This essay discusses participation in online collaborations and the potentials of "extreme sharing networks" in the unregulated commons. Current debates focus too much on what social tools can do and not enough on the people who use them. The motivations of the multitudes who add content to online environments matter a great deal. The following offers hands-on guidelines and an outline of preconditions for online participation. Terms such as involvement, turn taking, network, feedback, or distributed creativity [1] are frequently applied in order to characterize social and cultural interaction in online collaborations. Today, people do not merely browse the Web. They give away information, expertise, and advice without monetary compensation. They submit texts, code, music, images, and video files in settings that allow for such contributions. They also re-mix each other’s content. Thousands voluntarily participate in open encyclopedias, social bookmarking sites, friend-of-a-friend networks, media art projects and blogs or wikis, which exemplifies the growing interest in technologies of cooperation. Swarms of users/ producers form extreme sharing networks supporting people’s goal to lead fulfilled and engaged lives. The broad cultural context of increased content provision facilitated by the World Wide Web is the precondition for the emerging paradigm of the artist as a cultural context provider, who is not chiefly concerned with contributing content to her own projects. Instead, she establishes configurations into which she invites others. She blurs the lines between the artist, theorist, and curator.

However, it is surprising how little emphasis has been placed on the subtle motivations for taking part in participatory projects. The blueprints for participation in social networks and their multi-faceted hierarchies of gift exchanges have not been drawn out enough. Brian Holmes and Maurizio Lazzarato are highly skeptical when it comes to the liberating potential of digital social communication. They argue that networked "lean production" turns full-time employees into "part-of-the-solution-nodes" without health insurance, union protection, or job security. For Lazzarato network technologies are even more totalitarian than Henry Ford’s assembly line. Holmes argues that distributed, casualized labor is based on the ruthless pleasure of the exploiter using the soft coercion of the laptop as portable networked instrument of control. Paolo Virno places these questions of labor, idleness, and leisure at the center of the discussion about all of contemporary production. [2] In addition, Tiziana Terranova points out that the openness of virtual space reinforces narrow group identities. [3] It creates archipelagos of disconnected islands. This extreme form of social filtering and "cyberbalkanization" fosters micro-territories of interest-based communities. The current interest in collaboration is surprising, but collaboration is not for everyone and enthusiasm for participation is not the default. Robert Putnam outlines that civic participation and social connectedness are on the decline in the United States. [4] Putnam collected evidence showing, for instance, that fewer people go to public meetings. His argument is that Americans are more likely to find themselves bowling alone than getting involved in various groups. However, in opposition to Putnam's observations, self-help groups and special interest communities thrive. We connect to others who share our views but glare at the world outside our narrow agreeable circles with disinterest. Critics also propose that social and resource sharing tools cannot replace heated face-to-face debates and that information suffocation takes away from time for thinking and reflection. However, we are not agents of technology without self-determination. We can make informed, human, and reflected use of technological tools. While much of the debate surrounding networks caters to corporate management concerns, this text is not written to promote business. Instead it acknowledges achievements in creating sustainable extreme sharing networks that do not represent utilitarian corporate interests. What follows is not an argument for or against collaboration or networking. The center of interest here is the issue of participation in online environments.

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Brief Chronology and Definitions of Collaboration

In 1945, computing pioneer Vannevar Bush outlined the idea of hyperlinked pages, which became the core concept of the World Wide Web. The first person to elaborate on this concept was Ted Nelson who, in 1960, started developing the hypertext project Xanadu. In 1980, Tim Berners-Lee worked as independent
researcher at CERN ("Organisation Européenne pour la Recherche Nucléaire) where he proposed a project based on the concept of hypertext that would facilitate the sharing and updating of information among researchers. In 1989, this led him to conceptualize the World Wide Web by linking the idea of hypertext with the TCP and DNS ideas. [5] Since then, the unifying interface of the WWW made it considerably easier for people to form groups on the Internet. Today, people connect in order to discuss health issues, organize politically, find jobs or solutions to technical problems. They join self-help groups or locate others who share their specific set of interests. People from all walks of life form knowledge collectives to hunt, gather, and freely share material that is of specific interest to them. Knowledge collectives of unrestricted exchange and dissemination include individual aficionados, governmental and non-governmental organizations, researchers and students. The benefits of early online groups, such as the WELL [6] in the 1980s, were outlined by Howard Rheingold in his book Virtual Communities. [7] More recently, a growing number of users / producers has been making use of cooperation-enhancing tools such as blogs and wikis. At the same time, friends networks such as LinkedIn and MySpace often remain attached to utopian technoromanticism. What is portrayed as open and free is often rather closed and expensive. Recent studies of the Pew American and Internet Life Project show that 51 million of US Americans have created content online and 57% of (American) teens who use the Internet could be considered content creators. [8] The average European Internet user now spends 10 hours and 15 minutes a week online. Personal media such as blogs allow for life sharing; the social bookmarking tool del.icio.us allows users / producers to save their URL bookmarks online and connect to those who assigned their saved entries with the same self-defined keywords, also called folksonomies. According to Joshua Schachter [9], there were 400,000 posts on del.icio.us in May 2004. Skype, a program that allows users to make free calls over the Internet, has now 41 million users. These socially cooperative tools, including RSS, make inter-communal connections easier.

Non-collaboration is the exception today. From activism to media art, science, and academia, it is hard to discern areas in which people do not work together. However, neither collaboration nor cooperation are new phenomena; nor are they exclusively specific to the online domain.

In countries with sufficient net access and a supportive cultural context, individuals organize to challenge intellectual property online. They publish openly. Many even produce collaborative artworks. The high times of the individual, solitary artist genius are over. Today, cultural context providers realize that artistic production entails more than making informed aesthetic choices. They are aware of the long history of participation in art (i.e. Marcel Duchamp, Robert Adrian, John Cage, and many others). Rheingold goes so far as to suggest that "a new literacy of cooperation - a skill set for how to leverage the power of socio-technical groupforming networks and catalyse action - will become an important competency in the next decades." [10] However, collaboration and cooperation are not limited to the WWW. Collaboration is an intensive, risky, and complex process that brings people together around a common goal. In collaboration, resources, reputation and rewards are shared by all participants. Cooperation is a less precarious endeavor, based on more casual interpersonal activities. In cooperation, participants keep their resources separate. They take home the fruits of a given project individually. Success is not hindered by divergent goals. Consultation refers to advice from an expert and offers the least involved model of working together. The German political theorist Christoph Spehr introduced the notion of free cooperation. [11] Instead of portraying the rules of cooperation (i.e. property relations) as an unshakable given that "naturally" transcends history, Spehr stresses the need to negotiate and re-negotiate these rules. In its questioning of authority, the concept of free cooperation is related to the civil rights movement in the United States. For example, experimentation with new modes of cultural production is in many cases linked to the emergence of alternative institutional models. Today, steep increases in tuition fees at universities in North America and Europe, as well as the general corporatization of academia have led to many self-organized community initiatives such as Universite Tangente. More collaborative, alternative models of living and working challenge the exhausting principle of competition for domination and survival. The 11 million citizens of the world who protested simultaneously and showed their defiance regarding the war in Iraq on February 15, 2003, are a suitable example. The fact that organizers were able to mobilize such a large number of people was deemed successful, despite the fact that it did not stop the war.

The Social Protocols of Collaboration

The social protocols of (online) collaboration are not sufficiently investigated. What makes collaboration work? Certainly there is no "happy pill" for something as complex and quotidian as collaboration. The following general, practical guidelines for collaboration resurface throughout much of the literature in the field of collaboration study:

* Develop trust and mutual respect
* Outline clear and attainable short- and long-term goals
* Define needs / self-interest well
*Give reasons behind your thinking
*Combine online collaboration with face-to-face meetings to speed up the process
*Be concise, patient, and persistent
*Get everybody involved in the process
*Develop a clear process including self-reflexive loops
*Stick to initially made commitments
*Take a dose of humility
*Develop good listening skills
*Pay attention to scale in collaborative groups (production groups: 4-5 participants)
*Put a stop to domineering interruptions and put-downs
*Communicate frequently, clearly, and openly
*Acknowledge upcoming problems
*Use facilitators for larger groups
*Develop a long-term view
*Learn when to let go

For facilitators of online participatory projects the ground rules become more specific:

*Start with a core group of users / producers (start working with a core group of 10-15 when it comes to the point where you need to solicit participation)

*Start with relevant, high quality material (the quality of initial contributions sets the tone and an expectation for posts to come; it creates an identity of the online space)

*Keep contributors informed (it is not unusual for contributors to drift away after a few initial interactions with the collaborative system; thus a useful response is to give contributors an update on what is going on)

*Give individuals credit (in addition to the pleasure of making a submission, verbal acknowledgment and letting people know that their ideas are appreciated contribute to the success of online collaboration)

*Emphasize the benefits (it is natural for contributors to resist getting involved; hence facilitators of a social tool need to talk about the advantages of using it in workshops and face-to-face meetings)

*Allow for conflict (controversial debates are important - disagreement fosters engaged, substantive conversations)

*Let the users / producers rule (trust your contributors to take your system and adapt it to their needs)

The Utopias and Realities of the Commons. The Hierarchies of the Internet Gift Economy

For people in countries with affordable high-speed net access and the necessary hardware, the Internet offers a common area for sharing and the creation of very large resource pools. The idea of "the commons" goes back to the village commons. In Old New England, all people could graze their cattle or hold public festivities on this piece of land. The term "unregulated networked commons" refers to the remaining public areas online in which people can store resources such as pieces of code, music mp3 files, movies, artworks, or texts (e.g. Archive.org). Beyond providing a "storage space," the networked commons is used by knowledge collectives and group forming networks, info-driven mobile computing crowds, and peer production networks. In the unregulated commons, everyone can draw on the resources of all others. Content can be created, distributed, and mixed. There are many examples of large groups of distributed resource contributors participating in a central knowledge pool. But participation and "open access" in the networked commons are hindered by the fact that most open knowledge repositories exist predominantly in English. Tools like GoogleTranslate or Babelfish still result in auto-poetic texts rather than accurate translations.

The openness and cornucopia of the commons are often accompanied by digital utopians' triumphant narratives. Today's utopian belief in the liberating power of access and the renewed rejection of competitive and hierarchical structures had predecessors in concepts of "guerilla television" and "public access" before and during the civil rights movement of the late 1960s and early 1970s in the United States. [12] For the digital utopian, Richard Coyne argues, the Internet is the technological equivalent of the gift of salvation or redemption, and the gift is not yet with us but it is to come. In various ways, Marcel Mauss, Georges Bataille, and Jean Baudrillard have all argued that societies are grouped around the notion of excess (and acts of generous gift giving) rather than resource scarcity. [13] But the ideology behind social software technologies is not purely based on the idea of gift giving. In the gift economy of the Internet, gift giving does not relate to loss or the reduction of excess. Sharing a digital file only creates a copy while the giver retains the "original.". What was ours is still ours after we gave it away as gift. Richard Barbrook refers to online gift giving as cybercommunism. [14] Not without amusement he stresses that such acts are deeply at odds with the military objectives underlying the invention of the Internet. Brewster Kahle, the founder of...
Intelligent Agent 06.02

Out-Collaborate This!

Collective working modes often result in cost-free and unrestricted repositories of material such as SourceForge’s Freshmeat project, which maintains the Web’s largest index of software. The project website says, "Thousands of applications, which are preferably released under an open source license, are meticulously catalogued in the Freshmeat database." [20]

There is an additive quality of skills and knowledge within projects of geographically dispersed online “gift communities,” which is hard to match by any commercial enterprise. They are "out-collaborated." The accessibility of resources creates expectations that have political implications (e.g. property / copyright). Who would choose to pay for information that is available for free elsewhere? How much material needs to become freely accessible and publicly owned before corpora-

Large knowledge archives can challenge the content hegemony of institutional repositories (i.e. museums) and the selected histories that they offer. It will be seen if recent art history, for example, will be re-evaluated based on an open user / producer-created archive of cultural documentation. Archives of cultural data with contributions by artists can inspire younger generations by exposing them to artwork that they would not find behind the gates of the museum or gallery. Knowledge, here, is not delivered by authorities but assembled by the user / producer swarm. It remains to be seen, however, how heavily cultural archives are in fact accessed. The edited but artist-driven Rhizome ArtBase collects and "exhibits" media artworks. The rich Media Art Net database is comprised of documentation of artworks and related information. [21] Artists rarely have secure backups of their server-side work, which makes centralized repositories significant.

Researchers and self-learners in new media find it hard to keep up with the changes in this rapidly evolving field. They find it challenging to design curricula in an area that has little precedence. New media textbooks are expensive, often not up-to-date and mostly in English. Intellectual property rights of most materials reinforce the commercialization of knowledge and deny creative re-use. Much of the intellectual labor produced in universities is locked away in expensive books or journals published by academic presses. Collaborative knowledge pools include Connexions, CiteULike, MIT Open Course Ware, H2O and Share Widely. [22] These tools challenge the romantic ideal of the individual thinker who keeps her findings close to her chest. Collaborative research saves time and resources and improves teaching. It is also aimed at avoiding the reinvention of the wheel. Expectations are quantified by ever-larger amounts of knowledge being moved into the commons out of fortified enclosures (i.e. password protected journals or syllabi).

Artists as Cultural Context Providers

We (Jackie and Natalie) are the initiators and coordinators rather than the absolute authors. User participation and contributions make up the fundamental core of the work that needs to be done. [23]

Is drawing a distinction between the artist on the one hand, and those mediating art on the other hand still justified in this context, or should everyone be viewed as a producer of culture under rather similar, often precious circumstances? [24]

The following section discusses the model of the cultural context provider. [25] There currently is a lot of advocacy for cultural practices that demand involvement on
the part of the audience, creating situations in which art projects are co-produced. People interact with networked computer systems, and artifacts evolve out of experimental relationships between several people. The media art curator is not exclusively the "middle person" between artists and museums or galleries anymore. Curators do not merely organize exhibitions and edit, filter, and arrange museum collections. Their practice includes facilitating events, screenings, temporary discursive situations, writing / publishing, symposia, conferences, talks, research, the creation of open archives and mailing lists. Curators are increasingly becoming meta-artists. They set up contexts for artists who provide contexts. The model of the curated website has become a useful recognition mechanism. In media art many cultural context providers function in various registers including that of the curator. However, the once clear line between curator, artist, and theorist is now blurred. Jon Ippolito writes, "While art professors typically divide clearly into critical (Art History) and creative (Studio Art) faculties, new media's brief history often requires its practitioners to develop a critical context for their own creative work. This is why so many pre-eminent new media artists are also critics or curators." [26]

The model of the well-informed expert advances to that of the cultural editor who channels the perspectives of other cultural producers. The prevailing standards of recognition in the art world are slowly ported to their online equivalents (i.e. gallery, museum, cafe, community center versus self-publication, peer-curation, and museum website). The hopes of early net artists for the democratization of art that would make them independent of the traditional museum curator because of the public exposure that the Internet affords have largely not materialized. While online projects can remain very intimate spaces without institutional promotion, there definitely is the opportunity for self-organization. Artists can generate platforms such as mailing lists, websites, and independently organized exhibitions to circulate their ideas and set up platforms from which they can interact with an audience. The power of the media art curator is somewhat decentralized but she is still important as expert and cultural legitimizer. She can contextualize projects as part of culturally discursive currents or historical processes. Experiments with collaborative forms of curating that would expand the notion of the sole curator are rare and have so far not sparked much of a following. But curators have the ability to foster participation in open artworks by drawing attention to them. Problems occur due to the continuously evolving nature of audience-oriented works. The properties of an art object have drastically changed, and curators are now faced with projects that are ephemeral, based on networks, appear in many copies, and are often grounded in a form of communication rather than a physical object. Context-based artworks are sometimes dismissed by curators as service rather than art. Less enlightened museums curators frame new media art in modernist terms that are based on familiar rules for institutional inclusion or exclusion. On which aesthetic criteria should institutions base their decisions in the face of constantly changing forms of new media art works? Perhaps the museum is not the most suitable venue. Many emerging practices can be experienced at media art festivals such as Transmediale, Ars Electronica, Dutch Electronic Art Festival, or ArtBot, but when it comes to more traditional art institutions, the validity of much of this work as art is questioned. Venues for new media practitioners are not predominantly festivals or museums but virtually distributed communities:

[...] organisations are using the traditional commission model for determining which individuals will receive electronic archive and display space. [...] Organisations using this strategy include Turbulence, a website sponsored by New Radio and Performance Arts Inc. [...] Using a peer-review process, Turbulence selects up to 20 Internet art projects per year to commission and display. Turbulence retains exclusive rights to display of the work for 3 years. [27]

These curated sites slowly gain in credibility and are a good entry point for people looking for net-specific art.

What is an Extreme Sharing Network?

The use of the term network in this text does not refer to a personal or professional group of acquaintances or an Old Boys network. The self-entrepreneurial, opportunistic networking that widely occurs in the art world is not of interest here. This essay is not discussing radio or television networks. Neither does it address local or wide area, criminal, or business networks. What is of interest here are ways in which the Internet supports social networks through listservs, message boards, friend-of-a-friend networks, mobile phones, short message service / text messaging (sms), peer-to-peer networks, and social software such as blogs. In the essay, we are focusing on these technologically enabled social networks. And within that realm, we are looking at self-organized, autonomous networks that support the development of sustainable relationships empowering us to lead fulfilled and engaged lives. We call these particular social networks extreme sharing networks. This term evolved out of the notion of extreme programming. The concept is seen as sustainable mechanism for social change based on intensive collaborative work. Personal collaboration burnout is circumvented. Extreme sharing networks are deliberately constructed as loosely knit groups based on commonalities, bootstrap economies, and shared ethics. They offer alternative platforms of production and distribution of cultural practices. [28] However, they do not exist completely outside of institutions. A network can be just as brick-and-mortar as an institution. Over the last decade, there has been a realization that the traditional set-up of institutions, based on competition instead of cooperation, is...
labeled inadequately. In competitive situations, energy that could have been channeled into one concentrated collaborative effort is lost. Networks can respond faster to discursive currents. For extreme sharing networks, the political sensitivities of an institution are not an issue. Jobs are not on the line. Such social networks escape the bureaucracies of large institutions by making productive use of unconventional formats of debate, such as networked luncheons, skype meetings, and evenings in the living room or bar. If people identify with a network, they have the potential to circumvent local struggles for recognition (Linz / Vienna, Sao Paolo / Rio de Janeiro, New York / Los Angeles). They can reach across cities and national borders and form a social network identity that is not tied to a locale. Research can be experimental and playful, as results do not immediately need to be measured in financial terms. Networks can make use of publications in hybrid forms. They can employ open access publishing and collaborative online editing (i.e. Sarai Readers). This is frequently not in accord with standards of recognition in larger institutions.

Extreme sharing networks allow people to freely meet in the commons, mobilize and share talents, context, and resources (in-kind and financial). They create visibility for discourses and artworks that would otherwise be overlooked. Everybody is an expert at something and can contribute to the mix in meaningful ways. These gift communities [29], or extreme sharing networks, have the potential to inscribe discourses in collective memory, inspire and, to some degree, shape people's lives. The following is a list of the main potentials of extreme sharing networks:*

* Go beyond local identities through network identity
* Provide resources / access to distributed talent pools
* Create visibility for discourses and artworks that would otherwise be overlooked
* Inspire younger generations by exposing them to ideas and media
* Respond to issues in a fast and flexible way
* Create open access resource archives for the public
* Shape expectations
* Provide intellectual community among new media practitioners
* Share expertise over geographically distributed areas
* Publish in hybrid formats / online open access initiatives
* Be open to experimental, informal formats of research

**Organization and Domination**

What marks our participations in social networks? Networks shape expectations. If we can get a certain piece of information for free through our network, we will be reluctant to use a fee-based service for retrieving the information. Throughout New York City, there are free wireless networks creating the expectation that wireless, high-speed Internet should be free. If the open archive of a network offers lots of materials that we can re-use without unreasonable copyright restrictions, then we will come to expect that this should be the default situation. A set of common goals with which participants can identify is beneficial for bringing individuals together. The extreme sharing network needs to be meaningful in order to attract contributors. In addition, an interpretative flexibility is needed for networks to create their own trajectory. As much as the idea of "collaborative ruins in reverse" [30], one network grows into another based on urgencies. Networks creatively adapt to ever changing environments and gain the ability to reproduce themselves. The connected nodes are often in central control, which determines much of the success or downfall of networks. Who speaks on a mailing list? How far does central facilitation reach? A rotating set of facilitators is a good leadership model. An extreme sharing network will only succeed if networkers understand themselves as free agents and not as followers. Small work groups that address a specific issue work better than larger conglomerates. Participants align themselves with networks by publishing in their context. These networks offer an umbrella for work in a particular area. They are nodes, platforms on which researchers, educators, and activists can share their work and produce together. Their physical presence is not so crucial to the vitality of their output. The actuality of these networks is measured by their research production, their dynamic, and their ability to mobilize advanced discourse. Creation and socialization of research do not depend on brick-and-mortar institutions. The actuality of a network is determined by the extent to which it is able to inspire. Rarely can traditional cultural institutions afford to work on one topic for an entire year, but this is possible in an extreme sharing network. Very little of the success of a network has to do with the newest piece of technology. Limitations of free software for managing electronic mail discussion, such as Mailman, may stand in the way of more successful online debates, but they are not the central issue. As opposed to the early days of the Internet, when technologies themselves were novel and had an appeal, it is unlikely today that anyone would be attracted to an initiative merely because of its use of a wiki or some type of peer-2-peer software. Cooperation-enhancing tools such as blogs or wikis are important but without a true need for a social group, these tools will not go far. A social network needs to be able to connect. It needs to allow for co-ownership in its activities. An insistence on exclusive ownership in an inter-communal collaboration kills the motivation of co-participants. It destroys a sense of cooperation and trust. The creation of informal
and formal relationships among individuals within the network is essential. Social networks allow for a symbiotic production of events, texts, publications, and cultural projects. Extreme sharing networks are sometimes diagnosed with the "Major Tom Syndrome" - having cut off all contact to earth, suspended in the utopian galaxy of collaboration. On the other hand, the following examples show that these networks are very real and that their output has to be reckoned with!

The Australian Fibreculture [31] network is about critical debate on information technology and related policy issues, and provides a forum for the exchange of articles, ideas, and arguments on Australian IT policy. It runs a substantive open access Journal. Most recent issues focused on the politics of networks, on precarious labor, and on new media education. Since 2001, Fibreculture published a series of free newspapers covering topics such as networks of excellence, media activism, politics, and theory. Its mailing list comprises more than 900 subscribers.

The Institute for Distributed Creativity (iDC) [32] is an independent research network with a focus on collaboration in new media art. The iDC is interested in continuous collaborations and alliances, online community art, and experimental ways of triggering participation in online environments. In its first year, the iDC held the first conference on new media art education in the United States, "Share, Share Widely," and has put on a dozen events since.

The Institute of Network Cultures (INC) [33] focuses on research, meetings, and (online) initiatives in the area of the Internet and new media. The INC functions as a framework within which a variety of studies, publications, and meetings can be realized. Its goal is to create an open organizational form with a strong focus on content, within which ideas can be given an institutional context. The INC, founded in June 2004, facilitated conferences including "Art and Politics of Netporn," "Urban Screens," "Incommunicado 05," and "A Decade of Webdesign," as well as a lecture series on new media in the Netherlands.

Such peer production networks form knowledge collectives and create free archives in the unregulated parts of the commons. They move information into the "open" where it is protected by GPL and Creative Commons licenses. While increased numbers of individuals provide content, or participate in online communities, many people have a conflicted relationship with collaboration.

They experienced self-sacrifice, problematic crediting economies, and invisible labor as central themes in "failing" collaborative endeavors. Disintegration and revitalization are also seen as part of the process of failure. However, the end of one participatory effort can fade into the next one.

Within an alternative Internet economy of generosity and the gift, material can be shared. It is a Marxian economy by the people, for the people, and of the people. Now property definitions are radically reset. The growing online participation and content provision outlined in this text is the backdrop for an emerging paradigm of the artist as cultural context provider: a catalyst of performative online acts. The modus operandi of new media practitioners has largely shifted away from object creation towards the process of interaction. In addition, media artists write, curate, produce artworks and set up discursive events.

Peer-to-peer economies and "networks of excellence" have been thoroughly examined. In light of this prevailing business focus, it is important to fully consider alternative uses of technologies of cooperation. Without a deep understanding of the social protocols of collaboration and incentives for participation, non-commercialized projects will not draw the users / producers that they need. Extreme sharing networks will not suddenly disappear. They are here to stay!


References:


[6] WELL is an online forum and a virtual community since 1985; http://www.well.com/


[17] Ibid. [11], pp. 99-150

[18] Ibid., p. 126


[25] This essay started with references to studies that produced evidence for an increase of content production online. This widespread tendency towards participation is a reason for the emergence of the cultural context provider. Artists who have taken on the Internet as a context for their work de-emphasize individual authorship and answer to Brecht's demand for an apparatus that goes beyond broadcast-type, one-way information. Bertold Brecht "Der Rundfunk als Kommunikationsapparat" in Willett (ed.), *Brecht on Theatre* (Hill and Wang: New York, 1964 [1932]).


[28] In the past, experiments with new modes of cultural production were linked to alternative institutional models such as Black Mountain College. This experimental college thrived in the mountains of North Carolina from 1933-1957 despite a small budget. With faculty such as John Cage, Buckminster Fuller, and Walter Gropius, its approach to cultural and institutional practices was informal and collaborative.

[29] However, running a network is not completely free. The costs are small but they do add up in the long run. The time needed to moderate mailing lists, updating domain names, or paying for web space are part of the everyday business of socio-technical networks. These particular economies are under-examined.

[30] The American conceptual artist Robert Smithson thought of "ruins in reverse" as places that were already deteriorating at the time of their construction. Smithson's notion of "ruins in reverse" is exemplified in the context of a series of photographs that he presented to architecture students at the University of Utah in 1972.

