5 Adversarial Design as Inquiry and Practice

Throughout this book, I have presented examples of adversarial design, including software that reveals the entanglement of military and university research programs, social robots that curse at one another, and umbrellas that counteract surveillance systems. Each of these illustrates how design can do the work of agonism. These artifacts and systems are adversarial because they represent and enact the political conditions of contemporary society and function as contestational objects that challenge and offer alternatives to dominant practices and agendas. They exemplify a series of tactics that can be used to do the work of agonism—revealing hegemony, reconfiguring the remainder, and articulating collectives. Coupled with these tactics are computational qualities that provide distinctive affordances for doing the work of agonism, highlighting what it means to do design with computation, and moreover, what it means to do political design with computation.

So far, I have drawn distinctions between categories of objects, computational qualities, and tactics. I have highlighted what is particular to each and described how design can do the work of agonism. In this final chapter, I briefly extend the idea of adversarial design in two directions—as a kind of inquiry and as a practice. These two directions should provide material for ongoing scholarship into adversarial design and outline how adversarial design could be taken up by practicing designers.

Adversarial Design as Inquiry

Inquiry, like design, is a familiar term but generally a hazy endeavor. American pragmatist philosopher John Dewey provides insight into the purpose of inquiry, which helps explain adversarial design as a kind of inquiry into the political condition. For Dewey, inquiry is a process directed toward situations that are vague and lack a clear sense of meaning and

effect. Dewey (2008, 105) uses the terms "uncertain, unsettled, disturbed" to characterize these situations. As Dewey states (2008, 104), "Inquiry is the controlled or directed transformation of an indeterminate situation into one that is so determinate in its constituent distinctions and relations as to convert the elements of the original situation into a unified whole." Simply put, the process of inquiry provides clarity to muddled situations. And the purpose of providing clarity is to enable action. The outcome of inquiry should be an understanding of the significance and consequences of a situation so that one can better make decisions about or otherwise act on that situation.

With an eye toward describing adversarial design as a kind of inquiry into the political condition, I build on Dewey's work and offer the following: inquiry is a process of skilled examination and reconstruction that renders problematic situations sense-able. The terms *skilled* and *sense-able* are both important here. Inquiry is a *skilled* process because to engage in analysis and synthesis requires competencies of thought and action. By *sense-able*, I mean that the process of inquiry makes problematic situations able to be perceived and experienced. So the process of inquiry makes what Dewey (1954, 126) calls the "expanded, multiplied, intensified, and complicated" aspects of a problematic situation apparent and known and thereby better able to be addressed and acted on.

Another way to describe this, using more designerly terms, is to say that the process of inquiry *gives form* to problematic situations. Through the process of inquiry, the elements of a situation are discovered, analyzed, and synthesized into a new whole—a coherent object or event that has a perceivable structure and significance. To say that the process of inquiry gives form to problematic situations is meant literally. The process of inquiry produces a distinguishing shape and substance to something that is otherwise vague.

Through the process of making contestational objects, adversarial design is a kind of inquiry into the political condition. Political conditions are quintessential problematic situations. They are comprised of a diversity of actors and objects, each with multiple agendas and effects, which often seem incongruent. Adversarial design as inquiry provides a way to express and experience an otherwise confusing situation. Consider again the domain of social robots. As discussed, social robots bring together a wide range of technologies, actual and imagined functionalities, engineering practices, beliefs about what constitutes sociableness (some of which are informed by science), and over a century of cultural history and expression. To use Dewey's terminology, the situation of social robotics is

uncertain. Evidence of this uncertainty is found within the discourses of robotics itself and in the multiplicity of conflicting claims about what social robots are, could, or should be. The political issue of social robotics—What will be the character of human-robot relations?—seems vague. Moreover, the associations and connections between the constituent elements of robotics—those technologies, functionalities, practices, beliefs, and expressions—are disjointed. It is difficult at first glance to comprehend, much less comment or act on, their meanings or implications.

As a kind of inquiry into the political condition, adversarial design provides order to this mess of factors. Adversarial design draws out and instantiates the political issues of social robots in material form. And through a process of synthesis, it produces a sense-able organization to them. For example, the tactic of reconfiguring the remainder identifies what is included and excluded in the design of an artifact or system and then communicates the implications of those decisions by designing objects that invert assumptions and exaggerate the excluded qualities. Through the design of robots such as Kelly Dobson's *Blendie* and *Omo* (2007a) or Marc Böhlen's *Amy and Klara* (2006a), those inclusions and exclusions and their implications are made sense-able. The design of each of these robots gathers various factors of social robot design and synthesizes them into lucid forms, which make it possible for those who encounter them or who consider their use to recognize and appreciate the issues and implications of social robots.

So adversarial design gives form to political conditions. This means that designed objects can provide something literally to point at with regard to the political condition: they can be manifestations—expressive encapsulations—of some aspect of the political condition. This manifestation could be a robot, a visualization, a ubicomp system, or any other designed thing. More important than any specific format is that there be a form at all and that there be an object to consider. When working with computational technologies, this object is often more than a representation.

By leveraging computational capacities, these designed things can be objects that enact a political issue and that allow people interact with them in ways that are politically meaningful. The Web browser extensions *MAIC-gregator* (Knouf 2009) and *Oil Standard* (Mandiberg 2006) exemplify this notion of enacting an issue through use, performing the issues of hegemony in military research funding and oil as users surf the Web. Usman Haque's *Natural Fuse* (2009) is another pertinent example. It binds together a network of dependencies and effects and allows us to engage in a model of the political issues and consequences at play with regard to energy

consumption and resource management. Each project can be seen as providing substance to political issues. As a kind of inquiry in the political condition, these projects transform the messy elements of a situation into an object and an experience that allow one to sense it and make sense of it.

Adversarial Design as Practice

So far, I have emphasized the use of adversarial design as a way to engage in an interpretation of objects and as a kind of inquiry into the political condition. In both of these activities, the crucial task for the design scholar is to discover and explain the political qualities and potentials of the objects of design. But one could also consider that agonism might be useful as a generative frame for design as a way of shaping a proactive political practice. In such a practice, doing the work of agonism would be an explicit intent of the design.

Considering agonism as a generative frame shifts us to considering adversarial design as a process. In this process, the tactics of adversarial design—revealing hegemony, reconfiguring the remainder, and articulating agonistic collectives—become places along a continuum of a practice.[1] Although I have not treated them as such in this book, each of the tactics could be viewed as informing and leading to the next. The first tactic, revealing hegemony, would consist of identifying and documenting structures and patterns of power and influence in contemporary society. Insights gleaned from this could then be used as part of an assessment of the agendas and desires that are being either privileged or excluded, thereby informing the tactic of reconfiguring the remainder. This remainder could be folded into the third tactic of articulating an agonistic collective—designing a participatory space of contest in which those structures and exclusions might be experientially encountered and challenged and alternatives offered. At each stage, the conceiving and making of artifacts and systems would play a role in providing demonstrations of political issues and conditions, making them known and actionable, providing fodder for the next course of action.

Adversarial design as an intentional practice of inquiry into the political condition moves political design beyond awareness raising and critique. Both awareness raising and critique are important aspects of political dialog, but design can offer something more. Design can produce a shift toward action that models alternative presents and possible futures in material and experiential form. This provides a foundation for examining

and reconstructing political conditions as they are and also for imagining the political conditions that might be. Mark Shepard's *Sentient City Survival Kit* (2009c) hints at this kind of design that results in a literal reconstruction of a political condition. Projects such as the *CCD-Me Not Umbrella* (2009b) and the *Ad-hoc Dark (roast) Network Travel Mug* (2009a) do more than raise awareness and critique. They instantiate a possibility for another ordering of sociotechnical structures that allows us to act in the world in a different way. These projects make possible, at least in model form, ways to work around surveillance while remaining within a networked culture. Here, the value of an engagement with the medium returns. Shepard's projects include working prototypes. Their technical implementation demonstrates that such devices and such alternatives of action are possible. These prototypes are things in the world that instantiate ideas, and they cannot be denied on the grounds of being implausible. Particularly in our contemporary culture that highly valorizes technology, they command attention because they work. It is unlikely that the *CCD-Me Not Umbrella* and the *Ad-hoc Dark (roast) Network Travel Mug* will ever become commercial products. But this does not diminish their potential capacity as demonstrations of what could be. Just as engineering and computer science demos pave the way for future product features and capabilities, we could imagine adversarial design as a class of demos that sets a course for future political actions and conditions that are experienced and enacted through products and services.

The value of designerly form also becomes apparent in this notion of providing believable models for future actions and conditions. The importance of leveraging aesthetics and expressing product-like qualities is amplified in artifacts and systems such as robotics or ubicomp, where the opportunity for most people to engage in their use is limited. Often, in the domain of technology research, design, and development, what is publicly presented and experienced is documentation of the artifact or system—not the artifact or system itself. In some cases, this is documentation of the prototype products in action. For example, documentation of Shepard's countersurveillance *CCD-Me Not Umbrella* includes video footage taken from a staged (but real and working) CCD camera, which demonstrates the artifact's capacity to disrupt a computational vision system that is attempting to track a fictional user. But even in this case, the documentation is partial, suggestive, and built on narrative. With this project and other projects that rely on documentation as their primary public form, conventional design skills and strategies take on special importance.

Without the opportunity to engage in actual use, the user is an audience to the presentation of the design. A vital factor in the success or failure of a given design is the capacity of the documentation to draw the audience into a compelling consideration of use. The design challenge is to provide viewers with a persuasive suggestion of what the use of the artifact or system might be like, so as to enable the viewers to experience the documentation *as if* they were using the artifact or system. This is a challenge that the conventional methods and forms of design are particularly suited for because much of design is precisely the endeavor of communicating the potential experience of use. Even within the realm of consumer products, the purchase of a product often follows some form of staged demonstration of its capabilities that suggests what it would be like to use it.

Perhaps one reason that critical design has garnered attention is that those engaged in critical design tend to be expert product designers. They understand how technologies become goods and services and possess the skills to portray plausible and often tempting expressions of possible products. For example, Anthony Dunne and Fiona Raby's project *Is This Your Future?* (2004), developed for the Science Museum in London, explores near-future scenarios in which people personally produce biopower. One concept presented includes raising and then sacrificing rats as sources of energy for home appliances. To explore and express this concept, Dunne and Raby produced a series of product models, photographs, and even a manual that instructs future users how to avoid becoming emotionally attached to these sacrificial pets. Despite the outrageousness of the idea and the abject nature of the content, Dunne and Raby produced concepts that were believable as products and aesthetically alluring. Such combined use of visual representations and physical prototypes to communicate the potential of use is one example of the ways that the conventional methods and forms of design practice are employed to do the work of agonism.

Limits to a Practice of Adversarial Design

Some might differ with my claim that an entanglement with the professional practices of making products and the formal aesthetics of design can be of value to doing the work of agonism. It is fair to ask if trading on aesthetics is a problem because it flirts with an exploitative aestheticization of the political. As cultural critic Thomas Frank elaborates in his essay "Why Johnny Can't Dissent" (2004), conflict and difference, particularly

in the pop material and visual trappings of clothes, music, and literature, are not the sparks of a revolution but the seeds for harvesting "the next big thing." Perhaps the same could be said for adversarial design. Adversarial design does trade on the appeal of aesthetics. But does this negate or diminish its political potential? My answer to that question is no. However, it challenges design scholarship to adopt a more fluid notion of the political that does not hinge on unduly romantic ideas of radicalness, revolution, and oppositionality.

Doing the work of agonism through design is not a practice that is oppositional to design or technology as general domains. The visualizations are not antivisualization, the robots not antirobots, the ubicomp products and systems not anti-ubicomp. Many of the designers, artists, and engineers who are involved in the conceptualization and making of adversarial products and services are entrenched within and often deeply committed to these technological domains and their development. In a manner that echoes the basis of agonism as a political theory, these artifacts and systems may be adversarial toward the discourses of these fields and the ways in which those discourses are materially instantiated, but adversarial products and services do not work to destroy their fields. For example, it is not that robots such as Dobson's *Omo* or *Blendie* or Böhlen's *Amy and Klara* make assertions that there is something essentially inappropriate or otherwise wrong with robotics as technical or sociocultural pursuit, but rather that robotics could and perhaps should be differently ordered and pursued and its assumptions, perspectives, and trajectories shifted.

Moreover, those objects characterized as adversarial are not radical or revolutionary in the commonsense notions of those words. Too often, terms such as *adversary* and *contestation* are associated with the radical and revolutionary. And too often, things that are labeled *radical* or *revolutionary* are tied to romanticized notions of struggle or of social structures and processes that assume unified and solid positions of left and right or pro and con rather than the dynamic forces and structures that more aptly characterize the contemporary political condition. To speak of these designed objects as revolutionary or radical in the historical sense would be a gross overstatement and flawed. Adversarial design is a theme and set of tactics, and it is inherently pluralistic and can be applied across the political spectrum and issues. But it makes no promises of upheaval. It would be a mistake to universally characterize adversarial design as revolutionary or radical because that would set expectations beyond the scope of these projects.

The Challenge of Judging Adversarial Design

Because of its relationship to politics, there is a pressure for judgment about adversarial design. The effects of design for politics can be measured, so it seems as though it should be possible to measure the effects of political design. If not, then what are the purpose and consequence of adversarial design? These are fair enough points, but design for politics and political design are distinct affairs, and their differences affect the ways in which they can be judged. Design for politics is a comparatively simpler domain for judgment than political design because its goals are clearer and its metrics more obvious. A researcher interested in the effects of design applied to politics can conduct a range of observations and empirical analyses and thereby make claims concerning the efficacy of specific designs, which might even be able to be extended to design more generally. For example, AIGA Design for Democracy's ballot and election design project has conducted research that shows that changes in the design of ballots and polling place signage can help people understand and act on the ballot, as measured through methods of usability testing (Hewitt 2008). Design for politics—situations in which design is applied to improve the mechanisms and procedures of formal governance—can thus be held to claims of affecting specific mechanisms and processes of governance.

Political design, however, cannot be empirically evaluated in the same ways as design for politics. This book has outlined a set of tactics and themes by which we can better describe and analyze political design. These themes and tactics provide the grounds for judging political design. As stated in the beginning of this book, designed objects that do the work of agonism should be judged first and foremost on their contestational qualities. That is, the tactics and variations on the tactics—such as revealing hegemony and revealing in place, reconfiguring the remainder and agonistic reification, or articulating agonistic collectives and countercollectives—provide both qualities of contestation for description and analysis and also for judgment. So one basis for judgment is how and to what extent a given designed artifact or system achieves those tactics. For example, one can examine visualizations to determine their capacities to do the work of agonism. Do they assume identifiable political stances and communicate specificities of hegemonic structures? Do they produce representations or enactments, and if enactments, to what extent do these enactments involve the user in a reflective experience of their own place and role within these hegemonic structures? Or one can examine the ways in which ubicomp

systems provide opportunities to participate in probing, challenging, resisting, or embracing issues. Do they leave open the space of contest, or do they project particular ethical codes and positions into the space of contest? Do they activate new spaces for political engagement and expression, transforming through articulation the political meaning and significance of objects, environments, and actions?

Adversarial Design as a Participatory Practice

Designed things can do the work of agonism or be a kind of inquiry with an emphasis on the qualities of the object itself. But yet another tangent to adversarial design builds off the idea of design as a participatory practice. As a participatory practice, adversarial design would engage with groups and communities and use design to collectively and collaboratively explore the political condition and express political issues. Through this practice, adversarial design could become a new way of fostering public political action.

Both the introduction to this book and chapter 4 on ubiquitous computing and articulating agonistic collectives provide hints of adversarial design as a participatory practice. For instance, Jeremijenko's *Feral Robotic Dogs* (2002–present), suggests a participatory practice of adversarial design in which the designer or artist works with others in the use of a technology for political ends. As people work with Jeremijenko to hack and release the robotic dogs to detect toxins, they themselves become involved in taking political action and participating in doing the work of agonism. One notable aspect of the tactic of articulating agonistic collectives is that it involves and transforms others and their actions into political expressions. By using products that politicize the everyday, the user participates in political expression. Someone who uses Shepard's *CCD-Me Not Umbrella*, for example, might be considered as engaging in a kind of political direct action by working against a surveillance system. And to use Haque's *Natural Fuse* is to engage in a politicized interaction with others, collaboratively exploring the issues of energy consumption and resource management. However, participation is not the essential aspect of those projects and a participatory practice of adversarial design would need to go further still. In those examples, the user is not the instigator of the political action, and there is a distinct separation between the activities of design and the activities of use. Although this format succeeds as one kind of adversarial design, it is worth exploring whether there are other, more participatory ways that this work might be done.

Practices of participatory design offer insights into how such a shift in adversarial design might unfold. These practices are concerned with opening the design process beyond the experts and including those who might be affected by the designed thing in the activities of imagining, conceptualizing, and creating products and services. Historically, the practices of participatory design have been overtly political. The origins of participatory design in Scandinavia are interwoven with union politics and the rights of workers to participate in the structuring of their work environment. In contemporary participatory design, theories of agonism are beginning to appear and be proffered as useful frames for understanding new kinds of political action through design. Scholars Erling Björgvinsson, Pelle Ehn, and Per-Anders Hillgren (2010, 48) have recently drawn on Mouffe and notions of agonism to discuss how the processes of participatory design result in the making of "agonistic public innovation spaces" that enable the public expression of dissensus and foment debate through the activities of design. As I do in this inquiry into objects, Björgvinsson, Ehn, and Hillgren use agonism as an analytical frame for the activities and outcomes of participatory design. In the same way as extending adversarial design from an analytic to a generative frame for the making of objects, we can also imagine agonism as a generative frame for participatory design. Central to participatory design is the construction of methods and tools for eliciting and supporting engagement in the design process. These methods and tools have focused mostly on products and services for workplace settings. But we could also consider the construction of tools and methods for eliciting and supporting a participatory approach to adversarial design.

The lessons learned from this discussion of adversarial design can inform a participatory practice of adversarial design. Each tactic could be employed in a collective and collaborative manner. And as a process of inquiry, these could be taken up by both designers and nondesigners. The outcomes of that inquiry, which include the identification of issues and the constituent elements of an issue, might be markedly different with the participation of a public than when undertaken by a designer alone. One consequence of such a collaboration could be a broadening of the range of political issues and relations engaged through design, providing more sites and subjects for contestation.

One of the characteristics of all of the projects discussed in this book is a clever use of computation as a medium. This relies on deep knowledge and often expertise in the manipulation of computational technology. This is not something that could be immediately expected from a novice public.

In addition, many examples of adversarial design leverage an expertise in the making of products and the use of formal aesthetics as a strategy for luring people into the consideration of use. This too would not be present in a novice public. These are reasons to imagine participatory adversarial design differently, not reasons to abandon its pursuit. Part of a participatory adversarial design might then include educational programs that work to develop a level of technological and design fluency in participants. Or a participatory adversarial design could develop a new aesthetic that engaged speculation but without being spectacular or could focus on constructing publics rather than making objects. All of these possibilities merit further attention.

This question of how to imagine adversarial design differently is an appropriate topic to end with because it exemplifies a core tenet of agonism—that new sites and practices of contestation must always be pursued and that contestation never ends or is resolved. As Mouffe (2005a, 807) states, "To think politically is necessarily to abandon the dream of a final reconciliation and to discard the idea of a public space oriented to consensus. What democratic politics requires is a fostering of a multiplicity of public spaces of agonistic confrontation."

Doing adversarial design and using design to do the work of agonism require a similar perspective. If we abandon the notion that any one design will completely or even adequately address our social concerns or resolve our social issues, then adversarial design can provide those spaces of confrontation—in the form of products, services, events, and processes—through which political concerns and issues can expressed and engaged. To do adversarial design is to embrace a commitment to discovering and inventing ways to express and enable productive dissensus and contestation.

design/human-computer interaction

"There's a new HCI in town, and Carl DiSalvo is one of its most thoughtful proponents. Lively, timely, provocative, and inspiring, *Adversarial Design* sets out a manifesto for engaged design practice that moves beyond usability and sees interactive technology as an active site of civic and political discourse."
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