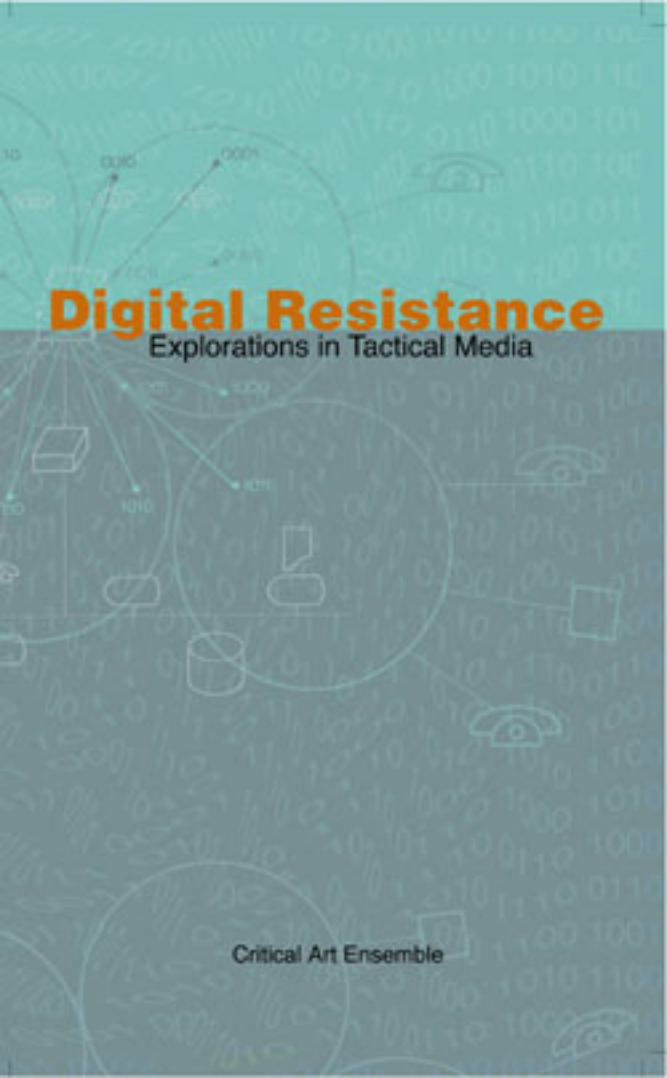
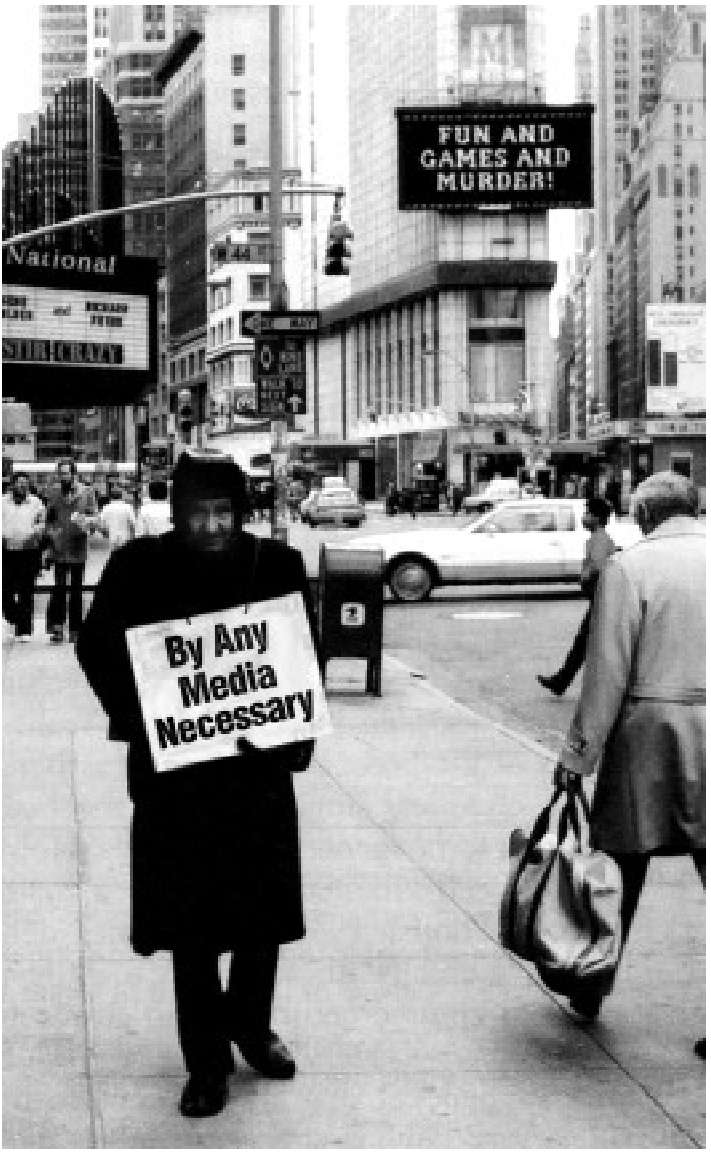
Digital Resistance

Explorations in Tactical Media



Critical Art Ensemble


FUN AND
GAMES AND
MURDER!
National
By Any
Media
Necessary

Introduction

For many decades, a cultural practice has existed that has avoided being named or fully categorized. Its roots are in the modern avant-garde, to the extent that participants place a high value on experimentation and on engaging the unbreakable link between representation and politics. Perhaps this is a clue as to why this practice has remained unnamed for so long. Since the avant-garde was declared dead, its progeny must be dead too. Perhaps this brood is simply unrecognizable because so many of the avant-garde's methods and narratives have been reconstructed and reconfigured to such an extent that any family resemblance has disappeared along with its public face. To intensify matters, participants are neither fish nor fowl. They aren't artists in any traditional sense and don't want to be caught in the web of metaphysical, historical, and romantic signage that accompanies that designation. Nor are they political activists in any traditional sense, because they refuse to *solely* take the reactive posi-

tion of anti-logos, and are just as willing to flow through fields of nomos in defiance of efficiency and necessity. In either case, such role designations are too restrictive in that the role boundaries exclude access to social and knowledge systems that are the materials for their work. Here may be a final link to invisibility: these participants value access over expertise, and who really cares about the work of an amateur?

All good things must come to an end. The naming and defining has begun along with a more structured flow in the form of a movement with numerous subcampaigns. The process began in 1993 when a coalition of Dutch cultural groups produced an event/scene in Amsterdam called the *Next 5 Minutes* (N5M). The topic of the event was "Tactical Television" (so named by Dutch cultural theorists involved in the production who were inspired by de Certeau's work, *The Practice of Everyday Life*). The event drew all kinds of people from Europe and North America who were concerned with issues of intervening in television, theorizing the structure and dynamics of video culture, modeling representations of political causes that further social justice, creating alternative models of distribution, and so on. The event was small (around three hundred people), but it indicated that a new kind of coalition was beginning to form. Event organizers quickly realized that tactical television was too limited in its scope, because there were people with a similar sensibility who were doing tactical work in all types of media, and that they should all come together. The event's next manifestation in 1996 addressed the topic "Tactical Media" (as it did again in 1999). This time the event was more international, and included all forms of media, although

the conversation was skewed toward electronic media (radio, TV, the Internet).

A name that would stick had emerged, along with a basic definition that was provided by the organizers of the N5M:

The term "tactical media" refers to a critical usage and theorization of media practices that draw on all forms of old and new, both lucid and sophisticated media, for achieving a variety of specific noncommercial goals and pushing all kinds of potentially subversive political issues.

These moments of solidarity via linguistic recuperation are usually accompanied by mixed feelings, and this particular case was no different. On the one hand, there was a feeling of caution and perhaps regret. Once named and defined, any movement is open to co-optation. Should tactical media become popularized, its recuperation by capital is almost inevitable. Definitions also create boundaries. What was once so liquid would become increasingly structured and separated as the movement was theorized and historicized.

On the other hand, joy can emerge out of separation that expresses itself as generative difference. There was a feeling of relief that those involved in tactical media could be any kind of cultural hybrid. Artist, scientist, technician, craftsperson, theorist, activist, etc., could all be mixed together in combinations that had different weights and intensities. These many roles (becoming artist, becoming activist, becoming scientist, etc.) contained in each individual and group could be acknowledged and valued. Many felt liberated from having

to present themselves to the public as a specialist in order to be experts (and therefore valued). It was a vindication of the proto-anarchist Fourier's idea that pleasure and learning come from what he termed the "Butterfly"—the human desire to access as many active processes and learning resources as possible, or to put it negatively, an aversion to boredom caused by redundant specialized activity.

Some of Guattari's ideas were also vindicated in the sense that this group developed a liberating collective arrangement of enunciation that denied linear separation. While this situation was not the beginning of a molecular revolution (although it may prove to be so), it was a molecular intervention. For a brief time there was and continues to be a relief from capital's tyranny of specialization that forces us to perform as if we are a fixed set of relationships and characteristics, and to repress or strictly manage all other forms of desire and expression. Participants knew that a practical process had been collectively started by many groups and individuals from around the globe (mostly by parallel invention) for a real politicized interdisciplinary practice, and that the methods needed to actualize this practice were being researched and tested the world over.

On a more personal level, the members of Critical Art Ensemble (CAE) had mixed feelings on the subject. To be named seemed restrictive, and in more paranoid moments, even murderous. However, since CAE was always being named whether the collective liked it or not, to have a designation members were comfortable with was good. We had escaped the unbearable weight of being artists, and within the specialization of art we could separate

ourselves from site-specific artists, community artists, public artists, new genre artists, and the other categories with which we had little or no sympathy. Because the collective did not appear to be engaged in a particular practice, we were being saddled with such designations, or found ourselves complicit with this categorizing process just so we could start conversations with people uncomfortable with the unnamed.

The collection of traits from which a tactical media practice emerges is bound to change depending on who is asked what these traits are. There is a constant shifting of value that parallels shifts in the roles of any given individual involved in the practice, so an individual can change he/r point of view very rapidly. In conjunction, cultural context plays such a significant part in the tactical media user's perception that the model has to be constantly reconfigured to meet particular social demands. Tactical media is not a monolithic model, but a pliable one that asks to be shaped and reshaped. It contains many different and often contradictory conjectures, but it has a few principles that seem to have general value (although there are always exceptions).

First, tactical media is a form of digital interventionism.* It challenges the existing semiotic regime by replicating and redeploying it in a manner that offers participants in the projects a new way of seeing, understanding, and (in the best-case scenario)

* By "digital" CAE means that tactical media is about copying, recombining, and re-presenting, and not that it can only be done with digital technology. Please see Chapter 5, Part I, for a more detailed discussion of the issue.

interacting with a given system. The already given and the unsaid are the material of a tactical media event. As Stanley Aronowitz says about the postmodern thinker: "We deconstruct the 'givenness' to show the cracks that sutures have patched, to demonstrate that what is taken as privileged discourse is merely a construction that conceals power and self-interest." Much the same can be said about the tactical media practitioner, the difference being that rather than just doing critical reading and theorizing, practitioners go on to develop participatory events that demonstrate the critique through an experiential process.

The tactical media practitioner uses any media necessary to meet the demands of the situation. While practitioners may have expertise in a given medium, they do not limit their ventures to the exclusive use of one medium. Whatever media provide the best means for communication and participation in a given situation are the ones that they will use. Specialization does not predetermine action. This is partly why tactical media lends itself to collective efforts, as there is always a need for a differentiated skill base that is best developed through collaboration.

In conjunction, tactical media practitioners support and value amateur practice—both their own and that of others. Amateurs have the ability to see through the dominant paradigms, are freer to recombine elements of paradigms thought long dead, and can apply everyday life experience to their deliberations. Most important, however, amateurs are not invested in institutionalized systems of knowledge production and policy construction, and hence do not have irresistible forces guiding the

outcome of their process such as maintaining a place in the funding hierarchy, or maintaining prestige-capital. One of the most recent examples of this trend is the tremendous job that amateur scientists and health care practitioners did and are continuing to do in shaping policy regarding HIV. Now most experts wouldn't recognize these people as scientists or health care providers; they were simply concerned individuals dedicated to social justice who collectively had an impact on policy construction. Their expertise primarily came from everyday life experience and amateur study, and yet this collection of people who rallied in coalitions such as ACT UP had remarkable vision and continue to have an impact.

Tactical media is ephemeral. It leaves few material traces. As the action comes to an end, what is left is primarily living memory. Unfortunately, as feminist performance theorist Rebecca Schneider has convincingly pointed out, no one has solved the haunting problem of the archive, an issue first isolated by Derrida. Tactical media rarely escapes the problems of secondary representation, and the few material trace elements, subservient and partial records of an immediate lived experience, often appropriate the value of the experiential process. After the event is over, photos, scripts, videos, graphics, and other elements remain, and are open to capitulation and recuperation. In spite of such problems, the situation is not entirely disastrous. Traces and residues are far less problematic than strategic products, which come to dominate the space in which they are placed. Monumental works are the great territorializers—they refuse to ever surrender space. Instead they inscribe their imperatives upon it and disallow anything other than passive view-

ing. They are the great negaters of generative difference, and are engines of alienated separation. But unlike monumental works (whether these are in fact monuments proper, or even worse, movements, coalitions, campaigns, or programs that become bureaucracies), the trace is stratified in its interpretive structure, so no matter how quickly and profoundly it is assimilated, it still contains the possibility of radical *action*. This possibility redeems the trace because it can offer the makings of minor histories that render credible the beliefs that something different from the inhumanity of capital is possible, and that a continued capacity for direct autonomous action and its initiation can lessen the intensity of authoritarian culture. Aiming for this possibility, tactical media is always ad hoc and self-terminating.

In the following pages the reader will find theoretical and documentational traces of tactical media. CAE does not present these cases so much as models but as possibilities. They are simply modest illustrations of the broad material and content base of tactical media. We trust that they indicate that no cultural bunker is ever fully secure. We can trespass in them all, inventing molecular interventions and unleashing semiotic shocks that collectively could negate the rising intensity of authoritarian culture.

Vote Generic Centrism

"We promise to maintain exploitive social relationships.."

1

Electronic Civil Disobedience, Simulation, and the Public Sphere

What counts in the long run is the "use" one makes of a theory.... We must start from existing practices in order to retrace the fundamental flaws.

– Felix Guattari, *Why Marxism and Freudianism No Longer Disturb Anyone*

In 1994, when Critical Art Ensemble first introduced the idea and a possible model of electronic civil disobedience (ECD) as another option for digital resistance, the collective had no way of knowing what elements would be the most practical, nor did it know what elements would require additional explanation. After nearly five years of field testing of ECD by various groups and individuals, its information gaps have become a little more obvious and can finally be addressed. Of particular concern in this essay is the recent turn of events that has pro-

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duced an ECD model that opts for public spectacle over clandestine policy subversion, and that emphasizes simulated action over direct action. CAE contends that these are unfortunate currents in the general research on ECD. CAE still believes that ECD is an underground activity that should be kept out of the public/popular sphere (as in the hacker tradition) and the eye of the media, and that simulationist tactics as they are currently being used by resistant forces are only modestly effective if not counterproductive.

Civil Disobedience in the Public Sphere

Those familiar with CAE's modeling of ECD* know that it was an inversion of the model of civil disobedience (CD). Rather than attempting to create a mass movement of public objectors, CAE suggested a decentralized flow of particularized micro-organizations (cells) that would produce multiple currents and trajectories to slow the velocity of capitalist political economy. This suggestion never sat well with more traditional activists, and recently even Mark Dery (in both *Mute* and *World Art*) criticized the model because there would be conflicting goals and activities among the cells. To the contrary, CAE still holds that conflicts arising from the diversity of the cells would function as a strength rather than as a weakness; this diversity would produce a dialogue between a variety of becomings that would resist bureaucratic structure as well as pro-

*For more information: All CAE books, including *Electronic Civil Disobedience*, are available from Autonomedia (NYC) or they can be downloaded free of charge at <http://www.critical-art.net>. German (Passagen Verlag), French (l'Éclat), and Italian (Castelvecchi) translations are also available; unfortunately they are not available on-line, so contact CAE for more information.

vide a space for happy accidents and breakthrough invention. If resistant culture has learned anything over the past 150 years, it's that "the people united" is a falsehood; this concept only constructs new exclusionist platforms by creating bureaucratic monoliths and semiotic regimes that cannot represent or act on behalf of the diverse desires and needs of individuals within complex and hybridizing social segments.

The second key inversion of the model of CD was to aim directly for policy shift, rather than trying to accomplish this task indirectly through media manipulation. CAE's position is still that the direct approach is the most effective. The indirect approach of media manipulation using a spectacle of disobedience designed to muster public sympathy and support is a losing proposition. The 1960s are over, and there is no corporate or government agency that is not fully prepared to do battle in the media. This is simply a practical matter of capital expenditure. Since mass media allegiance is skewed toward the status quo, since the airwaves and press are owned by corporate entities, and since capitalist structures have huge budgets allotted for public relations, there is no way that activist groups can outdo them. A sound bite here and there simply cannot subvert any policy-making process or sway public opinion when all the rest of the mass media is sending the opposite message. Any subversive opinion is lost in the media barrage, if not turned to its opposition's advantage through spin.

There was a time when CD and media manipulation combined were successful in disrupting and shifting authoritarian semiotic regimes. The civil rights movement is an excellent example. The

movement's participants understood that the Civil War was still being fought on an ideological level, and hence one social/political/geographic region could be turned against another. The northern and western regions of the U.S. had advanced not only in terms of industry, but also in their methods of public (and particularly minority) control. The Civil War had eliminated the retrograde political economy of the south, but had failed to shift its ideological structure (a far more difficult element to change), and hence had not altered its symbolic mechanisms of control. All the civil rights movement needed to do was to call attention to this failure, and the fully modern northern regions would force the south to comply with an ideological position that would be more compatible with the socioeconomic needs of advanced capital. The images produced through acts of civil disobedience suceeded in provoking outrage at the retro-ideology of the south and rekindled the state of war between the regions. Student volunteers, community organizers, and eventually federal police agencies and the military (mobilized by the executive office) became allies and fought for the movement.

At the same time, the civil rights leaders were not naive about this matter. They knew that the only racist policies that would change were those not held by the north and that racism was not going to disappear; it would only be transformed into a more subtle form of endocolonization, as opposed to its then current status as an explicit set of segregationist norms. Indeed, the general understanding of African Americans—that there was a hard boundary beyond which policy would shift no further—was key in the rapid decline of the civil rights movement and in the high-octane fueling of the black

power movement. Unfortunately, the latter fared no better with its media campaign, because it lacked the infrastructure to support its own material needs.

As a means of media manipulation, CD worked in the case of the civil rights movement because the historical dynamic of capitalism acted as the foundation for its success. History was still heterogeneous and the normative manifestation of capitalist ideology was still a striated space at both the national and international levels. But what do we do now, having reached the point where visible, diversified ideologies in the West no longer exist, and history is nothing more than a homogeneous construct that continuously replays capitalist victories? From where will public outrage originate? What army, government, corporation, or any other power base will support the disempowered when exploitive endocolonial relationships are precisely what allow these agencies to flourish? This is why CAE has argued for direct confrontation, by using financial leverage obtained through blocking privatized information (since this form of information is the gold of late capital). Appropriating media gains nothing in undermining an authoritarian semiotic regime because no power base benefits from listening to an alternative message; however, appropriating profit through blocking information sends a clear message to any chosen capitalist institutions—for them, it may be cheaper to change policy than to defend militarily a semiotic regime under pressure. Accomplishing this task is possible in the virtual realm, and it takes only the most modest of investments to act (compared to forming an army); however, for such resistance to endure requires clandestine activity.

Currently, the one weak exception to rejecting (E)CD as a means to manipulate mass media is in cases where history and ideology have not been homogenized. These tend to be situations in which a resistance movement is in conflict with a dominant power that is still viewed by pancapitalism as being in some form different from itself. For instance, the democracy movement in China used CD and media manipulation with a degree of success. Outrage was generated; however, rigid national boundaries kept it from manifesting in any way useful for the movement other than the granting of asylum by western countries for those who had to flee the Chinese authorities, and in generating a modest amount of diplomatic pressure on China. Even in this best-case scenario (and in a way very similar to what occurred during the civil rights movement), while the ideological order of pancapitalism was offended, the western economic order perceived China to have more similarities than differences, and hence little was done by the "outraged" west to support the democracy movement or to materially undermine the Chinese infrastructure.

ECD and Simulation**

Very early on in the development of electronic media, Orson Welles demonstrated (perhaps accidentally) that simulation has material effects. The simulation of a news broadcast reporting that aliens had invaded earth had the effect of causing a minor panic among those caught in the hall of mirrors that emerged out of the implosion of fiction and

**CAE would like to thank Heath Bunting for his valuable contribution to CAE's development of a simulationist model of subversion.

nonfiction created by the broadcast. Only varying degrees of plausibility existed as to the truth of the story. Simultaneously, all information was true and all information was false in that historic moment of an erupting hyperreal. We have seen a replay of this narrative in the 1990s with regard to resistant electronic culture, but with some peculiar differences.

In an addendum written in 1995 for *ECD and Other Unpopular Ideas*, CAE noted that there was growing paranoia among U.S. security agencies about controlling the electronic resistance. Oddly enough, these agencies scared themselves with their own constructions of electronic criminality. It was much like Welles being scared of his own broadcast. In that comic moment, CAE ironically suggested that ECD was successful without ever having been tried, and that merely announcing that some form of digital resistance could occur could have the effect of creating a panic in security agencies to such a degree that their primary focus would become locked in the hyperreality of criminal constructions and virtual catastrophe. This is a comment that CAE wishes it had never made, as some activists have come to take it seriously and are trying to act on it, primarily by using the Web to produce hyperreal activist threats to fan the flames of corporate-state paranoia. Again, this is a media battle that will be lost. State panic and paranoia will be transformed through mass media into public paranoia, which in turn will only reinforce state power. In the U.S., the voting public consistently supports harsher sentencing for "criminals," more jails, and more police, and it is this hyperreal paranoia that gets law-and-order politicians the votes needed to turn these directives into legislation.

How many times must we see this happen? From McCarthyism to Reagan's fear of the Evil Empire to the War on Drugs, the result in each case has been more funds for military, security, and disciplinary agencies (fully mandated by an already fearful and paranoid voting public), and this in turn tightens the endocolonial belt. Considering that the U.S. is currently involved in the rapid creation and expansion of security agencies devoted to policing electronic criminality (and since these agencies make no distinction between politically motivated action and criminality for profit), it seems misguided to give power vectors increased means for raising public support for this military growth, as well as a basis for increased national and international legislation regarding political management of new electronic media.

Whether simulationist tactics could be used in a more compelling way is difficult to say. Since the CIA and the FBI have been using these tactics for decades, it is easy to locate examples that could be inverted. One of the classics is the CIA's toppling of the Arbenz government in Guatemala in order to support United Fruit, protect oil interests, and undermine a democracy with such leftist leanings that it legitimized the communist party within the U.S. sphere of influence! To be sure, the CIA built its operational infrastructure well by using economic sabotage to create unrest, but the final act was one of electronic subversion. The CIA simulated field radio broadcasts of antigovernment troop movements around the capital. Upon intercepting these broadcasts, the Guatemalan government became convinced that a large rebel army had been mustered and was preparing for an attack. To the contrary, the public was overwhelmingly support-

ive of the government, and only a modest rebel faction existed. Unfortunately, government officials panicked and the government fell in disarray.

The FBI used a similar means of subversion by employing hyperreal communications in its attack on the Black Panthers. Much like the CIA's intervention in Guatemala, the FBI's infowar had a strong infrastructure. The Bureau had infiltrated the Black Panther Party (BPP) and was close to the high command, so it knew the nature of (and the players in) the party's internal struggles. It had also successfully used local law enforcement to harass chapters across the U.S. The party's treasury was perpetually depleted due to the persistent arrests of members by police, who intentionally abused their power in order to drain party funds by forcing the membership to continually post bail for those detained. Given these conditions, paranoia was the order of the day for the Black Panthers, and when the schism between the San Francisco and the New York chapters erupted, the FBI saw a perfect opportunity to implode the party. As a result of a simple letter-writing campaign that fanned the flames of mistrust between east and west leadership, the party collapsed amid its own internal fighting. (The FBI's campaign consisted of the creation and delivery of documents that criticized specific leaders and their party policies; these documents were made to look as if they originated from internal party opposition.)

This method could be inverted and turned against authoritarian agencies. The infighting that already occurs within and between government and corporate institutions makes them self-subsidizing targets. The military and economic infrastructure that was necessary for the operations in the examples

given here is not necessary for ECD operations, since the internal warfare is already occurring (given capital's tendency toward predation, fear and paranoia are a part of everyday life experience for those deep within power vectors, and hence no expenditure is necessary to create them, as was necessary with the BPP). Certainly, carefully written and directed letter(s)/e-mail messages could have an implosive effect (although it's doubtful that a full collapse would ensue); however, the lessons learned from these classic cases of simulationist tactics have to be understood and applied. First and most obvious, this form of resistance would be covert. Second, reliable insider intelligence would need to be acquired. This is the most problematic area in this kind of tactical maneuvering, although it is not impossible to find solutions. For simulationist tactics of resistance to be successfully employed, methods and means of research, intelligence gathering, and informant recruitment have to be developed. (CAE is willing to bet that the next breakthrough paper on resistance will address this very problem of amateur intelligence generation.) Until that occurs, subjective-subversive action will be pretty ineffectual. At present, those not involved in a fully developed covert approach can only act tactically in regard to the strategic principles of an institution rather than to specific situations and relationships. Obviously enough, a tactical response to a strategic initiative makes no sense. In all probability such action will not have the desired effect, and will only alert the agency being hit to prepare for potential external pressures.

We must also remember that simulationist infowar is only a destructive tactic—it is a way to cause institutional implosion, and has very little produc-

tive value in terms of policy reconstruction. To continue with the example of racism, agencies that have institutionalized racist policies (and that includes pretty much every institution in the pancapitalist regime) will not be changed by an infowar of institutional attrition. The semiotic regime of racist policies will continue untouched in other institutions that are interrelated through the shared privilege acquired by maintaining such policies. CAE still insists that productively challenging institutions will not occur through nihilistic gestures, but instead through forcing changes in the semiotic regime on an institutional basis while leaving the material infrastructure intact for reinscription.

The Problem of Containment

Marshalling the materially destructive tendencies of hyperreality has other problematic consequences when these destruction codes are released into the spectacle. Most notable is the problem of containment. If an authoritarian agency believes itself to be under attack, or under the threat of attack (deferred virtual catastrophe), and it is in the public limelight because of this, it will lash out in a less than predictable way. It may act in a manner that is injurious to itself, but it is just as likely that it will act in a way that could endanger unsuspecting elements of the public sphere. Introducing the public into the formula forces the threatened agency to face one major consequence: In order to keep up with the speed of the infosphere, it must act quickly. Hesitation, even to allow time for reasonable analysis and reflection, is not an option. In the current marketplace of public relations, success and failure have imploded, and all actions, when represented

well, reside in the sphere of hyperreal success and victory. The only useful distinction to be made is between action and inaction. Inaction is the sign of weakness and ineptitude. Caught in this high-velocity vector, a threatened agency will take action that will be explosive (not implosive). Scapegoats will be designated, and action detrimental to these individuals or populations will follow (the perfect macrocosm of this sequence of events is U.S. foreign policy and the actions taken on its behalf). In other words, once this sequence of destruction was initiated by threat (whether virtual or actual), the often uncontrolled forces that would be released could not be contained or redirected by the resistant force. This inability to contain the explosion links this model (in effect only) to terrorism. Not that the activists are initiating terrorist practice, since no one dies in hyperreality, but the effect of this practice can have the same consequence as terrorism, in that state and corporate power vectors will haphazardly return fire with weapons that have destructive material (and even mortal) consequences.

What is odd is that such action would not be taken out of a concern for infrastructure, but for the semiotic regime and the entity's public image in hyperreality. However, when the public is taken out of this formula, the sequence changes dramatically. The agency under pressure would not have to act quickly. It could have time to investigate and therefore be able to deliver a more surgical strike, because the sign of weakness (the public perception of inaction) would not be damaging its intended public representation. In this worst-case scenario for the activists, the response would be far more directed, and hence the consequences

would tend to fall on those who actually took the risk of initiating the action. If the agency were unaware that it was under subversion and an implosion occurred, the public would not be notified or feel the direct consequences (although indirect ones such as unemployment are probable). In either case, there would be no violent explosive spinoff of shrapnel that could land anywhere in the landscape of resistance. In other words, containment would be actualized. What is of additional interest is that the agency under pressure would subsidize containment activity. No agency wants to publicize that it is in financial trouble, that its security has been breached, etc., and hence it would contain itself. However, if the public is introduced into the formula, then the likelihood of containment evaporates and the consequences become less than civil. For this reason CAE continues to believe that all useful models of ECD (or for that matter, nearly all political as opposed to consciousness raising and pedagogical actions***) within the current political conditions have in common covert action and an abhorrence of mass media as a theater of action.

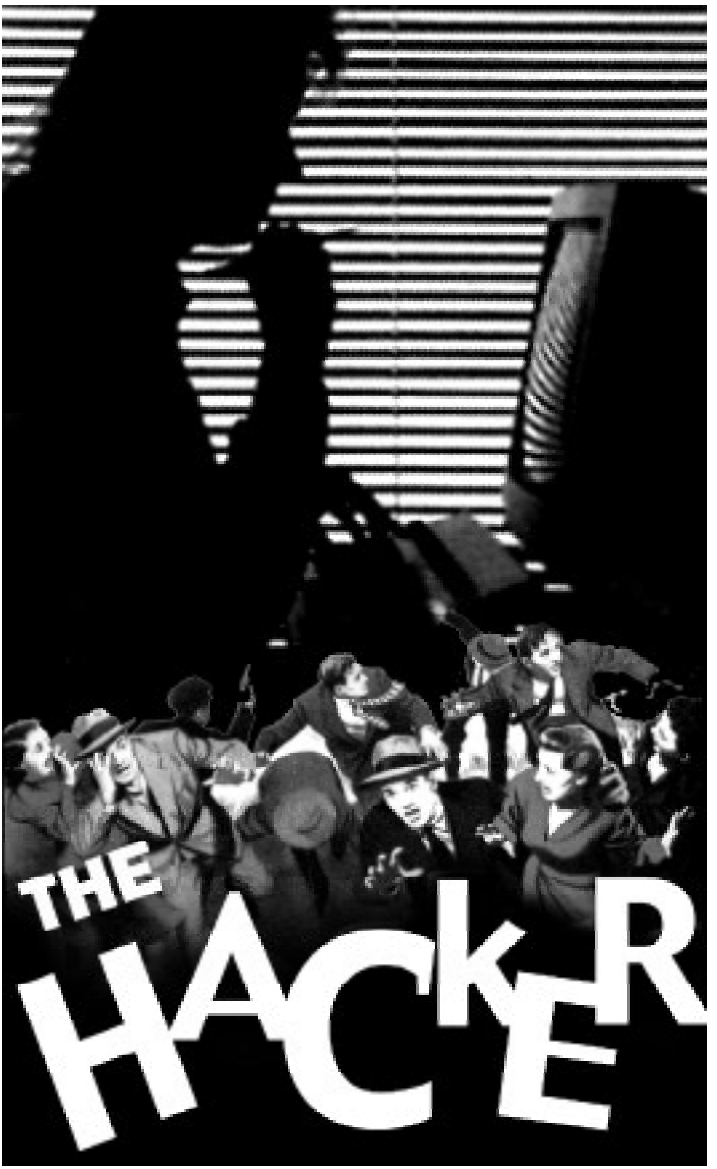
***A pedagogical situation/action gives participants the opportunity to escape some form of taken-for-granted authority. In this moment of liberation, they can think about alternative possibilities in relation to the specific or general issue addressed. This kind of work is the domain of politicized cultural action. However, such action is only pedagogical, not political. It prepares the consciousness of individuals for new possibilities, and in the best cases, moves them to political action. Activity inspired by pedagogical situations, however, is political action. By political action, CAE means the temporary or permanent redistribution or reconfiguration of power relationships (material or semiotic). We would also like to note that the distinction between these categories should not be assumed to be totalizing, but rather represents a general tendency in the typology of activist action.

Writing the Discourse on ECD

Given the desire to keep the mass media out of the discourse on ECD, CAE thought it wise to close with a few suggestions on how to speak semipublicly about what should only be discussed among trusted companions. This is an old problem, so fortunately there are some precedents—most notably the Frankfurt School. Its strategy was to write in the most dense, arcane style imaginable so that only initiates into the fold could decipher it; in this way the discourse stayed out of the public sphere where it did not become a resource for market cooptation. Happily, we do not have to go to such lengths. The writing can be clear and accessible, but it should be made to resist the eye of the media. Fortunately this is easy to do. All that is necessary is to make it "bad copy." This is why CAE speaks in terms of general models and hypotheticals (and never about specific actions). Not only would we not want to make specifics public for obvious reasons, but generalities (models) are not very interesting to the grand majority of the popular media audience. Models are bookish and slow, and in the fast-paced image barrage of popular spectacle, they are simply boring.

CAE also suggests looking to historical analogues for examples of tactical actions, particularly ones that were activated by authoritarian power vectors. None of the popular media is particularly interested in more talk about "olden times," nor are they interested in past atrocities (except for those perpetrated by Nazis). Discussion of such topics leaves the media with nothing interesting to bring to the public. This strategy goes back to issues of constellations, detournement, appropriation, etc. Use what

is already available, give the media vultures nothing, and the only option for cooptation left is cannibalism (hence the proliferation of retro). Now clearly, it's too late to stop media cooptation of ECD. It has already been sold for fifteen minutes of fame, and is fueling a new round of cyberhype, but e-activists can bring a halt to this current media event by supplying nothing more. We can also be thankful that ECD and other forms of electronic resistance that have now been dematerialized into the hyperreal buzz of "hacktivism" are just more cyberfads that will rapidly fade on the technohorizon, leaving the committed to continue with business as usual.


THE
HACKER

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The Mythology of Terrorism on the Net

The "wired world" is often presented and perceived as a world without borders. To some extent this idea is true, particularly when one is analyzing how the Internet is used by various military organizations and multinational corporations; however, in a general sense, the Internet is not a world without borders. It does not exist in a vacuum. For example, when an individual logs onto the Net, h/er perception of the electronic experience is partly shaped and framed by the socialization practices of that person's native country, and hence the experience has national and/or ethnic qualities. The mythologies of the Net that perhaps might seem most relevant to an individual are also partly determined

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This essay was originally a lecture given at Ars Electronica at *Mythos Information* in Linz, Austria, in 1995. While some elements seem a little dated, there are enough useful ideas regarding current debates on electronic civil disobedience that make this lecture worth printing. (While this lecture did go unpublished in English, it was published in German in *Springer*, and in Finnish in the anthology *Sähköiho*.)

by geography, class, and cultural identity. The development of the mythologies through which the meaning of the Net is constructed, or more accurately, imposed, typically arise out of national interests. To sum up, the Net is culturally and politically bordered, and its meaning is constructed under the authority of capital's variables of separation. For this reason CAE feels bound to make the following qualification: As CAE proceeds to discuss the mythology of terrorism on the Net, please remember that the position developed here comes from the perspective of those facing the political struggles against the rampant forces of authoritarianism in the U.S. Consequently, some of our comments may not be applicable to the European or world situation in general. It can also be said with a degree of certainty that a number of elements in this discussion will not be applicable to third world countries where terrorism still is considered to have limited revolutionary significance. On the other hand, CAE does hope that this essay will contribute to a comparative study of perceptions of the meaning and function of terrorism on the Net.

It was an experience that CAE had in London that drew the group to this topic of terrorism and the Internet. In the fall of 1994, the collective was speaking at the *Terminal Futures* conference held at the Institute for Contemporary Art, London. The topic was "electronic civil disobedience." During the question-and-answer period at the end of the talk, an audience member said that what we were suggesting was not a civil tactic of political contestation at all; rather, the tactic that we had suggested was "pure terrorism." CAE found this comment to be very curious because we could not understand

who, or more to the point, what this audience member thought was being terrorized. How can terror happen in virtual space, that is, in a space with no people—only information? Have we reached a point in civilization where we are capable of terrorizing digital abstractions? How was it that this intelligent person had come to believe that electronic blockage equaled terror? This is an unusual puzzle that CAE would like to take the first steps toward solving.

Let us begin by briefly describing terrorism as a political action. Terrorism is a strategic form of contestation, in which the resistant faction attacks the designated oppressor by using tactics of near-random violence against its citizenry. The resistant faction seeks two consequences through such actions: First, to create a panic that will sweep through the population. The panic originates when members of the public have a perpetual apprehension of their own mortality, due to what is perceived to be a consistent state of violence. If this panic can be maintained for a long enough period of time, the public will eventually demand negotiations to end this socio-psychological state of discomfort.

Second, this strategy is used in the hope that the oppressor will show its true face—one of extreme authority. That is, the oppressor will exert extreme control over its population in a militaristic manner. Two crucial events occur when the symbolic order of domination collapses and the material order of the military takes over. First, from the point of view of the citizens, "basic" freedoms are sharply curtailed; if this condition is maintained for long enough, terrorists believe that the citizens will eventually shift blame for their apparent lack of au-

tonomy from the terrorist organization to the state. Second, resistant factions tend to believe that the state will not be able to maintain the financial drain on its resources caused by constant use of military force. Unlike the deployment of spectacle, deployment of the military is exceedingly expensive, and there is no return on the investment other than temporary moments of social order. Due to financial constraints, the oppressor is eventually forced to come to the bargaining table. Terrorism then is not a revolutionary strategy, but one designed to force negotiation over policy.

The essence of terrorism is twofold. First, there is a public perception that terrorist violence is uncontrollable. Second, terrorism requires organic bodies to house the terror. But since terrorist violence cannot occur on a very large scale (since it is cellular in nature), a third component is required—an apparatus that can and will spread the spectacle of fear in a manner that blankets the given territory. We know this apparatus as "the media." The terrorist's violence allows he/r to appropriate this apparatus, and use it to deploy the type of fear that s/he sees as most advantageous. This final component is what leads us to understand that terrorism, as a necessary radical strategy in the first world, is an anachronism. The control of spectacular space is no longer the key to understanding or maintaining domination. Instead, it is the control of virtual space (and/or control of the Net apparatus) that is the new locus of power. For information economies, the Net, along with various intranets, are the apparatus of command and control. Since the division of labor has reached a plateau of unforeseen complexity, the most costly disaster that can happen in these economies is a communication gap;

this would cause the specialized segments of the division of labor to fall out of synch. Those who are electronically literate and dedicated to resisting both state authority and the hegemony of pancapitalism can use this development to great advantage. Through simple tactics of trespass and blockage, these resisters can force the state, military, and corporate authorities to come to the negotiating table. Placing the public in a state of fear is no longer necessary, nor is it essential to inflict violence on people in order to incite political change. And oddly enough, not even private property needs to be attacked or destroyed. All that is needed to accomplish what terrorism rarely does—policy negotiation—is to deny access to data conduits and bodies of data.

The most powerful weapon against authoritarianism has been delivered into the hands of the left, and yet we are letting it slip away. This is what truly worried CAE about the audience member's comments at the London ICA. The inherent civility of electronic disobedience is being deliberately and officially misconstrued under the signs of that which it is clearly not—terrorism, or more modestly, criminality. Most of the resistance on the Net confines itself either to offering alternative information services or to organizing around issues of autonomy, such as free speech. To be sure, these issues are important, but they are also secondary. However, the most important issue is not being discussed, and that is the demand for the right for people to use cyberspace as a location for political objection. Currently in the U.S., the punishment for trespass or for blockage in cyberspace is jail on the first offense. We must demand that a distinction be made between trespass with political intent and trespass

with criminal intent. For civil disobedience in physical space the penalty in the U.S., if one is arrested at all, is usually a $25 fine and a night in jail with one's fellow demonstrators. The state can be generous here, since such tactics are purely symbolic in the age of nomadic capital. Such generosity is not shown when the political action could actually accomplish something. This is a situation that must be changed.

But let us return to our original enigma, why an intelligent person would believe that civil disobedience is actually terrorism, when it is clear that electronic resistance has no relationship to terrorism in any tactical sense—no one dies, no one is under any threat. Further, it seems clear that the myth of electronic terrorism originates in the security state and in the U.S., at any rate, is deployed by state agencies such as the FBI and the Secret Service as well as by spectacular institutions such as Hollywood. How are people being duped by such obvious ploys? CAE's belief is that the prevalence of this myth reflects a subtle yet major shift in the validation of reality. The problem stems not so much from the efficiency of the state propaganda machine, but from a condition which is much more fundamental—an inclination to accept the idea of virtual terror.

The origins of this predisposition in the realm of the social are difficult to pinpoint, but probably began with the realization that power can be grounded in information. The first complex manifestation of this form of power is the bureaucracy—a very ancient form indeed. From the earliest days of the bureaucracy, official records

began to take on the status of official reality. What has changed since the days of papyrus and scrolls is that the organization of information has become amazingly efficient, since the invention of computers with their massive space-saving memories combined with accurate systems for immense storage and high-velocity retrieval. Combine these powers with computer networking capabilities, which transform information into a nomadic phenomenon, and the dominance of information reality becomes unstoppable. Information management is now generally perceived as a science of tremendous precision. And with the understanding of this activity as a science comes an authority and a legitimacy that cannot be disputed; after all, science is, for better or for worse, the master system of knowledge in secular society.

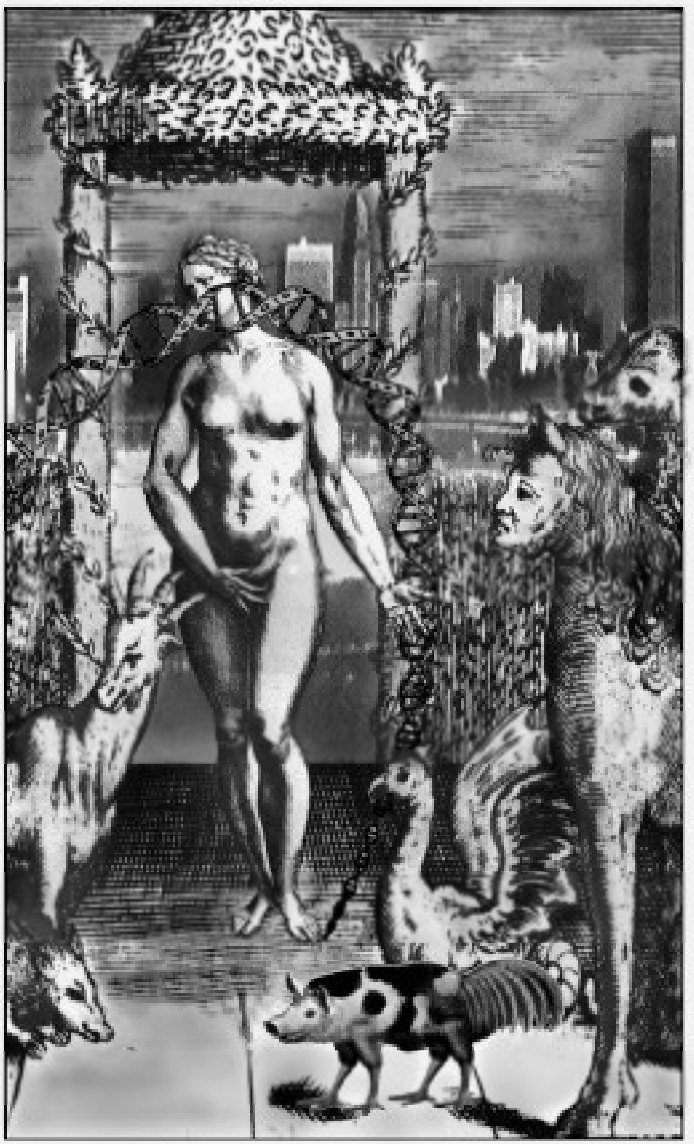
Let us return to the idea of the record. From an existential point of view, the record, optimized by the electronic information apparatus, has taken the form of horrific excess. Each one of us has files that rest at the state's fingertips. Education files, medical files, employment files, financial files, communication files, travel files, and for some, criminal files. Each strand in the trajectory of each person's life is recorded and maintained. The total collection of records on an individual is h/er or her data body—a state-and-corporate-controlled *doppelgänger*. What is most unfortunate about this development is that the data body not only claims to have ontological privilege, but actually does have it. What your data body says about you is more real than what you say about yourself. The data body is the body by which you are judged in society, and the body

that dictates your status in the social world. What we are witnessing at this point in time is the triumph of representation over being. The electronic file has conquered self-aware consciousness.

Herein lies a substantial clue as to why some people fear the disruption of cyberspace. While the organic body may not be in danger, the electronic body could be threatened. Should the electronic body be disrupted, immobilized, or (heaven forbid) deleted, one's existence in the realm of the social could be drastically effected. One could become a social "ghost," so to speak—seen and heard, but not recognized as real. The validation of one's existence could disappear in the flick of a keystroke. Once a population has accepted the notion that representation justifies one's being in the world, then simulacra begin to have direct material effects on the motivations and perceptions of people, allowing the security state and other keepers of information to exert maximum control over the general population. No doubt the erasure of social existence is a threat that strikes terror into people's hearts. This is, in part, why CAE believes it has been so easy to deploy the sign of terrorism on the Net. This is also partly why CAE members were accused of terrorism when we suggested using tactics of civil disobedience on the Net. Once we moved CD out of the realm of the physical, where disruption is localized and avoidable for those who accept their data body as their superior, we were suggesting their erasure as a consequence of political objection. What is frightening to CAE about this scenario is that electronic erasure is perceived as equivalent to being killed in a bomb

explosion. Now the perception exists that the absence of electronic recognition equals death.

With such considerations in mind, those who plan to continue the fight against authoritarianism, and who support maximum individual autonomy, have two important projects to complete. First, organic being in the world must be reestablished as the locus of reality, placing the virtual back in its proper place as simulacra. Only in such a situation can virtual environments serve utopian functions. If the virtual functions and is perceived as a superior form of being, it becomes a monstrous mechanism of control for the class that regulates access to it and mobility within it. The continuing calls for consolidation, fencing, and privatization of the Internet are indicators that resistance is behind in this battle. Second, steps must be taken to separate political action in cyberspace from the signs of criminality and terrorism. The current state strategy seems to be to label as criminal anything that does not optimize the spread of pancapitalism and the enrichment of the elite. If we lose the right to protest in cyberspace in the era of information capital, we have lost the greater part of our individual sovereignty. We must demand more than the right to speak; we must demand the right to *act* in the "wired world" on behalf of our own consciences and out of goodwill for all.



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The Promissory Rhetoric of Biotechnology in the Public Sphere

Just as the Christian soul has provided an archetypal concept through which to understand the person and the continuity of self, so DNA appears in popular culture as a soul-like entity, a holy and immortal relic, a forbidden territory. The similarity between the powers of DNA and those of the Christian soul, we suggest, is more than linguistic or metaphorical. DNA has taken on the social and cultural functions of the soul. It is the essential entity—the location of the true self—in the narratives of biological determinism.

—Dorothy Nelkin and Susan Lindee

Popular wisdom in western culture has long told us that science is our new religion. This trope has been repeated regularly since Turgenev's creation of the nihilistic Bazarof and Nietzsche's pronouncement

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of the death of God. Like most propositions derived from popular perception, there is an element of truth in it. Science is the institution of authority regarding the production of knowledge, and tends to replace this particular social function of conventional Christianity in the west. In keeping with this position, science has slowly but surely become a key myth maker within society, thus defining for the general population the structure and dynamics of the cosmos and the origins and makings of life, or, in other words, defining nature itself. Much as religion once defined the human role in the cosmos, science does the same in such a way that the political economy of the day seems to be a part of nature and attuned to its laws and imperatives. Certainly the theory of evolution is an example of science fulfilling the ideological needs of capital.

Science has never been very comfortable with its designation as the new religion, and rightly so. After all, the analogy is very loose, since science and religion share very few master narratives. The rhetoric of science has also generally strayed far from the rhetoric of theology. Science has developed its own language to represent itself to the public (i.e., those outside any scientific specialization), and the roots of its language are in the secularized speech of the Enlightenment. However, in the relationship between science and the public, we find a second suggestion of why science is often perceived as the new religion. Science is a key mediator of the public's relationship with nature, much as the Roman Catholic Church in medieval times mediated its public's relationship with God. Perhaps the Greens, with their simple, personal relationship with nature, could be our modern-day Protestants. Again, the analogy can start to get pretty silly when pushed

too far, but in light of the new biotech revolution, this exercise may be a necessity.

As the key knowledge producer for capital, science finds itself in a subservient middle-management position. Popular wisdom fails us when one notes that science as an institution is not the Church of Innocent III. It is by no means a general seat of power; its power lies only in the particulars of knowledge production. Indeed, this position is one of privilege, but it has definite limits. It must account for itself, and do so in the way that capital demands by showing that its knowledge production is profitable (particularly in the form of application, hence the marriage of science and technology). Should it fail in this endeavor, it will not be the great mediator of nature for long; however, science has been very successful at impressing its boss for the past century, and shows no signs of retiring. It is willing and able to exclusively serve the needs of capital, not just by generating knowledge that can be applied for profit, but also by *not* generating any knowledge or applications that could be detrimental to the maintenance and/or expansion of the system (for example, science has avoided creating a car that does not use fossil fuel).

In order to justify the selective nature of this variety of service, to impress and excite the various classes that monitor and distribute the investment capital marked for research and development, and to uphold its spectacle as a benevolent institution providing great marvels to the general public, science has constructed a rhetoric of promise derived from Enlightenment political principles to deploy either as a spectacle of seduction or deflection. This rhetorical system is most evident when the knowl-

edge meets the public in the applied form of new technology. From the building of railways to the construction of the Internet, utopian promises regarding the latest technological phenomenon have deluged us. And like those in every generation since that of the mid-19th century, critics of technology have tried to puncture these inflated claims (although usually with only modest success). While much of this rhetoric does come from scientists for the reasons given above, they alone are not to blame. These promises only continue to inflate when redeployed by the marketing and media agents of capital and by a broad variety of capital's ideologues. In this generation considerable time has been spent on critiquing the value of the Internet by leftist thinkers such as Pit Schultz, Geert Lovink, Richard Barbrook, Konrad Becker, Lev Manovich, Inke Arns, Oliver Marchart, Matt Fuller, Mark Dery, Critical Art Ensemble, and many others. They have endeavored to deflate the promises of marketers in their many guises, to reveal the ideological infrastructure of the technology and its representation, and to demonstrate that even the smallest utopian possibility contained in the rhetoric would probably not be generally realized by most of the world's population.

While the promises made about technology are many and appear in various permutations, they tend to fall into four main categories—democracy, liberty, efficiency, and progress. Democracy appears as the notion that everyone will be empowered by the new technology, and thereby have increased agency within the social realm. For example, one promise is that new transportation technology (the elder of the techno-revolutions birthed with capital's commitment to trains) will create a cos-

mopolitan state in which no one is restricted by spatial limits. Of course there is no real gain, only relative gain. Class structure replicates itself in the technology. Class strata reveal themselves in who can go farther, faster, more often, and in what degree of comfort. While a less privileged person can travel farther than ever before if so inclined, the relative distance between what members of different classes can and are likely to do remains about the same (or increases).

Liberty is usually presented in terms of freedom from restrictive social elements. This promise can take many forms. Liberation from drudgery in the form of work is an example of a typical form; however, decades of technoculture have taught us only that the greater the intensity of technology, the greater the workload. Much the same is true of efficiency. Improved efficiency only means more profit and speed for capital, while the implied promise of individual benefit never seems to materialize. Taken together, a working definition of progress emerges that means nothing more than the expansion of capital, but presents itself as advancement of the common good.

This collection of rhetorical truisms has worked well for over a hundred years, ushering in numerous innovations both mechanical and electrical, both analogic and digital, with strong public support. As the biotech revolution is being set into motion, the standard practice of parading the utopian principles of bourgeois society should be happening again, but strangely enough, it isn't. The problem is that history is disrupting the deployment of another round of the same old promises. Biology tried to have its social revolution once before (before it was tech-

nically ready to carry it out), when it was believed that Darwinism could explain the nature of biological process and its relationship to social "progress." The usual promises were made: real democracy would emerge through biological engineering, because all citizens would be fit agents for political action. A truly self-aware, self-generating equality would emerge. People would be liberated from biological destiny by controlling it themselves, and would be able to apply the values and morals of society to the production of the flesh. In this manner, biological progress would parallel technological progress.

What appeared instead was the horror show of eugenics that spawned unspeakable atrocities. The utopian mask fell from capital's face, and the sight was repulsive: selective breeding, forced abortions and sterilizations, and in the worst cases, genocide. All excess populations (i.e., those of no use to capital) were viciously attacked or done away with. At the other end of the spectrum (positive eugenics), capital worked on a biological means to replicate the populations it required by socially rewarding those who bred for health, intelligence, and moral character.

The eugenic initiative sliced a wound so deep into the social body that it has yet to fully heal. To this day it remains a painful memory that is almost impossible to acknowledge. In the U.S., eugenics is considered something dead and best forgotten. Few American authorities acknowledge that the U.S. was a leader in eugenic philosophy and practice. The feeling is that it happened somewhere else (probably in Germany, where there were Nazis). Unfortunately for the new generation of geneticists

and molecular biologists, the utopian rhetoric that once served other science and technology producers so well is now tainted. Using such language could raise up ghosts from the past that are better left to rest. Since the public has already seen the true face of capital and its plans for the flesh (invasion and instrumentalization), it would not be wise to use representation that could encourage remembrance of this vision, because it could lead to a popular condemnation of the new trajectory of flesh sciences.

The question now is, what rhetoric can be used to represent the new biological initiative so that it can keep its distance from eugenics? If the secular rhetoric of the Enlightenment is off limits, then what is left? One good place to turn is the utopian rhetoric of Christianity (and the Roman Catholic Church in particular).* The Church survived the eugenics movement reasonably unscathed—at least to the extent that it was not seen as a primary initiator of the movement, and in some cases was an open critic of it. Why the Church acted this way is open to question. Clearly, the idea that creation could be appropriated by humans would not sit well with the Church, and hence its position was to defend its belief system from a secular hubris that was out of control. However, one could also argue that

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*The other useful model is cybernetics. This postwar model unquestionably dominates the rhetoric *within* the various specializations in biology, but loses its dominance outside the specialization. Whether theological or cybernetic rhetoric is employed often depends on the public being addressed. For example, technocrats tend to appreciate the language of cybernetics more than the language of theology, because it is their own language. However, other publics that do not have the investment in cybernetics tend to be a little more wary of its reduction of the organic to code.

Church denunciation of eugenics was self-serving. For example, between 1900 and 1920, many of the marginalized groups in the U.S. that would be negatively affected by the eugenics movement, such as the Poles, the Italians, and the Irish, were largely Catholic. The Church could lose its constituency in America, and hence its public outcry. This notion of self service is reinforced by the fact that such protectionism wore off later in the century when the Jews became the primary target group affected by eugenics. Be that as it may, the rhetoric of origination and creation used by the Church remained disassociated from eugenics, so its rhetoric is still open to appropriation for those with the authority to use it.

Returning to the popular wisdom that science is our new religion, in the case of the biotech revolution there may well be an additional element of truth. The spiritual promises of a dying institution are now being reborn as a material reality that is not dependent on faith. In the process, perhaps we are witnessing another attempt to solve the conundrum of the skeptic who wants to believe. This problem was eloquently presented by Dostoyevsky through the character Ivan in *The Brothers Karamazov*. Ivan has a desire to believe in God, but His envelopment in mystery and otherworldliness leaves Him unaccountable for the evils in the world. If indeed there is a God, the empirical proof of His incompetence is overwhelming. For instance, Ivan saves newspaper clippings of atrocities committed against children. How can a good and righteous God allow such things to happen? In deciding between God and justice (the secular), Ivan feels compelled to choose justice, but suffers greatly for this choice. Here at the next *fin de siécle*, this paradox

of psychological suffering is no longer so perplexing. All that was once shrouded in mystery is now open to accountability and measurement. The choice is neither to push through the absurd and leap into transcendental worlds through uncompromising faith, nor side with justice at the expense of an empty soul; rather, the best option is to understand that redemption is grounded in the material. Whether speaking of questions about a new genesis, healing, universal connectedness, or even immortality, the answers are to be found in molecular strata beyond operational reality; however, this other realm can be measured, modeled, catalogued, and manipulated. Controlled access to creation, life, and the cosmos should be considered the solution to Ivan's dilemma.

The Quest for the New Eve

Biblical signs and symbols are entrenched in western culture. From childhood, we are taught to recognize and interpret them. For this reason biblical metaphor has always been an excellent resource for specialized culture to use in speaking to popular culture. Eve is one of those symbols that is immediately recognizable, for even the undereducated and/or the staunchly secular have had this sign of origination embedded in their cultural vocabulary. Since the legitimation of the theory of evolution, science has had a begrudgingly antagonistic relationship with creationist theory, which clings to the literal interpretation of the sign of Eve and the narrative of Genesis. It would be best if the creationists just went away and left science to its work, but like pesky gadflies they keep on challenging evolutionary theory with arguments solely supported by unfounded propositions contained in a sacred book.

As the popular wisdom of the American bumper sticker flatly states: "The Bible says it, I believe it, that's the end of it." In order to speak back to the nonspecialized public regarding the matter of the origin of life, science has managed to more than swat at the creationists with its partly empirically buttressed arguments—it has appropriated its symbol. We now have a Simian Eve—a lovely australopithecus found in Africa, and believed to be the oldest of our human ancestors. (One must note that while she is the Simian Eve, she is also known as Lucy, named for the Beatles song playing at the moment of her discovery.) Science corrected the Biblical misconception a second time by empirically proving that the first Homo sapiens woman was of African origin and appeared somewhere between 100,000 and 400,000 years ago. She is known as Mitochondrial Eve after the genetic trait used to trace her origin and clock her age. The broad approximation of her age is due to uncertainty among scientists as to how the mitochondrial clock works. One thing they do agree on is that the first Homo sapiens is older than the 6,000 plus years that Christian fundamentalist scholars claim for Eve.

The Human Genome Project has one last Eve for science to offer us. She is the one who will help the public understand the beginning of a second genesis—one that is not beholden to any reproductive boundaries that once separated the species—and to understand it as a good thing. She is Eve without the fall—an Eve of perpetual grace, but most amusingly, she is a random Eve.

The mythology of this Eve goes as follows, although the narrative tended to vary slightly with each scientist CAE interviewed: When the Human Ge-

nome Project (HGP) began its mission of mapping and sequencing the entire human genome, it needed DNA in order to start. Since HGP was an academic/government initiative, ethics committees were established to make sure that this genetic investigation did not go into territories best left unexplored. One of the concerns among all the participants was to insure that those who donated blood to the project would do so anonymously, so their identities would be protected from the media and various objecters to the project who might harass willing participants. A review board with strict procedures was set up to insure the privacy of blood donors. However, after the first donor was approved, no other donors were needed. The DNA of the first approved volunteer was mass produced (copied) as needed. Why go to the trouble and expense of having any more? After all, one donor is sufficient for the project's needs. What is known about this donor is that she is a woman from Buffalo, New York. She is the Eve of the second genesis. It will be a curious sight to see if she, too, is labeled by science with the sign of origination.

New Nature

The ability to copy and recombine presents a cosmological paradox. On the one hand, the creatures of earth, plant and animal, great and small, no longer have any essential traits. Postmodern theory made this proposition years ago, claiming that all qualities are a matter of performativity grounded in the social, and are always already becoming other. To prove their proposition, theorists scoured the planet for evidence that contradicted biological universals. For example, Judith Butler followed this formula when studying human sex and gender. In or-

der to show that gender was a category of becoming rather than being, she struck directly at medical and social essentialism by citing examples of persons who had male genitalia but double X chromosomes, and hermaphrodites who had both male and female genitalia. This demonstrated that the choice of gender is an arbitrary medical determination reinforced by the dramaturgy of everyday life. While these biological manifestations are relatively rare, they occur regularly enough to call into question any universalist claim about gender. Now that DNA can be replicated and spliced at will, the concept of the individual (or any living thing) as a temporary set of organic relations could become an operational norm. Even Butler would have to admit that, just ten years ago, gendering was bounded by the limits of sexual reproduction. In the new version of nature, there are no limits. The species is completely boundless (in fact, the idea of a species may now be a biological anachronism). DNA is DNA is DNA, and so the DNA from one species can be recombined with the DNA of another. The DNA could come from hundreds of donors, all from different species. To use Guattari's terms, we are now literally becoming plant and becoming animal. These abilities to copy and recombine can be used to remake the world, and design life in a manner that creates heaven on earth, a process that molecular biologist Lee Silver calls "remaking Eden."

On the other hand, if all DNA is compatible, is this not the essential link between all living creatures? Here is a new universalism—the proverbial "we are all one" at the molecular level. Or, as Mellon Professor of the Sciences Edward O. Wilson puts it:

> *We are literally kin to other organisms.... About 99 percent of our genes are identical to the corresponding set in chimpanzees, so that the remaining 1 percent accounts for all the differences between us.... Aren't these small steps gradually enlarging the self by degrees until the self is identified with more and more others?*

To once again use the language of Deleuze and Guattari, we will be able to escape the tyranny of the arboreal that emphasizes the perception of interspecies relationships as fragmented and separate, and thus becoming ever more remote from one another in their complexity, and hence, forever more specialized. Instead the living world will become viewed as more rhizomatic, with each point immediately connected to any other point. In this case, our own survival and development is intimately connected to that of all other living things.

This new universalism will have a dramatic impact on how we perceive the world, and how we act in it. For example, the new universalism will revolutionize medicine (such as in pharmacology and gene therapy as answers to surgery and other forms of mechanical invasion), but will also revolutionize the very worldview of medicine itself. Many now complain that modern medicine has become fragmented and wish to return to older holistic models. Prior to the development of western modern medicine, western medical practice was dominated by a form of holistic healing based on the Galenic system of the four humors that determined the character of the person. In this model the doctor was interested in the patient as a whole—activities (both material and spiritual), environment, diet, and so on. With the emergence of modern medi-

cine in the 19th century, this type of practice was abandoned and medical practice became much more specialized in its interests. It focused on the micro-level, concentrating on cellular pathologies and micro-body invaders (i.e., germs), and de-emphasized the person as a whole or the influence of he/r daily life on he/r health. In light of the new universalism, medicine could return to a new consideration of the patient; anything (environmental conditions for example) that affects the molecular level (rather than focusing on the cell/germ face-off and surgical intervention) could become significant, and therapy could be skewed toward molecular prevention rather than toward cure and symptom arrest.

To be sure, this new paradox, in which the temporary and the permanent exist in the same moment, is going to be presented as a win-win situation. Whether we are redesigning ourselves, or learning to understand our natural interconnectedness in a tangible (as opposed to mystical) way, good things are going to happen. These promises go to the extreme of offering the material reality of immortality (and not as an angel or condemned soul). In regard to immortality, there are cautious promises such as this one by Professor of Biochemistry S. Michal Jazwinski:

We are generating transgenic worms and mice to test the hypothesis that at least some of the longevity genes isolated in yeast are important in aging in mammals. If we can validate this notion, we will have contributed a foundation for drug discovery efforts aimed at ameliorating some of the deficits of old age. This in turn would help to further our goal for everyone to "die young at an old age."

And wild promises such as this one from Michael Rose, Professor of Evolutionary Biology at the University of California at Irvine:

> *Death rates go up sharply with increasing age, but once you go off the edge of that ramp, you reach a plateau where you are dependent on the quality of your cell repair capability.... I believe there are already immortal people and immortal fruit flies. We just need to get the benefits of these genes conferring immortality at a younger age, before we suffer too much damage.*

Some biologists are convinced that they are coming to understand the mechanisms of aging and cell repair. For example, one hypothesis is that every time a chromosome directs a cell to divide, a small piece is shaved off the chromosome's tip. When the tip becomes too short it stops directing the cell to divide, and cell repair stops. As the nonreproductive cell ages it can begin to malfunction, and here the problems of aging really begin. Biologists believe that if they can find a way to maintain the tip, it will never give the cell the message to stop dividing, and in this manner we can combat age, fight certain illnesses, and perhaps live forever. This discovery is doubly exciting because it has long been known that some animals, turtles for example, do not age (decay). Perhaps a lifelong process of cell repair can be initiated in humans through molecular therapy.

As always, capital makes techno-revolutions sound good, and to the extent that the interests of individuals and of capital overlap, the revolution will be good. Unfortunately, we do not know how big this overlap will be, and if we are to judge from

past experience, we can expect much more to be worse than better. Further, while the utopian promises have yet to really manifest themselves, the numerous problems (too numerous and too great to list here) are already manifesting themselves.

The most gruesome of these problems is the rebirth of eugenics. This time, it is primarily a positive eugenics that has returned in a form designed to solve the problem of workforce replication during a time of rapid economic change and expansion.** Now that humans have become a temporary set of biological relationships, an opportunity has arisen to redesign their biological matrix to better fit the needs of capital. To those who submit their offspring for redesign, capital promises in return to give that child a predisposition for a competitive edge in the open market (higher intelligence, better health, better dexterity, more desirable appearance, etc). This form of positive eugenics is market-driven, and pays for itself, thereby killing two birds with one stone by achieving both profits and a better worker/citizen. The values/needs of capital are now being inscribed on the body at a molecular level. Just how far this redesign process will go remains to be seen. Currently, very simple forms of choices are offered, such as sperm or egg donors with particular traits, embryonic testing (at four or eight cells) followed by embryonic self-termination if the quality is not up to standard, selective reduction of multiple fetuses, and so on. Recombinant traits have not been introduced yet, but given capital's values of profit, speed, and expansion, above all else there is no rea-

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**See Critical Art Ensemble, *Flesh Machine* (New York: Autonomedia/Semiotext(e), 1998) for a more in-depth discussion of the development of reprotech and the parallel development of eugenics.

son to believe the experiments in redesigning will not continue (most likely they will be presented as medical research).

The second major problem revolves around privatization. Under the hegemony of capital it is a miracle that we are not paying for air, or that there isn't a tax on it at the very least. However, we will soon have to pay for our genes, because no biological resource from the molecular level on up will remain in the public domain. All useful/profitable genes and biochemicals from various genomes are being privatized and patented. Emblematic of this tendency is the patenting of azadirachtin, derived from the neem tree of India. This tree has been known for centuries for its general cure-all traits (but it is particularly helpful in relieving infection) and as a natural pesticide. W. R. Grace isolated the plant's most useful chemical (azadirachtin) and patented it. While the isolation process was known to Indian companies, they did not patent it; the neem, along with its helpful properties and the knowledge of how to use them, was considered to reside in the public domain. After all, understanding of how to use the medicinal and other useful properties of the tree had developed over centuries. In a direct act of colonial aggression—eco-piracy by any other term—W. R. Grace appropriated and now has relative control of a traditional public resource.

The final problem is the ecological need for diversity. Biological diversity among species and within species that share the same operational realm as humans is beginning to dwindle. The truth of the matter is that monoculturing is very profitable in the short term, even though it may spell disaster in the long term, particularly in regard to food pro-

duction. Industrial farming is always looking for ways to maximize land use and to grow as robust a product as possible. Consequently, those plant varieties that are less robust or for whatever reason require too many resources to produce are being lost. For example, at the turn of the century there were over 7,000 varieties of apples grown in the U.S.; now there are less than 1,000. This interspecies diversity is a natural defense against parasites and diseases. Should an apple tree disease similar to the Dutch Elm disease sweep through this population with its diminished variety, the chance is small that one of the varieties will have a natural defense against it. Imagine this problem affecting already monocultured staples like soy or wheat. Industrial farming techniques, pushed to the limits by the need to remain competitive in price, are forcing farmers to use recombinant seeds developed by corporations. The profit machine is on, and not even the threat of ecological disaster will turn it off.

Conclusion: On Miracles

To the philosopher of skepticism, David Hume, a miracle is "a violation of the laws of nature." In Hume's day one of these laws was that only members of the same species could breed via gendered pairing. This is no longer true. Is the new biology a miracle in this sense, or is it that there is no nature left whose laws can be violated? Is all that is left a collection of resources to be managed for the generation of profits? Many of the new miracles spoken of in this essay are truly wonderful unto themselves, but as they are assimilated into the system, they evolve into creatures less reminiscent of those in the peaceable kingdom of Eden, and become more akin to the predators of the Hobbesian war of

all against all. There is no rhetoric glorious enough, not even the rhetoric of the miraculous, that can hide humanity's tragic trajectory under the rule of pancapitalism.

JOIN THE
COMMUNITY

4

Observations on Collective Cultural Action

After reviewing the current status of the U.S. cultural economy, one would have to conclude that market demands discourage collective activity to such a degree that such a strategy is unfeasible. To an extent, this perception has merit. Financial support certainly favors individuals. In art institutions (museums, galleries, art schools, alternative spaces, etc.), the Habermas thesis, that Modernity never died, finds its practical application. In spite of all the critical fulminations about the death of originality, the artist, and the rest of the entities named on the tombstones in the Modernist cemetery, these notions persist, protected by an entrenched cultural bureaucracy geared to resist rapid change. If anything, a backlash has occurred that has intensified certain Modernist notions. Of prime importance in this essay is the beloved notion of the individual

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artist. The individual's signature is still the prime collectible, and access to the body associated with the signature is a commodity that is desired more than ever—so much so that the obsession with the artist's body has made its way into "progressive" and alternative art networks. Even "community art" has its stars, its signatures, and its bodies. This final category may be the most important. Even a community art star must do a project that includes mingling with the "community" and with the project's sponsor(s). Mingling bodies is as important in the progressive scene as it is in the gallery scene. This demand for bodily commingling is derived from the most traditional notions of the artist hero, as it signifies an opportunity to mix with history and interact with genius.

The totalizing belief that social and aesthetic value are encoded in the being of gifted individuals (rather than emerging from a process of becoming shared by group members) is cultivated early in cultural education. If one wants to become an "artist," there is a bounty of educational opportunities—everything from matchbook correspondence schools to elite art academies. Yet in spite of this broad spectrum of possibilities, there is no place where one can prepare for a collective practice. At best, there are the rare examples where teams (usually partnerships of two) can apply as one for admission into institutions of higher learning. But once in the school, from administration to curriculum, students are forced to accept the ideological imperative that artistic practice is an individual practice. The numerous mechanisms to ensure that this occurs are too many to list here, so only a few illustrative examples will be offered. Consider the spatial model of the art school. Classrooms are de-

signed to accommodate aggregates of specialists. Studios are designed to accommodate a single artist, or like the classrooms, aggregates of students working individually. Rarely can a classroom be found that has a space designed for face-to-face group interaction. Nor are spaces provided where artists of various media can come together to work on project ideas. Then there is the presentation of faculty (primary role models) as individual practitioners. The institution rewards individual effort at the faculty level in a way similar to how students are rewarded for individual efforts through grades. Woe be to the faculty member who goes to the tenure review board with only collective efforts to show for he/rself. Obviously, these reward systems have their effect on the cultural socialization process.

On the public front, the situation is no better. If artists want grants for reasons other than being a nonprofit presenter/producer, they better be working as individuals. Generally speaking, collective practice has no place in the grant system. Collectives reside in that liminal zone—they are neither an individual, nor an institution, and there are no other categories. Seemingly there is no place to turn. Collectives are not wanted in the public sphere, in the education system, nor in the cultural market (in the limited sense of the term), so why would CAE be so much in favor of collective cultural action?

Part of the answer once again has to do with market demands. Market imperatives are double-edged swords. There are just as many demands that contradict and are incommensurate with the ones just mentioned. Three examples immediately spring to mind. First, the market wants individuals with lots

of skills for maximum exploitation—it's a veritable return to the "renaissance man." An artist must be able to produce in a given medium, write well enough for publication, be verbally articulate, have a reasonable amount of knowledge of numerous disciplines (including art history, aesthetics, critical theory, sociology, psychology, world literature, media theory, and history, and given the latest trends, now various sciences), be a capable public speaker, a career administrator, and possess the proper diplomatic skills to navigate through a variety of cultural subpopulations. Certainly some rare individuals do have all of these skills, but the individual members of CAE are not examples of this category. Consequently, we can only meet this standard by working collectively.

Second is the need for opportunity. Given the overwhelming number of artists trained in academies, colleges, and universities over the past thirty years, adding to what is already an excessive population of cultural producers (given the few platforms for distribution), the opportunity for a public voice has rapidly decreased. By specializing in a particular medium, one cuts the opportunities even further. The greater one's breadth of production skills, the more opportunity there is. Opportunity is also expanded by breadth of knowledge. The more one knows, the more issues one can address. In a time when content has resurfaced as an object of artistic value, a broad interdisciplinary knowledge base is a must. And finally, opportunity can be expanded through the ability to address a wide variety of cultural spaces. The more cultural spaces that a person is comfortable working in, the more opportunity s/he has. If designed with these strategies in mind, collectives can configure themselves to ad-

dress any issue or space, and they can use all types of media. The result is a practice that defies specialization (and hence pigeonholing). CAE, for example, can be doing a web project one week, a stage performance at a festival the next, a guerrilla action the next, a museum installation after that, followed by a book or journal project. Due to collective strength, CAE is prepared for any cultural opportunity.

Finally, the velocity of cultural economy is a factor. The market can consume a product faster than ever before. Just in terms of quantity, collective action offers a tremendous advantage. By working in a group, CAE members are able to resist the Warhol syndrome of factory production with underpaid laborers. Through collective action, product and process integrity can be maintained, while at the same time keeping abreast of market demand.

These considerations may sound cynical, and to a degree they are, but they appear to CAE as a reality which must be negotiated if one is to survive as a cultural producer. On the other hand, there is something significant about collective action that is rewarding beyond what can be understood through the utilitarian filters of economic survival.

Size Matters: Cellular Collective Construction

One problem that seems to plague collective organization is the catastrophe of the group reaching critical mass. When this point is reached, the group violently explodes, and little or nothing is left of the organization. The reasons for hitting this social wall vary depending on the function and in-

tention of the group. CAE's experience has been that larger artists'/activists' groups tend to hit this wall once membership rises into the hundreds. At that point, a number of conflicts and contradictions emerge that cause friction in the group. For one thing, tasks become diversified. Not everyone can participate fully in each task, so committees are formed to focus on specific tasks. The group thus moves from a direct process to a representational process. This step toward bureaucracy conjures feelings of separation and mistrust that can be deadly to group action, and that are symptomatic of the failure of overly rationalized democracy. To complicate matters further, different individuals enter the group with differing levels of access to resources. Those with the greatest resources tend to have a larger say in group activities. Consequently, minorities form that feel underrepresented and powerless to compete with majoritarian views and methods. (Too often, these minorities reflect the same minoritarian structure found in culture as a whole). Under such conditions, group splintering is bound to occur, if not group annihilation. Oddly enough, the worst-case scenario is not group annihilation, but the formation of a Machiavellian power base that tightens the bureaucratic rigor in order to purge the group of malcontents, and to stifle difference.

Such problems can also occur at a smaller group level (between fifteen and fifty members). While these smaller groups have an easier time avoiding the alienation that comes from a complex division of labor and impersonal representation, there still can be problems, such as the perception that not everyone has an equal voice in group decisions, or that an individual is becoming the signature voice

of the group. Another standard problem is that the level of intimacy necessary to sustain passionately driven group activity rarely emerges in a mid-size group. The probability is high that someone, for emotional or idiosyncratic reasons, is not going to be able to work with someone else on a long-term basis. These divisions cannot be organized or rationalized away. Much as the large democratic collective (such as WAC) is good for short-term, limited-issue political and cultural action, the mid-size group seems to function best for short-term, specific-issue cultural or political projects.

For sustained cultural or political practice free of bureaucracy or other types of separating factors, CAE recommends a cellular structure. Thus far the artists' cell that typifies contemporary collective activity has formed in a manner similar to band society. Solidarity is based on similarity in terms of skills and political/aesthetic perceptions. Most of the now classic cellular collectives of the 70s and 80s, such as Ant Farm, General Idea, Group Material, Testing the Limits (before it splintered), and Gran Fury used such a method with admirable results. Certainly these collectives' models for group activity are being emulated by a new generation. However, CAE has made one adjustment in its collective structure. While size and similarity through political/aesthetic perspective has replicated itself in the group, members do not share a similarity based on skill. Each member's set of skills is unique to the cell. Consequently, in terms of production, solidarity is not based on similarity, but on difference. The parts are interrelated and interdependent. Technical expertise is given no chance to collide and conflict, and hence social friction is greatly reduced. In addition, such structure allows

CAE to use whatever media it chooses, because the group has developed a broad skill base. Having a broad skill base and interdisciplinary knowledge also allows the group to work in any kind of space.

Solidarity through difference also affects the structure of power in the group. Formerly, collective structure tended to be based on the idea that all members were equals at all times. Groups had a tremendous fear of hierarchy, because it was considered a categorical evil that led to domination. This notion was coupled with a belief in extreme democracy as the best method of avoiding hierarchy. While CAE does not follow the democratic model, the collective does recognize its merits; however, CAE follows Foucault's principle that hierarchical power can be productive (it does not necessarily lead to domination), and hence uses a floating hierarchy to produce projects. After consensus is reached on how a project should be produced, the member with the greatest expertise in the area has authority over the final product. While all members have a voice in the production process, the project leader makes the final decisions. This keeps endless discussion over who has the better idea or design to a minimum, and hence the group can produce at a faster rate. Projects tend to vary dramatically, so the authority floats among the membership. At the same time, CAE would not recommend this process for any social constellation other than the cell (three to eight people). Members must be able to interact in a direct face-to-face manner, so everyone is sure that they have been heard as a person (and not as an anonymous or marginalized voice). Second, the members must trust one another; that is, sustained collective action requires social intimacy and a belief that the other mem-

bers have each individual member's interests at heart. A recognition and understanding of the nonrational components of collective action is crucial—without it, the practice cannot sustain itself.

The collective also has to consider what is pleasurable for its members. Not all people work at the same rate. The idea that everyone should do an equal amount of work is to measure a member's value by quantity instead of quality. As long as the process is pleasurable and satisfying for everyone, in CAE's opinion, each member should work at the rate at which they are comfortable. Rigid equality in this case can be a perverse and destructive type of Fordism that should be avoided. To reinforce the pleasure of the group, convivial relationships beyond the production process are necessary. The primary reason for this need is because the members will intensify bonds of trust and intimacy that will later be positively reflected in the production process. To be sure, intimacy produces its own peculiar friction, but the group has a better chance of surviving the arguments and conflicts that are bound to arise, as long as in the final analysis each member trusts and can depend on fellow members. Collective action requires total commitment to other members, and this is a frightening thought for many individuals. Certainly, collective practice is not for everyone.

Coalitions, Not Communities

While cellular collective structure is very useful in solving problems of production, long-term personal cooperation, and security (for those involved in underground activities), like all social constellations, it has its limits. It does not solve many of the prob-

lems associated with distribution, nor can it fulfill the functions of localized cultural and political organizations. Consequently, there has always been a drive toward finding a social principle that would allow like-minded people or cells to organize into larger groups. Currently, the dominant principle is "community." CAE sees this development as very unfortunate. The idea of community is without doubt the liberal equivalent of the conservative notion of "family values"—neither exists in contemporary culture, and both are grounded in political fantasy. For example, the "gay community" is a term often used in the media and in various organizations. This term refers to all people who are gay within a given territory. Even in a localized context, gay men and women populate all social strata, from the underclass to the elite, so it is very hard to believe that this aggregate functions as a community within such a complex society. To complicate matters further, social variables such as race, ethnicity, gender, education, profession, and other points of difference are not likely to be lesser points of identification than the characteristic of being gay. A single shared social characteristic can in no way constitute a community in any sociological sense. Talking about a gay community is as silly as talking about a "straight community." The word community is only meaningful in this case as a euphemism for "minority." The closest social constellation to a community that does exist is friendship networks, but those too fall short of being communities in any sociological sense.

CAE is unsure who really wants community in the first place, as it contradicts the politics of

difference. Solidarity based on similarity through shared ethnicity, and interconnected familial networks supported by a shared sense of place and history, work against the possibility of power through diversity by maintaining closed social systems. This is not to say that there are no longer relatively closed social subsystems within society. Indeed there are, but they differ from community in that they are products of rationalized social construction and completely lack social solidarity. In order to bring people together from different subsystems who share a similar concern, hybrid groups have to be intentionally formed. These groups are made up of people who are focusing their attention on one or two characteristics that they share in common, and who put potentially conflicting differences aside. This kind of alliance, created for purposes of large-scale cultural production and/or for the visible consolidation of economic and political power, is known as a coalition.

CAE has supported a number of coalitions in the past, including various ACT UP chapters and PONY (Prostitutes of New York), and has organized temporary localized ones as well. One of the problems CAE had with such alliances was in negotiating service to the coalition while maintaining its collective practice. Coalitions are often black holes that consume as much energy as a person is willing to put into them; hence membership burnout is quite common. CAE was no exception. After a few years of this variety of activism, members were ready to retreat back into less visible cellular practice. CAE began looking for a model of coalition different from the single-issue model.

One potential answer has come by way of CAE's affiliation with Nettime.* Nettime is a loosely knit coalition of activists, artists, theorists, techies, collectives, and organizations from all over Europe and North America that have come together for reasons of *generalized* support for radical cultural and political causes. It has approximately seven hundred members, and has existed in various forms for about six years. Nettime functions as an information, distribution, and recruitment resource for its members. The core of its existence is virtual: Member contact is maintained through an on-line list, various newsgroups, and an archive. In addition, the coalition holds occasional conferences (the first two, Metaforum I and II, were held in Budapest in 1995 and 1996; Beauty and the East was held in Ljubljana in 1997), produces and contributes to the production of cultural projects (such as Hybrid Workspace at Documenta X), acts as a resource for various political actions, and produces readers and books from its archive (the most recent being *README: ASCII Culture and the Revenge of Knowledge*).

From CAE's perspective, one of the elements that makes Nettime a more pleasurable experience is that unlike most coalitions, it is anarchistic rather than democratic. Nettime has no voting procedures, committee work, coalition officers, nor any of the markers of governance through representation. Hierarchy emerges in accordance with who is willing to do the work. Those who are willing to run the list have the most say over its construction. At

*The description of the Nettime coalition given in this essay is solely from CAE's perspective. It was not collectively written nor approved by the Nettime membership.

the same time, the general policy for coalition maintenance is "tools not rules." Those building the virtual architecture govern by providing space for discussions that are not of general interest to the entire list. They also direct the flow of information traffic. Whatever members want to do—from flame wars to long and detailed discussions—there is a place to do it. For events in real space, the primary rule of "those who do the work have the biggest say" still applies. Indeed, there is considerable room for exploitation in such a system, yet this does not occur with much frequency because members have sufficient trust in and allegiance to other members; the coalition as a whole won't tolerate system abuse (such as spamming, or self-aggrandizing use of the list); and there is a self-destruct fail-safe—members would jump ship at the first sign of ownership and/or permanent hierarchy.

Perhaps the real indicator of the congeniality shared by Nettime members is its cultural economy. Nettime functions as an information gift economy. Articles and information are distributed free of charge to members by those who have accumulated large information assets. Nettimers often see significant works on the intersections of art, politics, and technology long before these works appear in the publications based on money economy. For real space projects, this same sense of voluntarism pervades all activities. What is different here from other cultural economies is that gift economy is only demanding on those who have too much. No one is expected to volunteer until they suffer or burn out. The volunteers emerge from among those who have excessive time, labor power, funding, space, or some combination thereof, and need to burn it off to return to equilibrium. Consequently, activity

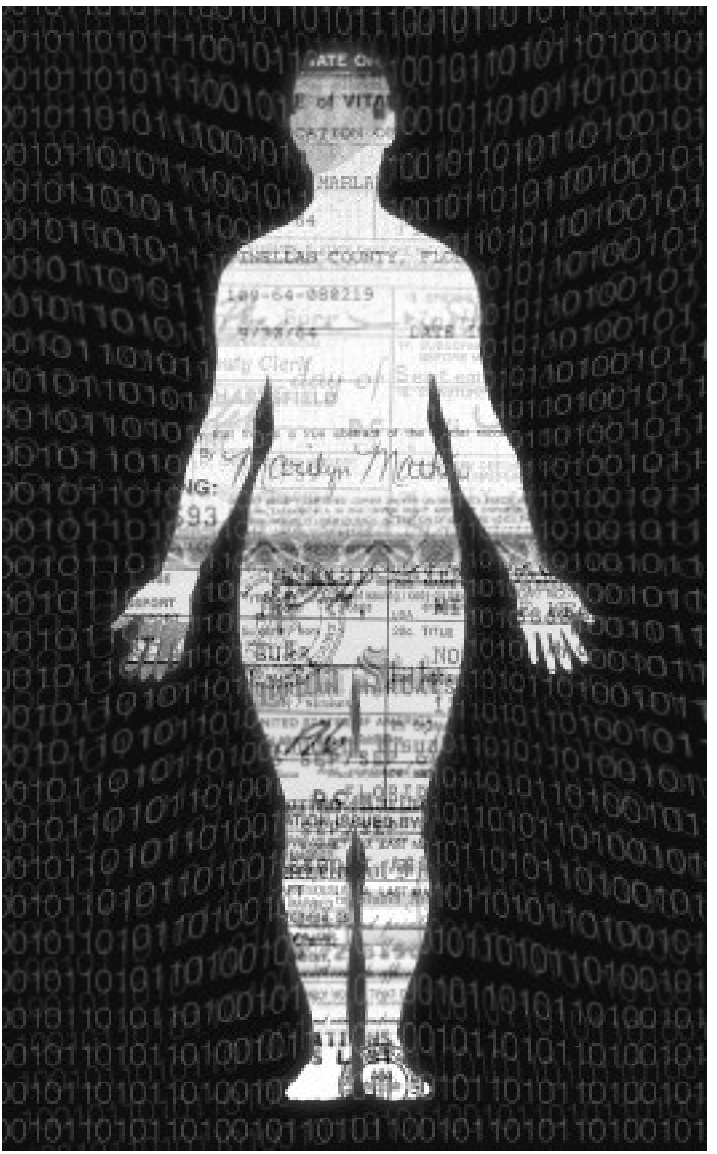
waxes and wanes depending on the situations and motivations of the members.

CAE does not want to romanticize this form of social organization too much. Problems certainly occur—quarrels and conflicts break out, enraged members quit the list, and events do not always go as expected. However, Nettime is still the most congenial large-scale collective environment in which CAE has ever worked. The reason is that this loose coalition began with the romantic principle of accepting nonrational characteristics. It believed that a large collective could exist based on principles of trust, altruism, and pleasure, rather than based on the Hobbesian assumption (so typical of democratic coalitions) of the war of all against all, which in turn leads to a nearly pathological over-valuation of the organizational principles of accountability and categorical equality. Nettime functions using just one fail-safe system—self-destruction—and it thereby skips all the alienating bureaucracy necessary for managing endless accountability procedures. If Nettime self-destructs, all members will walk away whole, and will look for new opportunities for collective action. An alliance with the temporary is one of Nettime's greatest strengths.

Final Thought

Although they are in a secondary position in terms of cultural organizational possibilities, cells and coalitions still present a viable alternative to individual cultural practices. Collective action solves some of the problems of navigating market-driven cultural economy by allowing the individual to escape the skewed power relationships between the individual

and the institution. More significantly, however, collective action also helps alleviate the intensity of alienation born of an overly rationalized and instrumentalized culture by re-creating some of the positive points of friendship networks within a productive environment. For this reason, CAE believes that artists' research into alternative forms of social organization is just as important as the traditional research into materials, processes, and products.



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Recombinant Theater and Digital Resistance

People are often confused by the ideas of recombination and digitality. The former typically connotes scientific esoterica pertinent to molecular biology, while the latter is associated with information and communication technology. Indeed, these associations are correct, but very reductive. Recombination and digitality are not so specialized. As we shall see, they are the foundation of a new cosmology—a new way of understanding, ordering, valuing, and performing in the world. While some cultural vectors have been faster to embrace digital models than others, no area remains untouched. Theater, like all of the fine arts, is now in the process of constructing a relationship with this new paradigm, and this is at times a very embittered struggle. The elder model of the analogic, deeply embedded in cultural institutions, is not voluntarily sharing any territory.

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Knowledge/culture production in the west has never been a very tolerant practice, and ideas of anarchistic pluralism held by epistemologists such as Paul Feyerabend have never gained much currency. The proponents of any given paradigm aim to eliminate all competitors and thus dominate knowledge production and the rewards that accompany such a position. Theater is no different from any other cultural vector.

Much more is at stake than the configuration and appearance of theater in the next century; the formation of digital theater (in the widest sense of this term) is a struggle over the micro-sociology of the performative matrix of everyday life. The digital model, like the analogic, contains both apocalypse and utopia, and the applications constructed now will in part determine the directions in which digital processes will later flow. Capitalism is primarily a digital political-economy, much as the medieval economy was primarily analogic. Pancapitalism's use of the digital thus far has been horrifying, whether one considers the pathological separation and alienation of Taylorist production, the false democracy of consumption, the repressive apparatus of surveillance, or the biotechnologies of eugenics. Digital culture is on this same trajectory, with its primary manifestation being an invasive mass media that functions as a re-production and distribution network for the ideology of capital.

In spite of this parade of the usual suspects that constitute the undesirable hegemony of pancapitalism, there has always been a resistant cultural undercurrent in the digital. The first evidence of it appeared in 1870 when le Comte de Lautréamont wrote: "Plagiarism is necessary.

Progress implies it. It embraces an author's phrase, makes use of his expressions, erases a false idea, and replaces it with the right idea." In three sentences Lautréamont summed up the methods and means of digital aesthetics as a process of copying—a process that offers dominant culture minimal material for recuperation by recycling the same images, actions, and sounds into radical discourse. Over the past century, a long-standing tradition of digital cultural resistance has emerged that has used recombinant methods in the various forms of combines, sampling, pangender performance, bricolage, detournement, readymades, appropriation, plagiarism, theater of everyday life, constellations, and so on. Maintaining this historical tendency by further refining methods, finding new applications, furthering its theoretical articulation, and increasing its rate of manifestation is an ongoing task for those who hope to see the decline of authoritarian culture.

Part I
The Analogic and the Digital

During the millennia it dominated, the cosmological paradigm of an analogic universe may not have made the world perfectly intelligible, but perhaps it offered a sense of certainty about the cosmos to those who lived within its enveloping hegemony. Merely sixty years ago, no one thought that the analogic model could ever be challenged. After all, the sheer weight of the data compiled in its defense was immeasurable. From the phenomenology of everyday life to the most complex abstractions of physics, one principle of the secular world was beyond doubt: *chaos came from order, and order from chaos*. The most common experience in life was the

construction of complex order followed by its decay. Entropy was the primary dynamic of organized material, and the exquisite moment when order and complexity were integrated was perceived as a brief singularity that was impossible to precisely replicate. The fullest expressions of complex order, intimately associated with the foundation of civilization itself, were cherished and valued above all others. However, over the past fifty years this transhistorical master-narrative, this timeless point of assurance, has found itself in competition with the rapidly ascending digital paradigm. As the digital model grows in influence, surrendering the values and certainties of analogic cosmology will be difficult for many, while the various publics of fully developed economies contend with the fragmentation and separation that accompany the emergence of a second model for understanding, organizing, and valuing phenomena. For each principle that the analogic model holds dear, the digital model proposes its opposite. From the smallest details to the first principle of the digital paradigm, it acts in a manner contrary to the analogic by insisting that *order comes from order*.

The conflict explicitly began in 1948 when Claude Shannon, an electrical engineer at Bell Labs, solved the problem of how to send a clear signal over a noisy channel. The solution was to transform the sound into a numerical code that could be transformed back into sound when the code was received. This would prevent any other sound from disrupting or distorting the communication process. The history of communications technology from that moment to the present is the operationalization of this idea, along with deploying the hardware and software within all communications and informa-

tion media. In historical terms, the analogic model has died a surprisingly quick death in the field of information and communications technology. The latter half of the 20th century has truly been a revolutionary period in this respect, but the communications revolution is only the beginning. The digital model of organization is rapidly spreading to other cultural vectors dominated by the analogic model. While its entry into other areas of human exploration and development may not be as dramatic (only in communications is the analogic model in a state of total meltdown), it has appeared in almost every sphere of human activity. The real revolution is not computers, the Internet, or DVD; rather, it's the rapid change over the brief fifty years during which we have moved from a totally analogic worldview to one that is shared by the digital.

Digital Economy

Perhaps saying that the digital appeared approximately fifty years ago is not quite correct. While it is true that the idea was not formalized until the 1940s, it had long been with us in the negative form of that which the analogic could not explain. In fact, whether this was understood or not, the political economy of capital has always included facets of the digital, and thus has created numerous digito-analogic hybrid forms. For example, the guild system in pre-capital had some characteristics that are best explained by an analogic model, while others are best explained by the digital model. The high value placed on producing unique products made by or under the guidance of an individual artisan is an expression of the analogic model, while replication of the workforce through strictly coded pedagogical procedures represents the digital model.

Yet it was not until late capital that the digital became a latent foundational principle in economic development. Complex manufacturing could not exist without an intuitive understanding and centering of digital principles (order from order). Here industrialists were attempting to make products in which the original and the copy imploded—every Ford Model T was the same as the one that preceded it and the one that followed it. Some physicists argue that no matter how sophisticated the process may be, manufactured products are still not *exact* copies, and some Taylorist consultants say that individual products within a given product line can vary dramatically in durability depending on whether they are manufactured on a Monday or a Thursday: indeed, both views are correct. The analogic model cannot be totally dismissed. At the same time, within operational reality, the products are perceived and treated as being the *same*. They are replications comparable to the digital copies that I can make on my computer of this very article. The products rolling off an assembly line are successful only to the extent that they can stand the test of equivalence; that is, the process offers an ongoing flow of sameness, of order from order.

Hybridization of the two models seems even more peculiar when one considers the western style of marketing these products. The consumer must hold two opposing values simultaneously. On the one hand, the consumer wants the assurance of reliability provided by digital replication, and on the other hand, desires to own a unique constellation of characteristics to signify he/r individuality. Consequently, manufacturers must provide products that signify both the analogic and the digital worlds. To return to the example of cars, Ford was too far ahead

of his time when he quipped to consumers that they could have "any color of car they want, as long as it's black." The purity of the digital model does not account for cultural lag; in spite of the digital domination of the assembly line, the analogic still dominates aesthetic value. The lesson learned from this is that in the practical arena of the commodity, precise replication is more desirable; however, in the aesthetic realm of the commodity, the appearance of difference is more desirable. Now auto manufacturers offer a digital infrastructure with an analogic superstructure. All types of colors, designs, and features are offered in a car in order to give the impression of difference and retain the analogic value of the unique precious object.

To this day, digital aesthetics is still on the economic margins. While it is dominant in appearance in the form of the mass media—now literally the domain of the digital—the high end of value is still found in the analogic. Here the anachronistic economy of artisans reproduces itself as luxury economy. This is the area where one-of-a-kind, customized, and designer products still rule over the cheap imitations and digital knock-offs. Custom-made jewelry, *haute couture*, and high art are still the signifiers of privilege that underlie aesthetic value. They are perfection in a world of counterfeits. The luxury market is closely related to high culture, but as we shall see, this secular field of sacred privilege is also being quietly plundered by the digital.

Digital Science

Even science has had to contend with the advancement of the digital paradigm. True, the elder sci-

ences of physics and chemistry have held tenaciously to their analogic version of the cosmos, but the youthful discipline of biology, in a sublime moment of oedipal revolution, has rejected the analogic model of its elders as being useless to its pursuits. Central to this discussion is the discovery of DNA. In the 1940s, it was already known that heredity is controlled by genes; that genes are located on chromosomes found in cell nuclei; and that genes are produced by DNA. However, DNA was not really understood in terms of its function and potential. It was not until Crick and Watson were able to imagine the structure of DNA that its true potential was realized. According to human genome scientist Maynard Olson, Crick and Watson's discovery was meaningful because it occurred within the atmosphere of a formalized digital paradigm. They intuitively understood that DNA was not analogic (order from chaos), but instead digital (order from order). This type of modeling made possible the biological understanding of the production of life. Information replication in the body is analogous to digital copying on a computer. Information is stored as DNA (in a base 4 format, rather than in a base 2 format as used by computers), and precisely replicates itself when cells divide. Now that this piece of information is understood, humans can intervene in the once autonomous molecular systems of reproduction. This organic frontier now has no borders because the basics of DNA become intelligible when one analyzes them using the digital model of information storage, recognition, retrieval, and replication. Digital humans, animals, food, and medicine are now in the marketplace.

Computer science and biology (hardware/software and wetware) have reached a parallel maturity in

the latter half of this century. That this correlation is coincidence is unlikely, given their shared stake in the development of the digital paradigm. Consequently, even science, like culture and economy, has to suture the divide between the analogic and the digital. Without question, when asking whether natural, social, or economic processes are analogic or digital, the answer at the dawn of the new millennium is: they are both.

Digital Culture

If Henry Ford is the avatar of a digital economy, then his contemporary Marcel Duchamp is the avatar of digital culture. With his readymade series, Duchamp struck a mighty blow against the value system of the analogic. Duchamp took manufactured objects, signed and dated them, and placed them in a high-culture context. Duchamp's argument was that any given object has no essential value and that the semiotic network in which an object is placed defines its meaning, and hence, its value. If a bottle rack is in a hardware store or next to a sink in a kitchen, its value is defined by its function and its appearance is mundane; however, when it is placed on a pedestal in the legitimizing space of a gallery or museum (where the readymades reside to this day) and when it carries the signature of a legitimized artist, each object becomes a nonfunctional *object d'art*, and therefore an object of high value. Like Ford, Duchamp was too far ahead of his time. His critique was not widely accepted in a period obsessed with the romantic notions of the artist, when each artwork produced by the elite few and accepted by tastemakers of the time was viewed as a unique testament to artistic genius. No great work of art could be replicated by man or machine.

Half a century later various publics were ready to hear what Duchamp had tried to say early in the century. Andy Warhol was emblematic of the many artists, musicians, and writers who reintroduced the idea of the digital to a now-eager audience. Warhol discovered that all the people of digital culture really wanted was more of the *same*. No more unique objects—they wanted the familiar ones that were forever replicated around them. They wanted endless flows of Brillo boxes and serial prints of Campbell's soup cans produced at Warhol's studio, known as The Factory. The counterfeit was no longer the counterfeit if it met the expectation of sameness. Warhol subverted the modern notion of art, and was loved for it, not just by an unsophisticated public, but also by a cultural elite who saw his work as unique in making a "new" gesture by destroying the original and reducing art objects to the manufacturing (duplication) principle of equivalence. But Warhol did not stop there; he performed digitality as the first cyborg artist. He was a machine, no different from his constant companion the tape recorder. He was only replicating what he saw around him; he took in the images of culture and spit them out again.

Theater, of course, has its visionary too. Karl Kraus brought the digital model of theater to the attention of the public. He understood that the implosion of fiction and nonfiction into hyperreality could be used for purposes other than perpetuating dominant ideology. He also understood plagiarism as a method for cultural production. These notions came together in Kraus's critique of the European war machine in *The Last Days of Mankind*. Unfortunately, he was unable to conceive of a way to stage the work. He could not think of a way to release it

from hyperreality and loop it back into the physical world. Part of the problem was that the work relied too heavily on narrative structure, but most of the problem was that no looping mechanism had been constructed yet. To this day the construction of this loop is an ongoing and increasingly urgent process, given pancapital's rapid deployment of the digital for its own perpetuation and profit.

Part II
Recombinant Theater

The complex division of labor in late capital is organized around the principle of specialization. As long as a segment is useful, it will increase in complexity until a critical mass is reached: then the segment will divide and separate, creating a new area of specialization. During this process, members of a given segment develop numerous models and applications that act as subdividers within an area. Most of the people in these subareas consider themselves different from others within the specialization, much as members of the specialization perceive of themselves as inherently different from other specialized segments. The consequence of this situation is that a profound alienation emerges due to competition for resources among and within specializations, along with an inability to communicate effectively with one another due to lexical differences. Segments (and particularly subsegments) become so specialized that they sink into absurdity. How many times have we heard scholars, engineers, scientists, etc., say with *pride* that there are only a few people in the *world* who can understand what they do? This situation is an embarrassment that not only breeds alienation within specializations, but also

banishes interested nonspecialists (publics) from the stores of knowledge. To be sure, each segment and subsegment has developed some useful element to the same extent that each has serious difficulties. There is no paradigm, model, or application that is not in some kind of critical trouble.

Happily, this crisis has been recognized over the past few decades, but little seems to have been done about it. The division machine has been turned on, and there seems to be no off switch. The most common response to the problem in the fine arts and humanities, both in the university and in the culture industry, is a call for interdisciplinarity. For these institutions, this call is a very poor joke. Disturbing the Enlightenment tradition of managing knowledge through specialization would be disruptive to the entire politics, economy, and spatial-temporal relations of these institutions. Second, the digital methods needed to establish interdisciplinary practices are not completely accepted. Cultural education and production are both analogic institutions that reward the individual "genius" who is able to conjure unique and original moments of complex order, and these institutions reject, if not punish, those who engage with methodologies of the copy and with the celebration of the counterfeit. While this topic is sufficient material for a book, suffice it to say that strategies and tactics for unifying divisions among cultural practices will not come from the university or cultural industry centers; rather, they will emerge from the minor sectors and nomadic vectors that place themselves in the anarchistic and liminal zones of digital culture.

The Theater of Everyday Life

For the past decade, Critical Art Ensemble has repeatedly suggested that recombinant theater consists of interwoven performative environments through which participants may flow. One of these foundational environments is the theater of everyday life, which includes street theater and (for lack of a better term) what Alan Kaprow called "happenings." When using the term *street theater*, CAE has a very particular meaning in mind. We do not include the tradition of political theater that presents predetermined narratives "for the people." This type of presentation is merely traditional stage theater performed outdoors that has more ideological flotsam than a Broadway play. Such performances simply import spectacle and passivity into so-called public space. What CAE does consider street theater are those performances that invent ephemeral, autonomous situations from which temporary public relationships emerge that can make possible critical dialogue on a given issue. Traditional examples of this type of activity come from the Living Theater, the Theater of the Oppressed, Guerrilla Art Action Group, Rebel Chicano Art Front, and the Situationists.

Clearly, happenings fit into this model as well. In terms of intention, the differences are subtle. Perhaps the most obvious difference, albeit superficial, is that happenings ally themselves with art discourse, while street theater allies itself with theater discourse. The other difference is that while street theater was not recuperated in the west—just ignored—happenings were reinvented to better serve the culture market. The art world defanged them by turning happenings into performances and

environments into installations. Every politically useful characteristic and experimental motivation that happenings had were eliminated in favor of recentering the artist/performer, reconstituting a hushed silence from a passive audience, and reviving predetermined narrative trajectories. This list is a collection of the very characteristics that recombinant theater leaves behind; at the same time, recombinant theater attempts to include compelling anti-authoritarian cultural elements from other models of performative exploration.

Participation, process, pedagogy, and experimentation are the key components for further recombination that come from the theater of everyday life. Models of cultural participation are the type of application of digital aesthetics and organization that best serve resistant practice. Recombinant theater begins by eliminating the privileged position of the director, *auteur*, genius, or any other reductive, privatizing category. It undermines that analogic moment in which unique, complex order, manifesting in human form, separates itself from the chaotic rabble, and one voice speaks for the "betterment" of all. At that same moment, through capital's production of repressive social space, the chaotic rabble is digitized into audience form—a homogenized unit. In this process, subjects are fragmented and only a single line of desire is allowed expression—that line of degraded pleasure, that passive line of sight, that makes an individual a "normalized" audience member. This singular dimension of subjectivity is replicated in all the individuals who constitute the social constellation, and thus becomes the dominant trait of the whole and the part.

On the other hand, within the relatively horizontalized space of recombinant theater, individuals are reassembled into an analogic form. Multiple lines of desire as well as numerous forms of social interaction can find expression. Under these conditions, a loose-knit ephemeral public can emerge. An actual construction of a public (temporary though it may be) through an open field of performative practice makes possible a productive pedagogy not found in the unilateral didacticism of reactive or reactionary politicized art. In this way, a participatory process can emerge out of both rational social interactions and nonrational libidinal trafficking that creates skepticism in an individual about the taken-for-grantedness of the social codes of a given situation. While the instigators of this process do have an empowered position because they choose the topic and launch the event, this discrepancy in power between performer and audience dissolves when the two come in contact, and thus the power functions in a generative manner rather than as one of domination. When the process functions properly, the instigators of the event immediately fall into a mode of deterritorialization, and the process drifts into a multiplicity of unknown directions. No real intentionality exists, since the interaction is process-oriented and thereby subject to many unforseeable causalities and accidents. Only aesthetic *products* can be fully intentionalized and their quality controlled.

That is why this model remains permanently experimental. The method itself may not be experimental, but its application is. This type of performance is risky because the outcome is always unknown. Like all experiments, this one can fail, and fail in the worst sense. While failure from audience

indifference to one's gestures is always possible, experimental performance can decline into a worst-case scenario: a raving reinforcement of authoritarian culture. Once a discourse begins within a differentiated public (the foundation of interdisciplinarity in any practical sense), there is no way to be sure that the internalized ideology of dominant culture or other unfortunate conditioning won't effectively assert themselves. CAE knows by experience that they often do; however, the possibility of an emergent discourse of liberation, followed (one hopes) by the transformation of a public into a coalition, will never happen without open dialogue and minimal expression management. These are risks that must be taken.

Given such praise for the theater of everyday life, the reader must be wondering, why fix what isn't broken? While this model does work well for liberationist purposes, it has two tremendous shortcomings: the first is that it cannot bear the burden of a complex conceptual structure. As long as the idea the performer wants to bring to the audience is simple and a part of participant members' life experience, the model works well. For example, CAE carried out a guerrilla performance in Sheffield, UK, in the hope of revealing some of the hidden structures of domination in everyday life. CAE chose a harmless action that took place in a location where the typical activities of the local population would not be disturbed. The activity chosen was to give away beer and cigarettes. The location selected for the action was a pedestrian mall and transportation artery. Here CAE attempted to inject the expressive possibilities of open exchange found in a public bar into a space that was reserved exclusively for consumption. Although the area was allegedly

a public space, no conversation, conviviality, or coming together of diverse groups (or any other characteristic of bourgeois utopian public space) occurred there. Once this managed space was broken by the alien gesture of offering free beer, these very same elements of utopian public space immediately emerged. However, so did other restrictive structures of everyday life. For example, the environment that was created demonstrated male privilege. Far fewer women participated, and most of those who entered the environment stood at the periphery and observed the activity from the margins. This social constellation stood out as the perfect representation of the gender hierarchy found in pangendered social space. These and other elements of expression management in the performative realm became immediately visible, particularly for those in the center of the event. The most interesting reaction from the male participants was complete astonishment at the action. The whole context—a moment of meeting new people, having conversations, getting drunk while waiting for the tram, getting free commodities, and so on—seemed so unbelievable that as one man put it, "It's a dream come true." Years of socialization had made it seem impossible that members of the public could appropriate the space of the commodity. In this case, prior to the event, reterritorialization of the space of the commodity through public process could only be imagined in the confines of a personal, interior, dreamspace.

These are very basic observations relevant to understanding and to producing social space, but a performance such as this one could not offer even a superficial critique of how this situation had come to pass, or explain the mechanisms through which

the ideology of social space had been internalized. In spite of the fact that the performative model worked very well in terms of process, participation, immediacy, and pedagogy, the parameters of discourse were limited, to say the least.

A second major problem with this model lies in its pedagogy. *The theater of everyday life is limited to everyday life*. Key issues in liberationist practice that are beyond local and immediate parameters do not register in this model. Indeed, this is a problem for activists as well as for artists. As liberationist practice faces increasingly global or specialized issues, or requires an international constituency for locally based issues, the usefulness of the theater of everyday life begins to wane. For the theater of everyday life to function pedagogically, the participants involved must have direct experience with a given issue. For example, the spatial construction of gender inequality illustrated by the example above is something everyone experiences, but does not necessarily recognize. Participation in the theater of everyday life can make the transparent codes of gender separation opaque and impossible to miss. Once these codes are perceived, a critical understanding quickly follows through dialogue. That is why this model of performance was used so effectively in developing notions of agency and class position in *localized* third-world colonial struggles.

Unfortunately, many current issues that have drawn the attention of liberationist cultural forces are not so localized, basic, and available. For example, the revolution in biotechnology has brought about numerous social problems—most notably, the resurrection of eugenics. While it has been reconfigured to better fit the current market mecha-

nisms, and although it avoids calling attention to itself as overt social policy, today's eugenics is every bit as pernicious and destructive as the first wave that marked the late 19th and early 20th centuries. The problem is that this time, eugenics is an invisible social dynamic that is quietly emerging out of the pancapitalist institutions of the economy of excess and the nuclear family. How can a pedagogical theatrical environment be constructed in this case? Reproductive technology, and the current direction that molecular biology and medicine (both utopian and oppressive) are taking, are far too removed from everyday life because these practices are still limited in their deployment and the knowledge is so specialized. The idea of molecular invasion and colonization still seems like a science-fiction scenario. On the other hand, the area of the biotech revolution that people seem to find most troubling is genetically modified food production, because here there is a direct experience (anxiety) about the disruption of a daily ritual of eating.

Along this same line of solving the problem of the absence of experience is the issue of constructing international constituencies around localized social problems. For example, there is an international movement for the liberation of Mumia Abu Jamal. Once again, supporters are employing the traditional civil rights strategy of using outsider power vectors to shame a localized offender into correcting an injustice. As with the civil rights movement of the 1950s and early 1960s, people with no experiential connection to the situation must be convinced to identify with it. The perceptions and relationships of the support contingents are completely mediated. Perceptions of race relations, police/civilian relationships, prison issues, etc., vary

dramatically from culture to culture and from subculture to subculture. The consistent local elements of race relations, police, and prisons do not manifest in the same manner, because the outrage of one locality around this set of relationships is not necessarily the experience of another. Consequently, one local group cannot depend on intersubjective experience as a means to acquire political support for their cause. Globalization has created a new theater that bursts the boundaries of the theater of everyday life. We now have a theater of activism that has emerged out of the necessity of taking material life struggles into hyperreality. Activists are now more than just organizers, negotiators, objectors, and policy manufacturers; they are also inventors of and actors in fully mediated worlds, and are thereby forced into the treachery of representation.

Because of this situation, liberationist performers now must find a way to splice greater conceptual complexity and a more broadly based pedagogy into their performative models. CAE would like to suggest that one potential solution is to use elements from the emerging theater of information and its attendant technologies. Mechanisms that can deliver specialized information in a fast, aestheticized manner have become increasingly necessary and more useful than ever.

The Theater of Information

The tendency to immediately jump into what is considered the cutting edge of information and communication technology (ICT) is typical for those grounded in a variety of disciplines interested in experimentation within this genre. In the case of

the theater in particular, the tendency is to leap to the construction of a virtual theater. ICT has promised that a fully interactive, living, virtual theater is just around the corner if we just stay on-line. As yet, CAE knows of no virtual theater that has a multifaceted, interactive social dimension, and certainly nothing with any resistant potential; rather, the virtual theater available seems to reinforce the worst elements of the disembodiment of the technocratic class for the sake of greater instrumentality.

At present, virtual theater works on two fronts. The first is the use of ICT as a new display technology for older media that intersect performance practices—for example, streaming prerecorded video over the Net. Once again the old discourse of democratic TV is back, only with the added kicker that the problem of distribution (which undermined the video utopia of the 1970s) is solved. CAE does not want to take up space explaining why the Net is a poor broadcast technology; however, a broadcast technology with millions of channels tends to dilute the viewer base, and capital-saturated agencies will, as always, be able attract viewers more effectively than those that are impoverished. (This is one of the ways that capital replicates its class system in the allegedly neutral zone of virtual space.)

The second front is virtual theater proper, which tends to manifest in one of two ways. The first manifestation is the virtual community. Whether a text-based or a graphic user interface is used, these simulations of sociability are the most profound testament to the nightmare of disembodiment. Here capital realizes its Cartesian dreams of body elimina-

tion by creating an interface that appeals solely to the mind. Not only is the body itself eliminated from the social equation, but any sharing of space by bodies is eliminated. Deleuze and Guattari have persuasively argued that the matrix of authority is centered on the body. The two most regulated elements of the social world, are, first, what can enter and leave the body, and second, what a body may be in proximity to and/or intermingle with. In the case of virtual theater, nothing is going in or out of the body, nor is it sharing space with anyone or anything other than those objects that produce a space designed purely for production and consumption. In other words, those involved in the virtual theater are nothing more than neutralized subjects incapable of disrupting the matrix of authority and thus establishing an autonomous subjectivity. For any type of resistant activity, this variety of virtual theater is useless, despite its democratic claims to provide creative interactivity. Acting in a virtual community is the very definition of what Debord called "enriched privation."

The second manifestation of virtual theater is the netcast—using live video streaming of a local theatrical event that is linked to virtual text-communication software such as an Internet Relay Chat. This method invites remote viewing and multi-user commentary. Although this type of technological interface is an improvement over the virtual community of the avatar, it is still an unfortunate hypermediated version of social activity. The problems here are simple, and are related to the problems of broadcasting already mentioned. All actions and images are reduced to the same tiny scale, and most people are not accus-

tomed to speaking conversationally in writing. Due to the intense level of technological mediation, these productions are awkward to the extent that being a virtual audience member is certainly a step down from actually attending the event. The hope here (and whether it can be realized in a satisfactory manner remains to be seen) is to free audience members from the limitations of locality, yet it is difficult to know if this liberational characteristic is worth all that must be sacrificed in terms of immediate experience and social interaction.

Another theatrical use for this technology is less grand in its ambitions, but it is functional. ICT can virtually extend the spatial codings and parameters of the theater space and allow for simulations that otherwise would not be possible. Here the technology is used as a unidirectional performative component rather than as an interactive one. Since the audience members do not have to be at terminals and instead interact only in real space, the use of scale is no longer fixed, because projections can be used. For example, CAE did a performance at Rutgers University to call attention to sperm and egg donor recruitment on university campuses for use in neo-eugenic practices. Using SeeUCMe, CAE was able to provide the illusion that a reprotech company visiting Rutgers was actively recruiting a sperm donor for a woman who was monitoring the process online from Florida. (In actuality, the performer was in a back room in the building, but it read perfectly as a transborder process.) The effectiveness of this technology was due to the looping back of the virtual into real space, and a surrendering of interactivity in favor of participation.

For the most part, virtual theater lacks all the redeeming characteristics of theatrical practice, whether they are resistant functions or just pleasurable social functions. The short answer to this problem is simply to argue that the body is still the key building block of theater, and that if performers are to drift into virtuality, they should find the means to develop feedback loops between the electronic and the organic. However, CAE contends that there is another important piece to this puzzle: the jump from real space to virtual space is premature. The virtual has never been anything more than corporate hype to convince consumers that this time, the technological wish fulfillment machine will be a reality. Instead, performers should consider ICT's function as an information organizer. For example, what makes video streaming interesting is not the broadcast potential, but its archival potential (the inverse manifestation of broadcast) to allow viewers fast and immediate access to desired material (after all, the Net's primary function is to be a massive, organized file cabinet). Further, ICT as an information organizer represents a hardware/software combination that could help to solve the conceptual problems raised in the last section, provided that its interconnections with organic bodies are maintained.

ICT is not going to provide community, democracy, expanded consciousness, nor interactive theater, nor will it fulfill any other grandiose utopian wish. It will provide only very poor simulations of these things because these complex systems are reduced to the singularity of information exchange. ICT is really only good for one thing—information storage, retrieval, exchange, and display. Best of all, it does these fast. However, this one thing is

enough to offer a means to deepen the pedagogical dimension of resistant theatrical practice.

For example, CAE did a very large-scale event entitled *Flesh Machine*. During this event, CAE hoped to reveal the eugenic substrata in reprotech. The problem here is obvious—most audience members have no experiential connection with reprotech, so we could not use a method to tease out what they already knew, but had yet to articulate. Nor did the group like the idea of presenting a manual for the incoming audience to study (CAE did write a book on the subject that would function well in this capacity, but it would not solve the problem of there being no lived experience—critical texts have very definite limits). As Paolo Friere has pointed out, the "banking method" of education is of modest use in raising critical consciousness because it is not grounded in the meaningful structures of everyday life. Somehow, the collective had to devise a means to impart basic background information on reprotech under performance conditions so that information could lend support to an emerging experiential process. To make matters more difficult, the two had to fit together somewhat seamlessly.

CAE's answer was to use computers to deliver and seductively display the information. The collective created a CD-ROM with information on medical procedures, a diary of a couple going through in-vitro fertilization, an electronic children's book, and so on. The heart of the electronic presentation was an actual genetic screening test. A code was written for the test that allowed the computer to assess a participant's answers, and reward he/r with a certificate of genetic merit or reject he/r with a curt notice of insufficient genetic quality. When one

takes the test, it becomes abundantly clear that it is not just a medical document. It also notes one's aesthetic traits (such as skin color and quality) and searches for talents and abilities (intelligence, coordination, creativity, etc). Through this experience, many participants could comprehend very quickly and clearly the structure of genetic stratification and the markers of value latent in the test. Consequently, the audience learned how easily the flesh is commodified. This process was then reinforced by allowing those who passed the test to proceed in the event by having their blood taken for DNA extraction and amplification, and by having a cell sample cryopreserved. During the process, the participants interacted not only with the performers, but also with computer technicians, doctors, nurses, lab technicians, and scientists. For that period, they were immersed in the hyperreality of the flesh machine in a way that offered them an active experience of new eugenics and its tremendously complex cultural context.

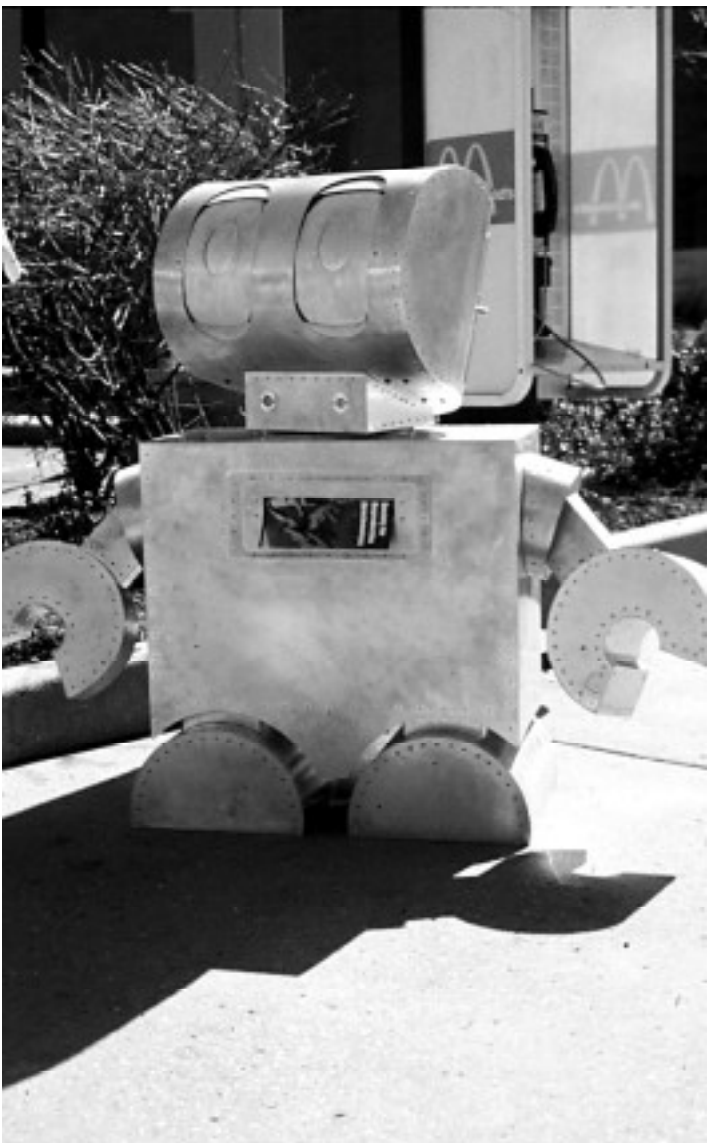
To be sure, this experiment in recombinant theater was conducted under the best of all possible conditions. Both the issue under examination and the audience for this work lent themselves to a functional use of the theater of information. The participants were overwhelmingly young and middle class and (as to be expected) computer literate. This computer literacy translates perfectly into bioliteracy, since biotech is just another form of infomatics/cybernetics. Consequently, this audience was primed to consume this information with ease.

In answer to the issue of producing work that has limited audience potential, CAE designed a sim-

pler action that could reach a broader audience. The group created the Society for Reproductive Anachronisms (SRA). This performative counterfeit consisted of a group of activists that spoke to people about the dangers of medical intervention in the reproductive process. In the tradition of activist groups, the public interface was designed around an information table. The SRA had the usual pamphlets and flyers, but it also offered computerized information. This included information on the positive aspects of genetic anomalies, reproductive fashion tips (such as the use of codpieces to raise sperm count), herbal remedies for reproductive problems, a genetic screening test (in which a participant was rewarded for failing), and much more. The main goal here was to produce an action that could be realized under almost any social condition. Production costs were extremely low, so any group or institution could sponsor the project. If participants had no computer skills, someone was at the table to help them. With a very simple gesture, a lot of complex information could be conveyed in an entertaining and inexpensive manner. While this piece was dialogic and the scripts were self-generated (as with *Flesh Machine*), this project did lack the broad variety of voices that helped make *Flesh Machine* so meaningful.

Research into this recombinant type of theater is only just beginning. Many more experiments will have to be conducted and computer literacy will have to increase before this type can fully and successfully be deployed in manifold situations. Whether computer literacy will grow beyond the classes of the technocracy is unknown, so it's possible that this form of recombinant theater will not be useful in more challenging situations. However,

where and when it does work, it contributes to a process in which social segments share space in a generative way, spheres of knowledge intersect, and new varieties of political connectedness emerge. The thinking and the doing do not end at the close of the event, but continue into everyday life, thus creating a never-ending theater of becoming.



Little Brother IAA

6

Contestational Robotics

Critical Art Ensemble & The Institute for Applied Autonomy

Part I

Since the modern notion of public space has been increasingly recognized as a bourgeois fantasy that was dead on arrival at its inception in the 19th century, an urgent need has emerged for continuous development of tactics to reestablish a means of expression and a space of temporary autonomy within the realm of the social. This problem has worsened in the latter half of the 20th century since new electronic media have advanced surveillance capabilities, which in turn are supported by stronger and increasingly pervasive police mechanisms that now function in both presence and absence. Indeed, the need to appropriate social space has decreased with the rise of nomadic power vectors and with the disappearance of borders in regard to

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multinational corporate political and economic policy construction; however, on the micro-level of everyday life activity, and within the parameters of physical locality, spatial appropriations and the disruption of mechanisms for extreme expression management still have value. Each of us, at one point or another, and to varying degrees, has had to face the constraints of specific social spaces that are so repressive that any act beyond those of service to normative comportment, the commodity, or any other component of the status quo is strictly prohibited. Such situations are most common at the monuments to capital that dot the urban landscape, but they can also be witnessed in spectacular moments when extreme repression shines through the screenal mediator as an alibi for democracy and freedom. The finest example to date in the U.S. was the 1996 presidential election. A protest area was constructed at the Republican National Convention, where protesters could sign up for fifteen-minute intervals during which they were permitted to speak openly. This political joke played on naive activists had the paradoxical effect of turning the protesters into street corner kooks screaming from their soapbox about issues with no history or context, while at the same time reinforcing the illusion that there is free speech in the public sphere. Certainly, for anyone who was paying attention enough to see through the thin glaze of capital's "open society," this ritualized discontent was the funeral for all the myths of citizenry, public space, or open discourse. To speak of censorship in this situation (or in the many others that could be cited by any reader) is deeply foolish, when there was no free speech or open discourse to begin with. What is really being referred to when the charge of cen-

sorship is made is an increase in expression management and spatial fortification that surpasses the everyday life expectation of repression. Censorship and self-censorship (internalized censorship) is our environment of locality, and it is within this realm that contestational robots can perform a useful service.

The Function of Robots

While robots are generally multifunctional and useful for a broad variety of duties such as rote tasks, high-precision activities, telepresent operations, data collection, and so on, one function above all other is of greatest interest to the contestational roboticist. That function is the ability of robots to insinuate themselves into situations that are mortally dangerous or otherwise hazardous to humans. Take, for example, three robots developed at Carnegie Mellon University. The first is a robot that can be affixed to pipes with asbestos insulation; it will inch its way down the pipe, cutting away the asbestos and safely collecting the remains at the same time. For a robot, this one is relatively inexpensive to produce, and could reduce the costs of removing extremely carcinogenic materials. The second is a robot designed in case of a nuclear accident. This robot has the capability of cutting into a nuclear containment tank of a power plant and testing for the degree of core corruption and area contamination. Once again, this method is certainly preferable to having a person suit up in protective gear and doing the inspection he/rself. Finally, an autonomous military vehicle is under development. The reasons for the development of this vehicle are not publicly discussed, so let's just imagine for a moment what they might be. What could an autonomous military vehicle be used

for? Let's make the fair and reasonable assumption that it has direct military application as a tactical vehicle (it is a humvee after all). It could have scouting capabilities; since the vision engines of this vehicle are very advanced this possibility seems likely. At present, the vehicle has no weapons or weapon mounts. Of course, such an oversight could be easily remedied. If the vehicle was used as an assault vehicle it would still follow the model set by the prior two robots. In other words, it could go into a situation unfit for humans and take action in response to that environment. However, one element distinguishes the potential assault vehicle from the other two robots. While the other two are primarily designed for a physical function, the latter has a social function—the militarization of space by an intelligent agent. Of modest fortune is the fact that this model can be inverted. Militarized social space can be appropriated by robots, and alternative expressions could be insinuated into the space by robotic simulations of human actions. While autonomous robotic action in contestational conditions is beyond the reach of the amateur roboticist, basic telepresent action may not be.

The Space of Contestational Robots

Like the physical dangers of being irradiated or breathing asbestos, there are dangers in specific social spaces which are too great to allow those of contestational consciousness and subversive intent to enter. Even the tiniest voice of disruption is met by silencing mechanisms that can range from ejection from the space to arrest and/or violence. For example, being in or around the grand majority of governmental spaces and displaying any form of behavior outside the narrow parameters designated for

those spaces will bring a swift response from authorities. Think back to the example of the convention protest space. Using the designated protest area was the only possibility, as no protest permits (an oxymoron) were being issued. Those who attempted to challenge this extensively managed territory were promptly told to leave or face arrest. These are the hazardous conditions under which robotic objectors could be useful; they would allow agents of contestation to enter their discourse into public record, while keeping the agent at a safe distance from the disturbance. (The remotes can work at distances up to ninety meters; however, the robot has to be kept within the operator's line of sight.)

Performative Possibilities

What could a robotic objector do in these spaces? We believe that it could simulate many of the possibilities for human action within fortified domains. For example:

Robotic Graffiti Writers. These robots are basically a combination of a remote control toy car linked with airbrushes and some simple chip technology. When running smoothly, this robot can lay down slogans (much like a mobile dot matrix printer) at speeds of 15 mph. (See part two.)

Robotic Pamphleteers. Simply distributing information in many spaces (such as malls, airports, etc.) can get a person arrested. These

are the spaces where a robotic delivery system could come in handy—especially if deployed in flocks. Remember, people love cute robots (anthropomorphic, round-eyed japanamation cuteness is a recommended aesthetic for this variety of robot), and are more likely to take literature from a robot than from most humans. At the same time, the excessively cute aesthetic can lead to robotnapping.

Noise Robots. These are very cheap to make from existing parts and are particularly recommended for indoor situations. By just adding a canned foghorn or siren to a remote toy car, one can create a noise bomb that can disrupt just about any type of small- to medium-scale proceeding into which it can be insinuated.

These are but a few ideas of how relatively simple technologies could be used for micro-level disturbances. Given the subversive imagination of tactical media practitioners around the world, it's easy to believe that better ideas and more efficient ways of creating such robots will soon be on the table. However, it also has to be kept in mind that robotic objectors are of greater value as spectacle than they are as militarized resistance. After all, they are only toybots. Yet these objects of play can demonstrate what public space could be, and that there are other potentials in any given area beyond the authoritarian realities that secured space imposes on those within it.

Costs

There is a triple cost to this type of robotic practice. First, it does require a modest amount of electrical engineering knowledge, and as we all know, edu-

cation costs money. Second, it requires access to basic tools, but access to a machine shop would be better. Third is the cost of hardware. Robots are expensive, and there is no getting around it. In the field of robotics proper, it is barely possible to build a toy for less than 10,000 USD. We have brought the cost down to between 100 and 1,000 USD, but this could add up very quickly for a garage tinkerer or for underfunded tactical media practitioners. It seems safe to assume that a robot will be used more than once in most cases, but even so, robotic objectors are outside the parameters for a common, low-cost, tactical weapon. To be sure, this research is in its experimental stages.

Security

In spite of the fact that contestational robotics is a completely civil action and poses no danger to anyone, do not expect authority to share this belief. First, when placed in a militarized area (i.e., any space in which deep capital is being protected), robots are assumed to be of military origin. Given this association, it is likely that the robotic objector will be perceived as a weapon, and treated accordingly. In conjunction, the builder of the robot is very likely to be treated as military personnel. Even if the robot is captured and found to be only a toy, the builder of the robot will be subject to arrest and serious jail time, because the military/police were deployed against a militarized menace. The charges that an activist may face vary in number and wording from state to state and from country to country, but they all have one common function. They give police discretionary arrest privileges. Even though no violent crime is committed, those associated with the state's perception of attempted

violence can be arrested as if a violent crime had been committed. Laws against "crimes," such as creating a false public emergency, are regularly used in such situations by authoritarian agencies. These laws are designed specifically to make it easier to arrest political dissidents and to stifle determined attempts at open discourse. They are also a way of re-presenting ethical political protest as terrorist action, and are one of the state's best sleight-of-hand tricks. This situation is very much the same as when hackers are called terrorists, even though their only crime is trespassing in an electronic environment where there is no one to terrorize. Given this extreme and unjust reaction, be sure to purchase supplies with cash, wear gloves when building robots, use only common parts and/or materials, remove serial numbers when necessary, and do not routinely frequent any supplier. Be careful: capital gets very reactionary when you hack its technology.

A Note on the Relationship of Amateurism to Contestational Robotics

The amateur has been a scorned figure in post-Enlightenment knowledge management. Specialists and experts are the ones who get the praise. In this situation, each knowledge specialist hides in h/er own tower, making occasional encroachments on neighboring territories. In turn, these short-range migrations are rebuked as amateur attempts to marshal information resources that trespassers cannot understand. This attitude is not totally without merit. Knowledge specializations are very complex and do require years of study to master. At the same time, dismissing the amateur out of hand can have a detrimental impact on the prac-

tical aspects of applying a specialization, whether in the material or policy arenas.

In relation to robotics, most of us aren't mechanical science experts, or software or electrical engineers, but we do have the advantages of being naive visionaries with collective political experience, the desire to share skills and resources, and the collective ability to open any desired field of knowledge. Home tinkering is of necessity in robotics and biotechnology to the same degree we have seen it used successfully in information and communications technology (everything from simple shareware to ascii culture to hardware recycling). New versions of expertise must be constructed. Without tinkerers using models of anarchist epistemology, contestational robotics will not come to be.

Part II

How to Build a Robotic Graffiti Writer

This manual is the first in a series of robotic objector projects for the home roboticist/techno-anarchist. This design combines the integrated perception and autonomous navigation skills of the human dissident with the efficiency and compact size of a robot specifically adapted to the goals and terrain of street actions. The basic design calls for a roughly shoe-box-sized trailer to be drawn by a remote-controlled vehicle. The trailer consists of an array of five

spray paint units that are controlled by a central processor. The vehicle is navigated into the target area by its human operator. At the appropriate time a switch on the controller is thrown, signaling the start of the "action." As the vehicle rolls along the ground, the row of spray cans prints a text message in much the same way that a dot-matrix printer would. For example the word CAPITALIST would be written as:

```
***  *  *** *** * * *** * * *** **
* *  *  *   *   * * *   **  *   * *
***  *  * * **  * * *   *   **  **
*    *  * * *   * * *   **  *   * *
*    *  *** *   *** *** * * *** * *
```

Depending on the nature of the action, the vehicle can either be navigated to a secluded "safe-zone" or considered a worthy sacrifice in the name of robotic objection.

The skills needed to build this robot do not require an engineering degree, although they do require a reasonable amount of experience in building circuits, programming micro-controllers (Basic STAMP), and shop skills/metalworking; the project might best be accomplished by a small group of individuals.

Materials

REMOTE CONTROL CAR. This will be by far the most costly aspect of this project. When coupled with the radio controller and essentials such as a battery charger, the vehicle represents roughly a $500 investment. What makes this car exceptional is that it needs to be capable of pulling 3-4 kilograms of additional weight and still maintain a top speed of 10-15 mph. This generally means a scaled-down version of a "Monster Truck" i.e., multiple engines, etc.

Consult your local RC enthusiast—they love these sort of specialty problems. It also must be able to receive three channels instead of the usual two.

RADIO CONTROLLER. Any three-channel controller will do.

2 WHEELS. Light-weight street wheels from an RC catalog.

5 INTERMITTENT SOLENOIDS. The surplus variety will be more than adequate here. Something in the neighborhood of 24v (.25 - .3 amp) that can hold itself shut against fairly vigorous tugging.

BATTERIES. One to power the solenoids (probably 24v) and one to power the circuitry (9v).

5 SPRAY CANS. The 3 oz miniature variety is best for reasons of weight and size. However, the industrial paint that road workers use could be used if the weight is less of a problem. Remember to choose a color that complements the terrain.

MICRO-CONTROLLER. Almost any standard chip (i.e., BASIC stamp) will suffice as long as it has at least two inputs and five outputs.

LED/OPTO-TRANSISTOR. For use as an encoder.

TRANSISTORS, RESISTORS, CAPACITORS, and WIRE. Specific values cannot be given here, as there are too many variables to worry about.

RAW MATERIALS. 1/32" aluminum or plastic sheet, lightweight plastic or wood square stock (1/4" by 1/4").

Construction

There are too many variables at work here to describe the construction or components in extreme detail. Availability of surplus goods and access to means of production will vary from group to group.

As with any robotics project, the strategy is to work on individual parts AND the overall product AT THE SAME TIME. One needs to be building working sub-systems, while continually evaluating them to ensure that they will work together.

The project is divided into four subsystems.

1) Micro-controller (+software)
2) encoder
3) structure of trailer
4) Solenoid–spray-can system

The Micro-Controller

A plethora of micro-controllers exist that are easy to learn to use. Any of the more popular packages that clutter the pages of hobbyist magazines will suffice as long as they meet the requirements of having at least two inputs and five outputs. The first input pin is used for the signal that comes from the controller and tells the microprocessor to start performing its task, i.e., print the text. The second input pin is for the encoder that attaches to one of the wheels or axles. The encoder tells the processor how fast the vehicle is moving in terms of "clicks" (see encoder section). Each "click," or 1/4 turn of the wheels, will mean that one column of a letter is to be printed. This allows the processor to adjust the space of the letters according to how fast

the car is moving. The five output pins are all used for controlling the solenoids that activate the spray cans.

The Text

As mentioned earlier, the text is printed as if by a dot-matrix printer. Each individual letter is printed with a 5x3 grid of dots and therefore requires a minimum of 15 bits to be rendered. The most cost-effective method of storing this data in terms of RAM would be to use 16-bit blocks (type SHORT) for each letter in your array and simply ignore the last bit. However, if you have the RAM, it may be more elegant to use one byte for each column (three columns per letter). This abstracts things a bit, making it easier to print simple graphics instead of text or to use the extra bits in each column as a kind of control character. For instance, you could have a bit that controls how long the can sprays, making it possible to have dots and dashes.

Depending on how much RAM the micro-controller has, you could build a function into the chip that translates the text into a binary stream using a lookup table—for instance, 111111010011100 for the letter P, as in the example earlier. Such a table would use only around 52 bytes or so (2 bytes per letter times 26 letters). Or translation could be done offline and the stream hard-coded into the chip at programming time.

The following is some pseudo-code that should give a fair idea of how the components interact with each other.

```
_________________________

Typedef COLUMN = a byte

pin1 = GO signal
pin2 = wheel encoder
pin3-7 = solenoids

COLUMN the_text_array[# of letters] =
convert_text("THE MESSAGE TO PRINT")
COLUMN col

while(1){
   if(GO signal ON)      //If it gets the GO
signal, the loop
      timer + 1          //must run 5 times
with the signal ON
   if(GO signal OFF)     //before it will
GO.  This prevents false signals
      timer = 0
   if(timer > 5){
      for(i = 1 to # of letters){
         for(j = 1 to 3){           //The
number of columns in a letter
            col =
read_next_column(the_text_array)
            paint_column(col)       //writes
the bits to pins 3 thru 7
            wait (for encoder click)
         }
         all pins OFF                  //
puts a space between letters
         wait (for encoder click)
      }
   }
}
_________________________
```

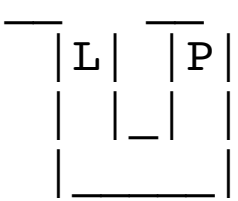
Signal from Controller (i.e., GO!)

The average remote control car uses a minimum of two channels in order to be controlled by the remote. That is, one channel controls forward and backward motion, and the other controls

left and right motion. It is very easy to add channels by using standard parts from an RC hobbyist catalog. In this case, we need one more channel that will be used to trigger the text-printing function. The signal that comes out of the receiver on the car is most likely going to be PWM (Pulse Width Mod), in which case the supplied code should be sufficient to direct the signal straight into the micro-controller. Should the signal happen to be analog, most micro-controllers have at least one pin that can receive an analog signal.

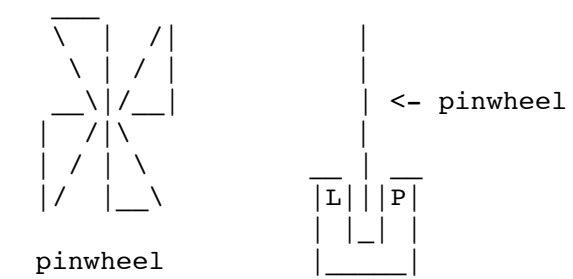
Encoder

There's no need to run out and buy a 600-degree optical encoder for this. All we need is a standard LED and phototransistor pairing. They tend to look like this:



There are two standard ways of implementing these as an encoder. In one version, the principle works like thus: When the LED light hits the phototransistor, it is ON. When something is stuck in between them, it is OFF. All we do is attach a pinwheel divided at 45-degree intervals to the axle of one of the wheels and have it pass through the center of the pairing, like this:

Fig. 1.



This is where the "clicks," described earlier, originate. Each space in the pinwheel causes one click in the phototransistor. The signal from the transistor is then passed on to pin 2 of the micro-controller.

In another variation on the same theme, the LED/phototransistor pair is pointed at a black-and-white pinwheel (potentially the wheel hub). The light from the LED reflects off the white parts and triggers the phototransistor, sending it into an ON state. The light is absorbed by the black sections, sending it into an OFF state.

Trailer Construction

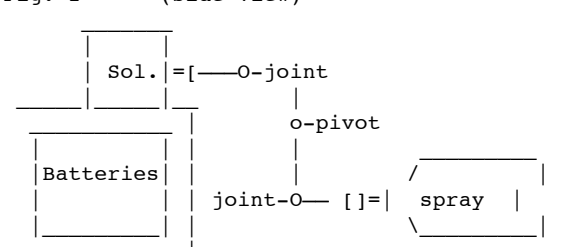
Anything more than a cursory description would be impossible here without the use of mechanical drawings or photographs. The basic idea is that we have a trailer chassis resting on two wheels. It is connected to the rear of the vehicle via some type of flexible joint. The chassis can be made out of a sheet of lightweight plastic or aluminum with plastic or aluminum supports. The spray cans are secured, lying flat on the trailer between the wheels. A slot or window runs the width of the trailer be-

low the spray nozzles and perpendicular to the spray cans (this is what they spray through). The solenoids are mounted on a shelf raised an inch or so above the spray nozzles. This allows room for the batteries and electronics to be stored underneath. (See Fig. 2)

Solenoid–Spray-Can Mechanism

Mechanically speaking, this portion will be the most difficult to construct and will require a lot of kludging to get it right. What we've got is a row of five spray-cans facing downward and another row of five solenoids that must use their pulling motion to push the buttons of the spray cans. This is probably most easily achieved by a simple system of fixed-pivot linkages. The solenoids are arranged so that they are facing (plungers toward) the spray nozzles, and probably raised an inch or so above the nozzle center. The linkages should be in the form of the letter Z, with joints at the corners and a fixed-pivot point somewhere in the Z diagonal. The plungers of the solenoids should be attached to the upper portion of the Z and the lower one should touch the tip of the spray can.

Fig. 2 (Side View)



The placement of the pivot point on the linkage determines how much leverage is placed on the nozzle. This may take some tweaking to get enough pressure to make it spray on command.

Conclusion

The intentions of this chapter are twofold. First, it presents one concrete example of how a robotic objector can be built to be useful to resistant forces. Second, it should open up critical discussion of the value, implications, and design of these tools. Several prototypes are already in the construction phase of development and collective discourse can only enhance the process.

SuperKidFighter CDL

7

Children as Tactical Media Participants

Critical Art Ensemble & The CarbonDefenseLeague

Part I

This story is apocryphal, but the unspoken motto of the Jesuits in regard to children's education is said to be, "Give them to me until they are twelve, and they are mine for life." This statement, coming as it does from the Jesuits, conveys a cruel honesty: western education is not about opening one's horizons through expanding the possibilities of interpretation and encouraging the exploration of various simultaneous becomings. Quite the opposite: education is about copying—it is digital reproduction in its most hideous form. Education (or for that matter any interaction between child and authority) is a means to replicate specific semiotic regimes within individuals that will direct them to become a part of a digital aggregate. It also functions to block any conduit that could allow the individual to flow in directions other than those approved of by dominant culture. The apocryphal saying quoted above

clearly implies that the goal of Jesuit education is precisely to inscribe an immutable and irreversible semiotic regime in individuals that will produce fully committed Roman Catholics. The goal of capital's educational system is the same, only on a larger scale; it must impose a semiotic regime that produces new generations of workers/consumers. Unfortunately, capital's education apparatus does not share the honesty of the Jesuits (making it all the more despicable), because its true ends are hidden by false rhetoric and bureaucratic habit.

Education is not the only culprit. Wherever a child turns, another institution is ready to do capital's digital social work. Children are coerced by the family, church, school, media, and even peer groups into learning that which feeds capital's ideological ends. These institutional bunkers combine to create an inescapable spectacular environment that envelops children and adults alike in a thicket of capital's semiotic barbed wire. Children have only unspecified desire as a defensive potential against the fate of imprisonment within the symbolic order. In view of the biotech revolution in the areas of pharmacology and genetic engineering, unspecified desire may soon be a poor final defense. The one glimmer of hope is that desire cannot be done away with if the organism is to continue to function, so it can only be diluted and misdirected, but never completely destroyed.

Any tools that could be used by children to cut through capital's thicket are withheld. Critical thinking is not introduced to intellectually developed children; they must wait until they are adults to be exposed to it in any radicalized form. What passes as teaching children critical thinking is lim-

ited to teaching what is needed to prepare them for success in a given specialization. This process of socialization insures that children use their mental skills in a self-managed way when they enter the workforce. For example, among assembly line workers, criticism is not a means to reveal the unsaid, or to mine out undisclosed meanings or hidden axiomatic principles. Rather, criticism is used to recognize how a product or production process can be made more competitive. Criticism is very specific and focused in this case, and is only valued when directly applied within the parameters of production. The worker is rewarded for thinking critically about specific products and processes, but if this energy is directed toward any other activity, such as criticizing capital itself, it is marginalized or punished. The same can be said about inventiveness. These intellectual and creative endeavors are presented as meaningful only within contexts acceptable to the capitalist machine.

For the tactical media practitioner, children are a significant audience simply because they are the least exposed to any critical pedagogy (when they should be the group most engaged with such learning practices). Since children are so deeply immersed within the institutions of the status quo, any practitioner with pedagogical intent will find it difficult to penetrate the semiotic regime of capital with even a gleam of light to expose the cells in which children are incarcerated. Having never experienced any form of autonomy, children have only vague unspecified desires that tell them that something is missing. However, this unspecified desire is the very x-factor (a desire which cannot be controlled) that makes children a potential audience. By finding representations and processes to stimu-

late the desires that the enriched privation of product consumption and alienated labor cannot, tactical media practitioners can help children visualize the possibilities that are withheld from them, and to realize these possibilities in language and performance.

In order to reach children, means must be devised to trespass on their territories. Children are surrounded by many different barriers. One of the worst is the mass media. The media blanket is very difficult to penetrate, in spite of many protestations to the contrary. Mass media work well to promote the ideology of the powerful, but they work very poorly for minoritarian causes. This is partly because sign systems work in networks. When a specific semiotic signal is broadcast, it is effective only if it meets with systemically sanctioned expectations of the audience members receiving it. For example, to think that a TV broadcast with gay content could "turn" impressionable youth gay (as various right-wing camps claim) is absurd. In the homophobic U.S., sign systems are rarely deployed by the socialization apparatus to support homosexuality. With very few exceptions (a few progressive schools in major cities, and occasional references on television), any sexual identity/role system other than heterosexuality is withheld until adulthood, and any contrary tendencies displayed by the child are discouraged or punished. Hence, any positive gay message (or for that matter, even a message of acknowledgment and/or tolerance of gay subjectivity) can only make a tentative impression at a preverbal level. No linguistic matrix is in place to receive alternative signals. Even those individuals who identify with the message at a nonrational,

nonspecific level still must then find a means to express the desire in the existing language, one that is hostile to their desires. Thus the process of becoming a minority hits a second level of linguistic fortification.

CAE/CDL do not want to be misunderstood as arguing for a replication of minoritarian systems by *imposing* a new sign regime (however alternative). Those producing pedagogical work for children should only provide the means to bring about a situation in which a process of broad-spectrum invention, discovery, and criticality can occur. Tactical media practitioners should not suggest where the use of these qualities should lead once unrestrained. When the qualities of self-awareness, criticality, and inventiveness emerge, children can entertain a broad variety of narrative possibilities in regard to identity and performativity. Fortunately, these minoritarian narratives can only function if an individual child is predisposed by an x-factor desire to be interested, and if the individual has a capacity for autonomous action.* Hence, the minoritarian process acts as its own fail-safe against exploitation and domination, since a child can only be motivated to act on these possibilities by he/r own desires, and never by any preinscribed values.

Tactical media practitioners should also note that individualized interventions are not very useful because the child will not be able to recuperate desire in the company of he/r peers. Children are very

* The need for this capacity eliminates the possibility of reaching younger children, who generally have not reached this point of development.

dependent on consensual validation. Since state institutions are not going to help in the development of minoritarian consciousness, only one place is left for resistant forces to turn, and that is to the peer group. While the peer group is often the unwitting agent of ideological replication, the x-factor is alive in this social constellation and can be liberated.

One suggestion for exciting the x-factor within a peer group can be found in the writings of the proto-anarchist Charles Fourier. He identified four tendencies that he believed conjured excitement and pleasure in people. The most relevant of these tendencies is the cabal, which refers to taking pleasure in secret, underground, and conspiratorial activities. This notion is useful to aid in creating autonomous situations for children. Children's first flirtations with autonomy within the social generally come in the form of the cabal. Here, the peer group acts as a foundation for productive power that allows each individual to test the known limits of the social. Sometimes these groupings can be very cellular and insulated (friendship groups): other times children's cabals can be complete networks, ranging in form from gaming groups to pop political fronts (such as punk) to drug economies. Such cells and constellations can be used as distribution networks for situational stimulants. The problem is that since children's desires and the desirous social currents within various networks are liquid, it is very hard to know what objects or gestures children will respond to. Discovering what will appeal to them is a roll of the dice.

To complicate matters further, children are key in structuring punishment and repression. Indeed,

they are material resources that are protected and thereby intersect with disciplinary and punishment systems, but they also are of extreme symbolic value. Children as living signs are prime controllers of adults. Much of the disciplinary apparatus is based on the assumption that children must be protected from the dangers of the adult world. Children are totalizing signs (much like "nature") that, once deployed, cannot be argued with. Anyone who resists the appeal of children must be psychotic, perverted, or just mean-spirited. Children are used to stop critical discourse and to provide the justification to reinforce the disciplinary apparatus—an apparatus that has never benefited children, except to the extent that the needs of children overlap with the needs of capital. As a general condition, capital loves the idea of children (much as it loves nature as its narcissistic mirror), but despises actual children. In the U.S., the heart of transnational capital, millions of children live in poverty, and even more do not have adequate health care—the infant mortality rate is the highest in the first world. In the third world, the conditions for children of low social rank are even more unspeakable. Capital only cares for children as a material resource to the extent that they have the potential to be molded into beings that suit its needs.

Children as signs are also used for less militarized forms of repression. Adults are infantilized in order to prod them into acting like "adults" (i.e., as agents of capital). Minoritarian political movements are very susceptible to this type of finger-wagging. For example, security agencies often laugh at politicized hacking as something being done by kids, pranksters, or adults who have yet to grow up, thus encouraging the idea of naive

youth rebellion in which underdeveloped, immature people cannot stop replaying the oedipal narrative. At the same time, security agencies in the U.S. claim that infowar is one of the greatest threats to national security, and that adequate funds need to be made available to battle this new menace by expanding the militarized cybercorps. Neither of these two scenarios is very accurate, but both serve their respective purposes well. The former demeans and marginalizes radical media critique and e-activism, while the latter creates a spectacle of anxiety in resource allocation sectors that will lead to increased funding for police and military agencies. In spite of this obvious contradiction in rhetoric, one can be sure that the call for resistant forces to stop acting like children will be as common as police persecution of minorities.

Whether one attacks the sign of children in its many ridiculous manifestations as a disciplinary code, or reaches out to real populations of children, punishment will be swift and harsh for those who are caught doing so. Of all the tactical media audiences, this one is the most hazardous. It is illegal to discuss any topics with children other than those approved by capital. Those speaking from a legitimized platform from outside the narrow specializations of parents, teachers, social workers, or other emissaries of the state are especially discouraged from engaging children in any critical discussion. For example, artists interested in their own socioeconomic legitimization cannot appeal to kids. They must appeal to tastemakers, collectors, other culturalists, and so on. An audience of children is of no career value. Such artists are infantilized as having lesser tal-

ents that could only appeal to the immaturity of children. Getting the attention of kids for cultural purposes is only useful in terms of its profit potential; it has no prestige value, which is what upgrades a common item to a luxury item, or in this case, converts amateurish musings into serious art. Nearly all avenues for starting critical dialogues with children are apparently shut down, so such an initiative will require extra inventiveness, and quite a bit more research.

Video games, however, provide a good starting point. Children are already socialized to the form, so no education is needed. The sticking point is content. Creating a critical narrative that will be attractive to kids is not easy. The second big advantage of using video games for research is that they have huge children's networks. For example, Blizzard, the maker of *Starcraft*, boasts that 35,000 people are visiting its *Starcraft* web-site at any given time. Hence, distribution possibilities come prepackaged. This situation has not gone unnoticed by various politicized groups that have programming capabilities, to the extent that hacked games constitute a micro-contestational front in itself. Neo-Nazis have created death camp games, and radical left groups such as Mongrel (UK) have created cop- and nazi-icon killing games. To be sure, the state of the art is very crude in terms of content, but the research shows that the games are effective in terms of distribution and hours logged by game players. Harwood of Mongrel claims that kids remain at their events for hours, attempting to master a game provided by the group. The question now becomes, how can the content be made more complex and critical without losing the audience?

Part II
Subverting and Perverting GameBoy

While the multi-user games on the Net have the greatest advantage in terms of distribution, the Nintendo GameBoy is a useful site for intervention for two primary reasons. First, the GameBoy is the top-selling video game console of all time. When rolling the cultural dice, how can it hurt to try and break the bank? Should the game take off among the target audience, it would have a tremendous effect on the gaming population. Or, if other capable politicized programmers use the tools and methods provided to create games for their own subversive purposes, another important goal would be met. The second reason for choosing the GameBoy is Nintendo's obsession with stopping piracy and reverse-engineering of its products. This project will help demonstrate that no product is perfectly fortified, no matter how many precautions are taken. Everything necessary to rewire a cartridge with a programmable ROM chip (an EPROM) is now available. This allows anyone to upload he/r own game onto the system. Everything necessary to replicate this intervention is downloadable from <www.carbondefense.org>. The details for the first game CDL has developed, *Super Kid Fighter* (SKF), are outlined below.

The narrative of SKF plays on oedipal desires in which the game participants can challenge everyday-life socializing agencies. The basis for the storyline comes from the writings of Wilhelm Reich regarding children's sexual rights, and the concept of a free public brothel for people of all ages. The game is written as a role-playing game

(RPG), and is primarily text-based. A player must make correct choices in order to escape authorities, earn money, and gain information that will help the player find and gain entrance into a brothel. In SKF, entrance into the brothel is the final reward of the game.

While this game is complex in its conceptual structure, it's not a complex game to play. After a few losses, the player will understand the customs of the game, and will be able to effectively navigate the avatar to the brothel at the end of the game.

Story

The setting for SKF is a town structured in grid form. The player begins the scenario at school where s/he is passed a note from a classmate announcing the opening of a free public brothel in town. Since none of SKF's classmates knows the location of the brothel, the player must find information elsewhere. The game really begins when the player escapes from school to search for the brothel. Since the authorities will not help in this quest, the player must rely on marginal groups to learn the brothel's location. Through interaction with characters outside of the disciplinary apparatus, the player acquires money (by running numbers, getting condoms for prostitutes, etc.), purchases drugs/alcohol, gets directions to the brothel, and learns techniques to avoid various characters set

on stopping the search. Money can also be acquired by working for local shopkeepers doing menial tasks for little pay, but the player soon learns that this option is basically a waste of time and effort. While gathering information and money, SKF is hunted by truant officers, parents, neighbors, school officials, and church authorities. Most of these characters can be avoided simply by running away; to escape others, crack is needed for superspeed; while to evade still others, such as police officers in cars, requires the help of street characters. SKF is also armed with a slingshot with unlimited ammunition, and can choose to fight when cornered. If a player lingers around one area or performs no action for an extended period of time, s/he will be attacked by the specter of guilt. The brothel will only appear on the grid if a player has proved he/rself to be a friend of all the people outside the disciplinary apparatus. Once the player has entered the brothel, s/he has the option to unveil one of two images—one being a naked male and the other a naked female. The overall favorable rating acquired during the game determines what percentage of the image the player will see. This mechanism helps to advance the replay value of the game.

Audience

Market research shows that most GameBoy players are males between the ages of ten and fifteen. This is the target audience. There is also a second-party audience—the parents of the children who may discover the game in the child's possession. Finally, Nintendo functions as a third-party audience. Thus, we assume that eventually one of the carts will make its way to Nintendo headquarters, which would result in either a flood of publicity or a silencing of it. In all, the real purpose of the game is not so much the play time involved, but the situational possibilities that will be generated as the game is passed around. Interference from second- and third-party audiences will only intensify the desired outcome.

Hardware Re-Tooling (Instructions for Reverse-Engineering the Chip)

Two options currently exist for creating a cart that can be reprogrammed. We chose to work through both routes, so as to explain the benefits and pitfalls of each option. The first option requires the programmer to grab up an existing cart and work from there. Any cart that contains the following hardware—ROM+MBC1+RAM+BATTER—is suitable for re-assignment. A full listing of the actual contents of each cart can be obtained from the Jeff Frohwein site (http://hiwaay.net/~jfrohwei/gameboy).

The following list contains names of carts more widely used for this procedure:

Donkey Kong, Donkey Kong Land, Donkey Kong Land 2, FFL 2, FFL 3, Kirby Blockball, Kirby Dreamland II, Kirby Star Stacker, Lucle, Mario's Picross, Metroid II, Mole Mania, Super MarioLand II: 6 Golden Coins, Super MarioLand III: MarioLand, World Cup USA 94, Vegas Stakes, Zelda.

Once you have obtained a cart, the next step is to remove the existing ROM chip and install a reprogrammable EPROM chip. First, you must carefully cut away the feet of the existing ROM chip. This can be done with a very sharp X-Acto knife. You can also simply desolder the chip, but beware, because both procedures risk pulling off the contact feet on the board. If this happens, you must start over with a fresh board. Once the chip is removed, you must obtain an EPROM chip from any major electronics dealer.

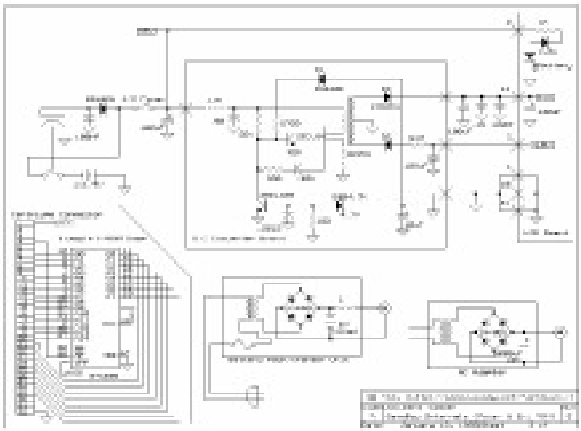
EPROM chips suitable for the procedure include:
- AMD AM29F040-150JC
- FUJITSU MBM29F040A-12PD
- TI TMS29F040-12C5FML
- SGS M29F040-150K

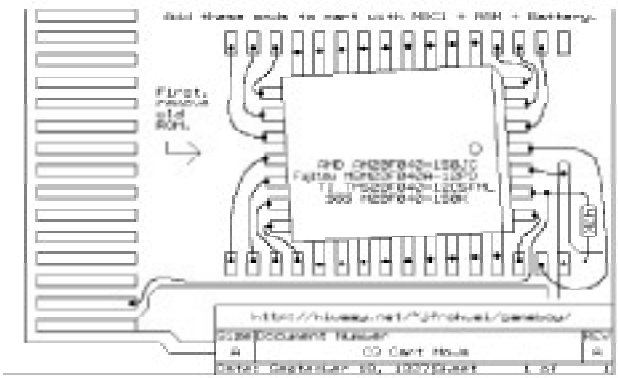
The schematic for the EPROM chip insertion into the GB cart looks like the image below (courtesy of Jeff Frohwein):

http://hiwaay.net/~jfrohwei/gameboy.

Adjust the EPROM to fit an angle similar to the schematic here (courtesy of Jeff Frohwein).

Legs may need to be bent apart to make the chip fit snugly against the board. Solder the pins that reach the pads and use wire wrap to solder connec-

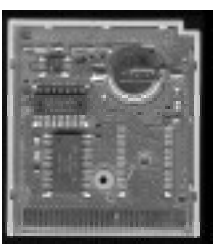


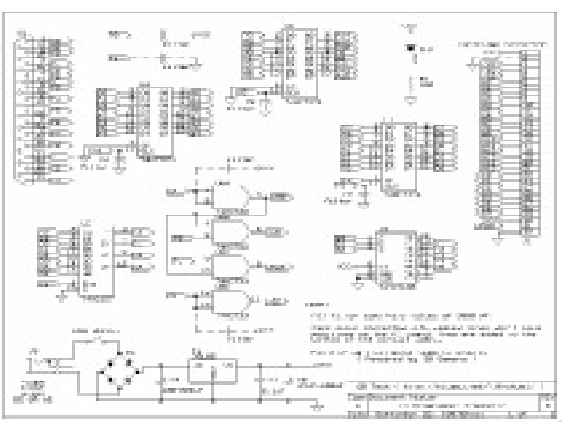


tions to pins that won't reach. Install the 47k resistor. One end will connect to pin 31 of the cart connector. Make sure that you tape off at least 75% of the connector to keep the solder from creeping down the whole pin. The cart should now be ready for reprogramming. This may take two to three hours for each of the first few carts you produce, but as you get more comfortable with the procedure, you will need to devote less time to the task.

Here is an image of a cart with the original ROM chip removed and with the new EPROM wired in its place.

Once the EPROM has been properly inserted into the cart, you are ready to begin work on the EPROM programmer. We did this by working off a printed circuit board and schematic that we obtained courtesy of Jeff Frohwein. This is probably the simplest way to work. The other option is to buy a pre-built EPROM programmer from any major electronics dealer. More information on programmer specifics can be obtained from Jeff Frohwein's site. The schematic and picture of the programmer we built from Jeff's design are shown below.





If you don't want to go through the hassle of such a hands-on procedure, you can modify a cart through the second option. A company called Bung of Hong Kong (http://www.bung.com.hk/) has recently started selling pre-built flash EPROM GB carts and programmers for a relatively low price. We purchased a few of their carts and their programmer to do some experimenting and found it a great relief from the tedious task of re-soldering large numbers of boards. Bung also offers their own software compiler for their programmer that proved to be even simpler to use than the hacked compilers we initially used. Both procedures work well. If you do not have a lot of experience with hardware, we recommend beginning with the Bung materials and playing with that before rewiring carts from scratch. Remember that help is always out there, and we were recipients of much of this help during the initial stages of our venture.

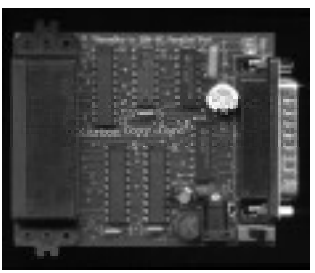


Image Conversion

Two types of images must be created for the game. The first is for background images. To create background images, we used a converter called PCX2GB available from the MegaMan X z site (http://digitalparadise.cgocable.ca/MegaMan_X/Projects/). With this software, we created .pcx files through PhotoShop and then ran the conversions. The sec-

ond type of image that you must create are sprites. These are the images/characters that are moveable and cannot be larger than 32 x 32 pixels. For memory's sake, it's best to keep sprites at 16 x 16 pixels. We created sprites pixel by pixel through the GameBoy Tile Designer, available from Harry Mulder's site (http://www.casema.net/~hpmulder/). The Tile Designer requires a talented illustrator, since images are created in four shades of gray (remember two of those shades are white and black).

Software Initiation/Programming the Game

This explanation for the game's development was written by a programmer. If you are not working with a programmer on your project, keep in mind that there is a lot of help out there, including help from the CDL. However, it is best to find someone capable of learning the techniques described below.

SuperKidFighter was written entirely in C using the GBDK v2.0.17 (written by Pascal Felber and Michael Hope). We used the No$ emulator (http://www.work.de/nocash/) for testing. A help page with some information on the function calls does exist, but outside of that, there is very little documentation to assist you. The best way to figure out what functions in the gb.h do is to examine the code examples, or bother Pascal Felber (http://www.aracnet.com/~pfelber/GBDK/) relentlessly like we did.

If your application is going to be of any substantial size, it will not fit entirely into ROM0. Apparently, there is a limitation on the size of constant data you can use in lcc. This limit is an lcc limit, however, not a GameBoy limit. In order to use more

GameBoy ROM than lcc will let you, you need to "ROM Switch." (The same problem exists for RAM, but we never hit the ceiling of RAM lcc). ROM0 is where your main program is loaded and cannot be switched out, but any other ROM can be switched into the high ROM area. There is a caveat: only one other ROM other than ROM0 can be loaded at any time. You create ROM information in .c files, and your makefile will generate .obj files that are essentially your available ROMs. The makefile also establishes the ROM numbers for your ROMs. The following line from my makefile makes ROM 5 from the code in DCbank_5.c: ..\..\..\bin\lcc -Wa-l -Wf-bo5 -c -o 5.o DCbank_5.c

To switch ROMs in your code, call SWITCH_ROM_MBC1(x) [where x is the ROM you want switched in]. Now, anything in the code for this ROM is available to you but if you call SWITCH_ROM_MBC1(y) [where y is any ROM number other than x], you cannot access anything in ROM x until you call SWITCH_ROM_MBC1(x) again. You cannot call SWITCH_ROM_MBC1(y) from ROM x because you will switch out from where you are calling from.

We didn't know that the overall .gb file would run out of space in ROM0 when we first started SKF, so we didn't plan to use ROM Switching. The result was that we had a fair amount of functionality coded before running out of room in ROM0. As such, every time we added something afterwards, we had to start ROM Switching. We threw code into any ROM that it would fit into. This led to seriously ugly code where unrelated elements existed in the

same ROM. This also caused us to ROM Switch far more than we would have had to if we had planned ahead. Our only word of advice is to design your code with ROM Switching in mind from the start. Try to keep like data in one ROM where possible. You won't use ROM Switching at first, but you will eventually.

There is room only for 39 sprite tiles and 255 background tiles. This is important. The "art department" at CDL used a bitmap conversion routine by MegaMan_X to create the graphics data for SKF. No repeated tiles were used in any background structure. The problem with this is that there is more background real estate on the GameBoy screen than there is room in VRAM for background tiles. It is standard practice in commercial GameBoy game design (and in most sprite-based game console development) to "re-use" sprites and background data. The seemingly never-ending streams of "brickrod" in Super MarioBrothers, "spacefloor" in MegaMan, and "steel beams" in DonkeyKong are all really one sprite that is repeatedly displayed over and over. We did not do this when we started SKF. Only after all the graphics were done did we discover that graphic structures designed to cover the whole background would consist of more than 255 background tiles.

If you are going to use text, use a version of GBDK > v2.0.17. Not only is the normal text for printf() grossly oversized for any practical purposes, but calling printf() when not in TEXT mode overrides data in background VRAM. Our (not too intelligent) solution was to create alphabet sprite tiles. With this approach, most of the 39 available sprite tiles

were now occupied, but every new line of text required loading the appropriate alpha tiles into the remaining sprite tiles and displaying those updated sprite tiles. This left me with two available sprite tiles. This was incredibly stupid. Evidently, v2.0.18 and higher of the GBDK provide a cleaner way of displaying text in graphics mode.

Use the No$ emulator to test .gb files on a PC. We can't overstate how important the No$ emulator was during the coding of SKF. To dump .gb images onto Bung carts, we used Gangaboy (it's a dumb name, but it's free and it works). It is available from the Bung site (http://www.bung.com.hk/).

Finally, throw out everything you know about game programming. If you're familiar with MS-DOS game programming or with the DirectX SDK, forget about concepts such as double buffering, blitting, surfaces, Win messages, Mode13, other applications clipping your window, stretching images for different display modes, etc. For example, there is no need to capture the background data before displaying a sprite and replacing that background data when the sprite is moved. If the sprite is moved, the "Dig Dug" effect of losing background data does not happen. The sprite is simply moved to the new position and the background data for the former position of the sprite is restored. There is no need to move the sprite or change backgrounds in a back buffer or "secondary surface." You can move the sprite in the "primary surface" and no tearing occurs. Also, there is not an infinite number of resolution modes, video cards, and input devices that you have to write special code for. If it works on your GameBoy, it will work on any GameBoy.

Game Building Tools

Mega Man X PCX2GB can be found here:
http://digitalparadise.cgocable.ca/MegaMan_X/Projects/

Jeff Frohwein's GameBoy Tech Page (too useful to describe): http://home.hiwaay.net/~jfrohwei/gameboy/

Bung Enterprises prebuilt carts and programmers available here: http://www.bung.com.hk/

Pascal Felber GBDK available here: http://www.aracnet.com/~pfelber/GBDK/

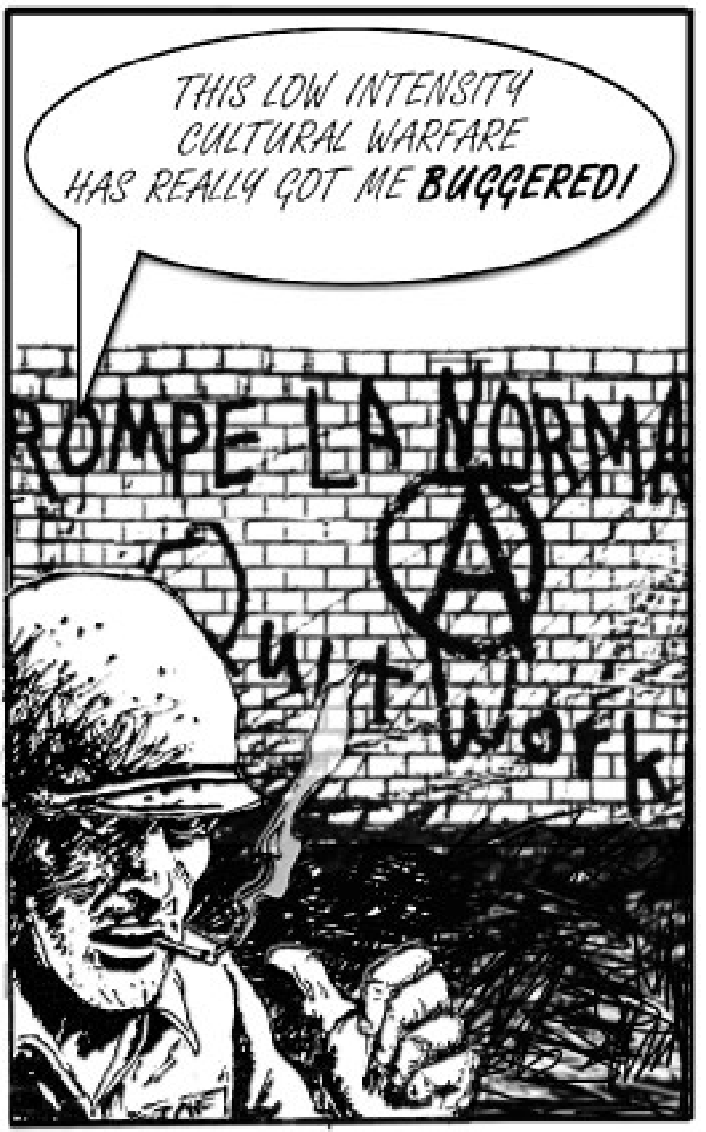
Harry Mulder's GameBoy Development GBTD and GBMB available here: http://www.casema.net/~hpmulder/

The RGBDS Zone GameBoy
specific assembler software available here:
http://www.matilde.demon.co.uk/rgbzone.htm

Groove's GameBoy Page
A good source for software examples:
http://freespace.virgin.net/stephen.blanksby/

Reiner Ziegler's Web Page ReadPlus
software available for cart construction available here:
http://vs-info.de/ziegler/

NoCash Funware No$GB Emulator available here:
http://www.work.de/nocash


THIS LOW INTENSITY
CULTURAL WARFARE
HAS REALLY GOT ME BUGGERED!
ROMPE LA NORMA
Work

8

The Financial Advantages of Anti-copyright

Speed and wealth go hand in hand.

—Paul Virilio

One of the constant concerns of cultural producers about the anti-copyright movement is how they can be compensated for their labor and not lose their work without engaging legitimized procedures for obtaining ownership. This problem has not been addressed by prominent figures in the plagiarism, electronic mirroring, and anti-copyright movements, who seem content to develop the principles of the movements more on theoretical rather than practical levels. The oldest (tracing back to Lautréamont) and most common position (Debord, Home, Benjamin, Gyson, Isou, Kraus, as well as the Karen Eliot, ®TMark, and

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Originally published in *Libres Enfants du Savoir Numerique: Une Anthologie du "Libre"* (Paris: Editions de l'Éclat).

Luther Blisset Projects) taken as to why information should not be privatized is the belief that experimentation and invention would be hindered by lack of access to the building blocks of culture. Once cultural artifacts (images or language) are privatized, they become cultural capital, and hence function to reinforce hierarchical social strata like any other form of capital. Privatization of culture is a process through which meaning is stabilized within ideological codes that serve the status quo. In addition, privatizing cultural artifacts elevates the producer to the false status of metaphysical creator and surrounds the makers with the false aura of mystic individualism. The truth of the matter is that they have simply participated in the general cultural practice of recombination—a process in which representation as a reflection of individuated genius has no reality except as a cynical ploy to generate sales of the artifacts. Further, privatized culture is market culture, and since cultural resisters do not want to give the market anything more to present as "new," tactics to create new meanings from common representation have been developed over the past century. Perhaps these tactics are about as concrete as the discourse on anti-copyright gets, although there are the more cavalier thoughts on the matter, such as the idea that participating in privatization is a sellout to market demands. Yet to avoid this fate in late capital, one can only choose to be a garret artist (another sad stereotype created by capital to undermine the development of social identity and solidarity) or sell out elsewhere (i.e., work). No matter where a cultural producer turns, there is no real practical advice, and one only finds the imperatives of ideological purity or abstract theory.

However, practical observations in regard to anti-copyright can be made. First, copyright is not about *individual* access or use (even though that is often a side effect). The two key principles for the existence of copyright are to protect one *institution* from the aggression of another, and to maintain exclusive control over a product so that the highest amount of profit that the market will bear can be obtained. In neither of these cases is the individual a part of the process. These principles are fairly simple. In any form of capitalism, an institution that competes with another will do anything to undermine its competitor and insure its own survival, and that includes stealing products (industrial espionage, particularly at the international level, is a fact of business). Luxury products are the least prone, while digital products are the most prone—seemingly bad news for writers, video/film makers, recording musicians, and Net/Web artists). Copyright regulations temper and slow the process of theft, and obfuscate the public perception of product acquisition as being little more than open piracy. If the process of theft can be slowed down, the product and the market can be reasonably well managed, but this is all at the macro level. From the market perspective, theft at the individual level is something that must be endured. Photocopies of books will be made, photos of artworks taken, sounds will be sampled, duplicates of video produced, and copies of all these things will be passed around from person to person.

Here is where the confusion sets in: Individual cultural producers (in the broadest sense of the term) are worried about being denied compensation for their work due to unbridled duplication. This is a false anxiety. Unless an artist is transformed into

an institution, there is no need to worry. For example, Elvis was transformed from an individual into an institution. "Elvis" does not refer to a human being; it refers to videos, films, records, and all kinds of merchandise. Elvis the individual is so irrelevant to the formula that he does not even have to be alive for "Elvis" to continue. Celebrities in whatever cultural field are no longer people; they are institutions that need to protect their capital, which is why they need copyright. However, for those who are still individual producers, copyright is not necessary—in fact, in most cases it's counterproductive. For example, let's say a writer has published a book that will sell five to ten thousand copies. No major publisher cares about that; too little profit is involved for them to pirate the book and risk legal ramifications. Of course, there will be people who will photocopy it and pass around copies. Who knows, someone may even key it into the Net and offer it for free, while small publishing houses in other countries may translate and publish it. CAE argues that such activities will only help in the long term, and should be encouraged through anti-copyright. The more people know of a work, the more likely they are to buy it, and it's very likely that commissions, lectures, and other fund-generating opportunities will follow from this situation. The money lost through the gifting of the text will be remade in other ways. The faster the information is disseminated, the better it is for the many discourses to which the information is relevant, and on the individual level, more money will be generated. Speed and replication develop funds in the digital era! Slowing the process down with copyright is counterproductive, both in terms of individual compensation as well as in terms of resistant cultural production.