (financial
> services, accounting, software, science) and cultural (films, music)
> production . . . the second is the move to a communications
> environment built on cheap processors with high computation
> capabilities, interconnected in a pervasive network – the
> phenomenon we associate with the Internet . . . . We are seeing the
> emergence of a new stage in the information economy, which I call
> the "networked information economy." It is displacing the
> industrial information economy that typified information
> production from about the second half of the nineteenth century
> and throughout the twentieth century. [15]

It is easy to see *TERRA*, within this context, as emblematic of larger trends afoot

within the sphere of this 'networked information economy.' By the end of its first

season, *TERRA* was viewed more by a global audience from Berlin to Buenos Aires than

it was seen on local television in Montana.[16] And in 2006, dubbed 'the year of online

video,' [17] the floodgates opened as large corporate media entities (i.e. *Discovery*

Communications, NPR, CBS, ABC, NBC) began their own podcasts and the

popularization of *YouTube* dramatically changed video viewing habits on the web. As the

podcast market quickly saturated, it was interesting to note that the *TERRA* podcast

largely maintained high rankings in spite of being in direct competition against long-

standing broadcast institutions capable of leveraging vast television audiences. The ostensible reasons for this result are two-fold: (1) the phenomenon known as the 'Long Tail' and (2) the history and considerable influence and 'increasing role for non-market production in the information and cultural production sector.' [18]

Chris Anderson coined the phrase 'The Long Tail' in a *Wired* magazine article in October 2004: "You can find everything out there on the Long Tail. There's the back catalog, older albums still fondly remembered by longtime fans or rediscovered by new ones . . . there are niches by the thousands, genre within genre within genre." [19] The crucial point of the 'Long Tail' is that networked, archived data structures have allowed us to search for content beyond that which is marketed to us by mainstream content producers. Therefore, a podcast like *TERRA*, which is easily searchable via the term "environment" *in Apple's iTunes Store* or via drilling down the available podcasts by category (i.e. Science & Medicine), is able to be discovered and viewed by a large number of 'green niche' enthusiasts. Because (a) opportunity costs (time) of finding niche programming are negligible, and, (b) on-demand viewership is non-competitive with 'blockbusters,' viewers are increasingly capable of digesting both broadcast hits (*'Lost'*) and narrowcast niche content (i.e. *wooden boat building tips*) without sacrificing either.

My conclusion is that, to a large degree, as video and podcasting have emerged on the web, digital technology has allowed a hierarchical inversion to take place that destabilizes many of the *de rigueur* 'laws' of industrial-era media production: namely, that bigger is better, marketing is more important than content, and economic scale is

dictated by advertising and demographics. In this sense *TERRA* is a small, independent, word-of-mouth, and non-monetized example of a new media enterprise that radically and successfully leverages digital technology to circumvent convention. Furthermore, as this passage from Benkler demonstrates, a reciprocal shift in "the field's most elementary. . . methods and applications"[20] has fundamentally transformed media production:

> Likely most radical, new, and difficult for observers to believe, is the rise of effective, large-scale cooperative efforts – peer production of information, knowledge, and culture . . . We are beginning to see the expansion of this model not only to our core software platforms, but beyond them into every domain of information and cultural production.[21]

That is, the 'new applications' of the convergent networked information economy do not stop at consumption. In fact, the historical backbone of open source software production has trickled down into many facets of web-enabled cultural production that include independent 'non-market' peer-produced media. As Internet historians are quick to point out, although peer-produced media may be a new phenomenon, open source peer-production of software has a long and rich history.[22] The most representative case is that of the GNU/Linux team of programmers who continue to challenge the proprietary operating systems (OS) developed by Microsoft from 1984 to the present day. In this case, thousands of developers in affiliation with the *Free Software Foundation* headed by Richard Stallman worked the equivalent of 8,000 man years for strictly non-monetary compensation to produce a system that has proven equivalent or better than any proprietary OS.[23] This ongoing peer-production 'resistance' effort indicates a coordinated global campaign of software developers intent on defending networked systems from monopolistic regimes who might threaten the free flow of information.

Outside of software, networked hardware has also been threatened by proprietary telecoms, cable companies, and Internet service providers who have argued that they control the 'last mile' of the broadband system – the fiber optic cable that connects most homes to the Internet. The 'network neutrality' campaign advocates that "all Internet traffic should be treated equally" [24] without restrictions on content, sites, equipment, or modes of communications. So far, the network neutrality community, a loose assemblage of scholars, journalists, and corporations have succeeded in at least one landmark case in which the *Federal Communications Commission* ruled against cable-provider *Comcast* regarding the blocking of particular peer-to-peer file sharing software.[25] Therefore, both in hardware and software, the 'free, democratic, public culture' of the web has nurtured a powerful and crucial nonmarket core community.

The modest success of *TERRA* and other independent web media producers owes a significant debt to such campaigns. First of all, much of the required distribution software, including the code and *RSS 2.0* system protocols that enable "feed" publishing, emerged themselves from open-source software projects (i.e *Harvard's Berkman Center for Internet & Society*) and are free-to-use without royalties. [26] Furthermore, the victories of the 'network neutrality' campaign have ensured that distribution on the hardware, the literal fiber that propels the networked information economy, has remained unencumbered by proprietary interests. As contrast, imagine the impacts of a preferentially tiered system (the kind advocated by telecoms, cable companies and so forth) on a program like *TERRA*. In such a scenario, the fastest and most robust connections would be auctioned off to the highest bidder, leaving the 'best access'

channels concentrated in the hands of big media. This scenario would effectively be the

death knell of *TERRA* and other low-budget niche media providers as they would be

relegated to the backwaters (or footpaths) of the information superhighway.

In order to examine how successfully *TERRA* "offers opportunities for

representation of non-normative or radical perspectives" we should re-conceptualize the

TERRA series in Benkler's terminology - language more reflective of an open-source

community based in a non-market economy:

> In the networked information economy, the physical capital
> required for production is broadly distributed throughout society . .
> . . The result is that a good deal more that human beings value can
> now be done by individuals, who interact with each other socially,
> as human beings and as social beings, rather than as market actors
> through the price system . . . . The result is a flourishing nonmarket
> sector of information, knowledge, and cultural production, based in
> the networked environment, and applied to anything that the many
> individuals connected to it can imagine. Its outputs, in turn, are
> not treated as exclusive property. They are instead subject to an
> increasingly robust ethic of open sharing, open for all others to
> build on, extend, and make their own. [27]

In this case, we see *TERRA* as both taking part and breaking with this nonmarket open-

source tradition. *TERRA* producers, contributing their cultural productions (films), are

not unlike a network of programmers each developing a particular software kernel within

a larger code (the podcast series). The social benefits from participation (primarily

exposure) are non-monetary but are nonetheless socially valuable in a highly-competitive

field where viewership often translates into future work; the series as a whole distributes

its content freely. *TERRA* has, at times, sought underwriting to pay its largest overhead

cost, the labor of its two full-time producers, but otherwise, the series is run without

concern for profits. *TERRA* solicits only non-exclusive rights with producers and allows them to distribute elsewhere and in any media.

Nonetheless, an interesting tension arises with regard to 'ouputs.' A holdover from industrial property laws*, the Digital Millenium Copyright Act of 1998*, unilaterally "criminalized production and dissemination of technology, devices, or services intended to circumvent measures that control access to copyrighted works,"[28] thereby forbidding any further use, building upon, or extension of *TERRA's* copyrighted material. The movement towards *Creative Commons* licenses, allowing sampling, modification, and redistribution, has somewhat changed the nature of this equation for cultural productions; however, the majority of professional media content on the web does not yet subscribe to an 'ethic of open sharing.' In fact, because of systemic intellectual property copyright restrictions (music, performance, photography, trademarks) most professional film and media remain fixed in exclusive arrangements; nonetheless, the widespread proliferation of remixes, mashups, and digital alterations of professional content throughout the web (*YouTube*) and sharing throughout the peer-to-peer community (*Bittorrent*) demonstrates that the open source ethos (though illegal) is here to stay.[29]

Consider *TERRA's* official mission statement as it appears in the *iTunes* podcasting browser as a window into the philosophy of nonmarket cultural production:

> *TERRA* is a collaborative indie filmspace and laboratory exploring the cutting-edge of science and the farthest horizons of the natural world. We are a worldwide crossroads, a forum for compelling issues, and a stage for the awesome diversity of our planet. Our non-profit mission is to raise global environmental consciousness via digital distribution of compelling documentary films.[30]

Regarding alternative viewpoints and perspectives, the key words here are: collaborative

(the project is produced by independent individuals working in concert), *indie* (the

project is unaffiliated with big media), laboratory (the project encourages

experimentation), crossroads (the project is open to all regions), issues (the project is

open to all political viewpoints), non-profit (the project does not aspire to make a return

on its capital investments), and digital (the project is allied with a larger shift in

technology). In practice, *TERRA* has sought to balance controversy and experimentation

with scientific accuracy and environmental progressivism. The producers of the show *do*

act as filters for production quality as well as administrators but ultimately, the producers

encourage diverse viewpoints and they are indeed well-represented. Consider the

synopsis for *TERRA* Episode 405: *"Evilution"* produced by Libbey White and appearing

on *www.lifeonterra.com* in January 2007:

> Kent Hovind wants you to know that evolution is an evil lie.
> Incorporating a fascinating array of found footage and animations,
> Libbey White gives you a ringside seat at the holy war between
> science andm religion. Which side will win? Watch "Evilution!", if
> you dare.[31]

This episode, which featured a startling composition of found footage, animation,

and satirical commentary, sparked a long-running controversy among *TERRA*

viewers (54,000 of them and counting) and was commented on over 28 times on

www.lifeonterra.com over the course of two years. [32] 'Dawn Kose' writes:

> *Liked the video. Funny but scarey* [*sic*]. *I download quite a few*
> *video podcasts especially science based ones for my six year old*
> *son to watch, but I don't think I can show him this one because he*
> *may believe some of the nonsense that was shown. I guess he's too*
> *young for sarcasm!* [33]

'John' responds:

> *AP, You are sad individual* [*sic*]. *Your response is the exact*
> *reason why evolutionists are so hard to deal with. You discard*
> *civility and expect to be treated rationally. Don't you suppose*
> *there's a reason you're in the minority? Do you really believe we*
> *evolved from monkeys? Why can't we witness evolution today if*
> *there is any veracity to it? With today's wise, all-knowing, and*
> *even ultrabrilliant evolutionists (just ask them) shouldn't there be*
> *somewhere we slow-minded, God-following individuals could go*
> *to actually witness a primate becoming a human? Have you ever*
> *witnessed it? I'm surprised YOU can believe in something you*
> *haven't touched, analyzed and discredited.* [34]

The film engendered highly-personal and even confused reactions from both sides. Both

in form and in content, *"Evilution"* broke with convention and would be unlikely to find

a home in any broadcast environment. Yet, it was highly successful from a narrowcast

point of view because it: (a) was unlike anything most people had seen in the 'for-profit

media marketplace,' (b) offered enough ambiguity to open up substantial interpretive

questions, and (c) facilitated vigorous debate and participation from both sides of the

issue. Interaction, participation, interdependence (and often, irreverence) – these are the

hallmarks which frequently typify an 'engaged' new media viewing experience. As

Benkler suggests, this opens up a new and powerful interpretive space:

> At a minimum we can say that individuals are less susceptible
> to manipulation by a legally defined class of others – the owners of
> communications infrastructure and media. The networked
> information economy provides varied alternative platforms for
> communication, so that it moderates the power of the traditional
> mass-media model, where ownership of the means of
> communication enables an owner to select what others view, and
> thereby to affect their perception of what they can and cannot do.
> Moreover, the diversity of perspectives on the way the world is and
> the way it could be for any given individual is qualitatively
> increased. [35]

The presence of *TERRA* and other niche providers have exposed a broad audience to

varied perspectives, hermeneutic questions, and nonmarket 'experiments,' thus,

qualitatively enriching and expanding the breadth of ideas and perspectives. After eight

million online views by the start of its fourth year and a *WEBBY Award* for '*Best Online*

Video' in 2007, it is clear that *TERRA's* programming proved both a popular and critical

success. [36] More importantly, this case-study articulates the ease with which

collaboration, experimentation, and distribution take place in a networked digital

ontology – offering us a concrete glimpse into a rapidly-evolving sector of contemporary

cultural production. In the next section, I will attempt to map the territory where this

case-study leaves off. For as progressive as these notions of *wired collaboration*, *digital*

distribution, and *narrowcasting* may have been in 2005, they have already largely been

subsumed and interpellated (in the Althusserian sense) as relative norms within the

community of web producers. [37] In the meantime, a new frontier has emerged which

marks a latter stage in the 'application' of these new technologies. Known variously as

social networking, *crowdsourcing,* and *participatory culture*, (hinted at prophetically by

Haraway's notions of *'coalition - affinity'*), the latest frontier transitions media

applications into the active realm of two-way virtual communities and, in so doing,

nurtures, prompts, and invites a new set of discursive practices which will re-define

environmental and scientific media-based 'interventions' for a new era.

REDWOOD RHIZOMES
"The community that shares roots/memes stands tall"

What motivates the particular breed of environmentalist who will live for years in the canopy of an old-growth forest to keep it from being logged? What propelled Tim DeChristopher, a student at the *University of Utah,* in the fall of 2008, to risk several years in prison for placing fraudulent bids on $1.8 million of public land oil leases to prevent development? [38] Our society has frequently characterized such behaviors as 'extreme,' 'irresponsible,' or 'foolhardy.' However, a sea change is occurring within popular culture: consider the case of *'Treehugger.com'* (its name reflecting the sentiments of the old breed of radical green idealists), a grassroots collaborative blog specializing in 'sustainability' which developed one of the most fervent networks of readers in the world, becoming one of the most visited websites in the world by 2007, and bought shortly thereafter by *Discovery Communications* for $10 million dollars? [39] Interestingly, the re-appropriation of the term 'treehugger,' once a derogatory label, mirrors similar 20th century etymological transitions such as the use of the word 'queer' as a term of self-empowerment by the LGBT community. [40] Ultimately, the reclamation and assimilation of 'treehugger' into mainstream iterations paves the way for a broader reclamation and reinterpretation of green narratives and archetypes supported by active grassroots coalitions.

It may appear self-evident that *'green is the new black'* (see *TERRA's Webby* acceptance speech, 2007) [41] but, as a fashion of the times, the real question is: who is curating the show? Clearly, the current wave of attention for environmental concerns does not emanate from the broadcast television world, which declared green

programming 'dead,' 'unfundable,' and 'fatigued' as recently as a few years ago; TV has

still yet to produce a major hit show on new, rapidly evolving, networks like *Discovery's*

Planet Green or the *Sundance Channel's* new series "Big Ideas, Small Planet." My

contention is that there is more than an accidental, tangential connection between the rise

of virtual communities and the re-popularization of the 'green' movement; in fact, I

would argue that the "rhizomic" nature of the networked information economy ushers in

a metaphoric consilience with all things 'green.' Consider, Gilles Deleuze and Félix

Guattari's description of a new kind of research 'rooted in' the prescriptive and

descriptive qualities of the rhizome:

> . . . any point of a rhizome can be connected to anything other, and
> must be . . . A rhizome ceaselessly establishes connections
> between semiotic chains, organizations of power, and
> circumstances relative to the arts, sciences, and social struggles . . .
> Follow the plants: "Go first to your old plant and watch carefully
> the watercourse made by the rain. By now the rain must have
> carried the seeds far away. Watch the crevices made by the runoff,
> and from them determine the direction of the flow. [42]

Sound familiar? Though they were writing in 1987, Deleuze and Guattari's elegant

conceptual synthesis anticipated many of the qualities of Benkler's 21st century

'networked information economy'[43] and Haraway's 'points of resistance' to the

Informatics of Domination. [44] Noticeably, the 'rhizome' metaphor is replete with specific

organic descriptions: flow, plants, weeds, water, and rain. In a very real sense, then, the

research agents (despite their technological pretense) in this new economy are configured

as 'gardeners' (or 'treehuggers') – nurturing seeds, nodes, or perhaps mycelium which

are threading and feeding through the superstructure (industrial culture production).

Horticulture is not a solitary pursuit, however, as another prescient example from

Deleuze and Guattari illustrates:

> . . . . Music has always sent out lines of flight, like so many
> "transformational multiplicites," even overturning the very codes
> that structure or arborify it; that is why musical form, right down to
> its ruptures and proliferations is comparable to a weed, a
> rhizome.[45]

Interestingly enough, the first major peer-to-peer media associations on the Internet came

into existence simply to spread music. Building on the rich analog communities of

'tapers,' who recorded and distributed live music, peer-to-peer music sharing emerged in

broadband environments (like college campuses) based on simple FTP-protocols and

quickly sprouted into massive file-sharing communities sharing proprietary digital media

(music, films, television, and software) such as *Napster* and *The Pirate Bay*.[46] To further

the gardening metaphor, those who provided their media content for others to download

are refereed to in laudatory terminology as "seeders" . . .

Figure 1: A web cartoon from Randall
Munroe's 'xkcd' online comic which
accompanied the Swedish trial of four
administrators of the Pirate Bay. 03/09/09 [47]

These communities have increasingly come under fire, starting with *Napster* (which re-organized as a for-profit subscription music service provider) and subsequently, *The Pirate Bay* which went to trial in Sweden in early 2009 for violating intellectual property statutes as outlined by the *Digital Millenium Copyright Act*. [48] Nonetheless, the technology continues to outpace legislation – as one such distribution 'node' is prosecuted, a host of nearly-identical, disaggregated sites repopulate the web. The question of what can be cultivated in the garden: weeds, herbs, or carrots, continues to play out on several simultaneous legal fronts. Nonetheless, activist-driven 'coalition-affinity' groups have gone beyond the 'mossy' first-order questions of plant succession communities in the networked information sector and are diving into richer and more extensive foliage in the form of *social networking* and *knowledge communities*.

So far, we have illustrated the potential of interconnected digital media to play a definitive role in the broad circuits of media at a time of far-reaching convergence. We have utilized *TERRA* as an example of a progressive science and environment-based digital project, which, on a minor scale, was capable of destabilizing traditional hierarchies and offering room for alternative modes of representation. We have also identified a strong current of 'organic' vocabulary in the technological and sociological fabric of the Internet which has helped to amplify green memes and foster a popular re-conceptualization of the 'gardener/treehugger/hacker' as a kind of new media savant. This meshing of technology and sustainability has been accompanied by a new kind of narrative and archetypal dialogue which has leveraged the 'green angle' on levels ranging from grassroots media production (the *Freshtopia* green cooking podcast), to corporate-

branded 'sustainability' projects (*General Electric*), to mass media broadcast *(Planet Green / Big Ideas, Small Planet)*.   It remains for the duration of this paper to assess how these self-identified green information architects are collaborating and participating in the verdant new growth of second-order successionary online communities. How indeed are these networked activist communities 'intervening' in public policy issues of science, natural resources, and the environment?

BAMBOO
"Grass-roots: plentiful, durable, renewable"

Summarizing Pierre Levy's ideas in <u>Collective Intelligence</u>, Henry Jenkins

discusses the role of *knowledge communities*: [49]

> New forms of community are emerging, however: these new communities are defined through voluntary, temporary, and tactical affiliations, reaffirmed through common intellectual enterprises and emotional investments . . . these communities are held together through the mutual production and reciprocal exchange of knowledge . . . . Out of such play, Pierre Levy believes, new kinds of political power will emerge which will operate alongside and sometimes directly challenge the hegemony of the nation-state or the economic might of corporate capitalism.[50]

Such communities are central to new operations of cultural production and political

identification, opening up dynamic possibilities for alliance and intervention in the fluid

spaces of convergence. The particular focus of these communities varies from highly

apolitical (fanatical viewers of *CBS' 'Survivor' Series*) to intensely policy-focused and

ideology-driven (*MoveOn.org*) yet these communities are united by the possibility of

intervention: fulfilling the desire for new, 'lean-forward' relationships and engagements

with the content that they master. In other words, knowledge communities *share* and

apply expertise, often taking matters of concern into their own hands. To take one

example of such a grassroots community working within environmental policy, consider

350.org. This non-profit, established by Bill McKibben and his students on the campus

of *Middlebury College* in Vermont in March 2008, has set out to create awareness and

spur global legislation to assure a cap in the amount of atmospheric carbon at "the

maximum safe limit for humanity," 350 carbon parts per million (this despite the fact that

we have already reached 387ppm). [51] The *350.org* campaign emanates directly from the

work of *NASA* climatologist James Hansen, among the first scientists to declare a

concrete limit on carbon emissions: "If humanity wishes to preserve a planet similar to

that on which civilization developed and to which life on Earth is adapted, paleoclimate

evidence and ongoing climate change suggest that CO2 will need to be reduced from its

current 385 ppm to at most 350 ppm."[52] As scientific consensus around this number

accumulated, *350.org* emerged as a "voluntary, temporary, and tactical" advocacy spin-

off. The community has "mastered" one isolated piece of research drawn out of NASA's

technocratic, decidedly apolitical sector and reimagined this concept for an acute

ideological mission. McKibben expressed the laser-focus of this approach at *Harvard*

Medical School's Center for Health and the Global Environment during a seminar about

'Covering the Environment in a New Media World' in the fall of 2008:

> This number is now the most important number in the world. In
> fact, if there is some reason that we have this thing, the Internet,
> this amazing new technology that sprung from nowhere, there's no
> better argument for it than trying to figure out how you spread one
> discrete piece of information to everybody on the globe.[53]

In this sense, *350.org* can be understood as a knowledge community that leverages social

media tools to prompt an *intervention* – an injunction, a reversal of an abuse, a

fundamental change in our natural relationships with the Earth - in short, a revolution.

As McKibben imagines, the Internet literally exists *for 350* and not the other way around.

New media technologies are the essential binding agents for mobilizing a coordinated,

engaged, and networked political movement. Among the current set of media tools

utilized by *350.org* are: (1) an animated multilingual online video that has been viewed

over 100,000 times via *YouTube*, (2) a cross-platform social network organized through

portals such as *Facebook*, *MySpace*, and *Twitter*, and (3) a coalition-building program

that has resulted in no fewer than two hundred official relationships with global partner-

organizations.[54] A sample of these partners attests to the wide-ranging appeal of the

350.org campaign: *1 Sky*, *Accion Verde* Zaragoza, *Christian Aid*, *Greenovate*, *Kids for*

Tigers, *Religious Witness for the Earth,* etc. 350.org appears to have successfully taken

its movement beyond the typical choir for 'green issues' (often 1st world, wealthy

constituents of the lifestyles of health and sustainability movement, LOHAS) thereby

extending the reach of its 'intervention' to include a wide-ranging cross-section of

religions, generations, and languages.[55]

Most notably, *350.org* seeks to breaks down the traditional barrier between virtual

communication systems, 'web world,' and political agents, 'real world.' *350.org*

sponsors, equips, and organizes 'actions,' mobilizing its partners for 'participatory' roles

in symbolic events (i.e. the *2009 International Day of Climate Action*). This type of

symbolic action resonates with earlier Civil Rights era disobedience but has been updated

for participants more likely to be familiar with 'flash-mobs'[56] than 'sit-ins' or street

protests. McKibben expresses the integral relationship between 'symbolic action' and

'real-world' outcomes:

> In the weird moment in which we live, practical action is symbolic
> and symbolic action becomes highly practical . . . and the web is
> the only reason that we have any possibility of that symbolic action
> getting large enough, quickly enough, to matter . . . . And if we can
> somehow get that interface between web-world and real-world and
> web-world and real-world working then we have at least a
> chance.[57]

Within this context, McKibben triangulates an important principle for progressive science

and environmental communicators: *media married with action yields intervention.*

Individual action, isolated 'green lifestyle' advocates, have practically no net effect on

global environmental health but social agents, working in symbolic congress, are capable

of truly translating information into situations that re-define our natural relationships.

While *350.org* offers a good case-study for demonstrating the power of

intervention-centered media, it is necessary for most media producers to think of the

situation in reverse; that is, *media-centered intervention*. In response to this challenge, I

propose a series of 'best practices' that may adapt and re-conceptualize static media

products (for example, my film*, "Division Street"*) into engaged, community-driven

multiplatform media concepts.

"Division Street" is an hour-long film, a selection of the *Wild & Scenic Film*

Festival, the *Reel Earth Film Festival*, and the *International Wildlife Film Festival*. An

excerpt of the official synopsis reads:

> "Division Street" chronicles the 'green adventure of a lifetime' - a
> quest to visit the most remote place from any road in the lower 48
> states. From pristine roadless areas to concrete jungles, follow
> filmmaker Eric Bendick as he tours North America, dodging
> Yellowstone's grizzlies and Miami's taxicabs, and highlighting
> sustainable road projects and wildlife corridors for the 21st century.
> Roads are the largest human artifact on the planet; they have
> fragmented wild landscapes, ushered in the 'age of urban sprawl,'
> and challenged our bedrock sense of community. But as the
> transportation crisis appears to be spiraling out of control, a new
> generation of ecologists, engineers, city-planners, and everyday
> citizens are transforming the future of the American road.[58]

From a new media outreach/intervention perspective the film's subject is immediately

advantageous: the decentralized highway network is accessible, relevant, and reveals

embedded analogies to our digital 'information superhighway,' qualities that facilitate

open-source participatory peer-production and intervention. The first step is to imagine

the stakeholders of this knowledge community; in this case, commuters, wildlife

advocates, landscape ecologists, Departments of Transportation, backpackers, hikers,

geocachers, and city planners (all of whom are profiled in the film). Secondly, we need

to imagine the virtual platform connecting such stakeholders to one another and to the

content production team. Jenkins and Lévy's work offers us incite into the landscape and

flow of participation and relationships in contemporary 'knowledge cultures:'

> Pierre Lévy speculates about what kind of aesthetic works would
> respond to the demands of his knowledge cultures. First, he
> suggests that the "distinction between authors and readers,
> producers and spectators, creators and interpreters will blend" to
> form a "circuit" of expression, with each participant working to
> "sustain the activity" of the others. The artwork will be what Levy
> calls a "cultural attractor," drawing together and creating common
> ground between diverse communities; we might also describe it as a
> cultural activator, setting into motion their decipherment,
> speculation, and elaboration. [59]

In the re-conceptualization of "Division Street" according to these guidelines, we

create a new 'aesthetic work.' The 'symbolic' core of the film, the physical journey to the

most remote spot from any road, works to break down the 'web world' vs. 'real world'

divide. By farming out this symbolic gesture to the disparate community of stakeholders,

we create network of peer-producers and close the "circuit" between "producer and

spectator." In this design, *divisionstreetmovie.com* will consist of a map of the fifty

United States. Each state will have GPS coordinates of the most remote location labeled

and identified by a star. When activated, each star will open to an upload window

allowing user-generated media from the locations to be added: panoramic photography,

video, text, or drawings. At launch, only one star is activated, the point profiled in the film, with accompanying rich media available for immediate viewing. Site visitors will be encouraged to participate by navigating to one of the forty-nine locations that have not been documented. For example, a site visitor from New Jersey (a) sees the location of the most remote location in New Jersey, (b) travels to this place with camera (c) and finally, uploads his/her media to the site. When complete, the website functions as a visual atlas of some of the last remaining intact ecosystems in the United States. The site can be accessed for entertainment, scientific analysis, and education about higher-order concepts such as wildlife corridors, landscape ecology, and ecosystem health. Additionally, user-generated media, ongoing interviews, and clips from the film make up the *"Division Street Podcast,"* available through the iTunes Music Store. The project thereby strives to create multiple access points, and multiple levels of participation/engagment for showcasing content. As an example of best practices, this is in agreement with Jenkins notion of a 'transmedia' projects: "a transmedia story unfolds across multiple media platforms, with each new text making a distinctive and valuable contribution to the whole."[60]

In the realization of this concept, a static media production is re-organized into an organic, multi-dimensional, evolving participatory media initiative. In summary, the demonstrated 'best practices' that animate *media-centered intervention* are: (a) closing the 'circuit' between producer and consumer; offering counter-hierarchical knowledge communication, production, and distribution, (b) incoporating symbolic action; net result: bridging the gap between virtual and political agency, fundamentally 'politicizing'

individual and group actions (c) offering crossplatform distribution 'nodes;' net result, transmedia projects broaden access and encourage formal innovation in new discursive practices (d) fostering social networks of diverse stakeholders; net result, allows interdisciplinary collaboration to ferment between relevant parties including scientists, activists, policy-makers, artists, and public, (e) cultivating a culture and practice of intervention; net result: activating new hermeneutic debates, re-engineering our relationships with normative philosophies, channeling community knowledge into social change.

The application of such practices in contemporary media production has far-ranging implications for our 'natural world' and its 21st century stewards. *Partnership* is more than an ethic, it is a *practice*. In this sense, it is no longer enough to know the best course; rather, it has become the challenge of real political agents, strange bedfellows, constant gardeners, and digital savants racing to enact a shared vision of our present and future world. It is the hope of this author that today's media producers, by paying close attention to current trends and strategies in the networked information economy and by embracing new methods, questions, and opportunities, may cultivate their own 'green thumbs' and enable a renewable harvest of the "greatest good."

END NOTES

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