17. UBIQUITOUS COMPUTING, SPATIALITY, AND THE CONSTRUCTION OF IDENTITY
Directions for Policy Response

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I. INTRODUCTION

This chapter argues that ubiquitous computing has the potential to profoundly affect our ability to inhabit and create our identities. Thus the infrastructure of ubiquitous computing—the symbiotic interrelations of laws, techniques, economic arrangements, and cultural practices that structure its use—is a profoundly important object of public policy.

Briefly, I argue that identity is the negotiated performance of meaningful relationships. Identity is always social. We are always and only who we are with respect to others.

Performances and enactments of identity call on a variety of resources. Among them are reciprocal techniques of visibility and concealment, ideals and genres of engagement, and tact. Spatiality is implicated in at least two ways. First, the architectures of lived space afford possibilities for visibility or concealment. They shape the ways in which we may see or be seen. Second, spaces themselves are socially meaningful. Certain roles and interactions are appropriate or not in certain spaces. Genres of performance create, sustain, and are supported by genres of place.

Ubiquitous computing—the embedding of networked sensing, calculating, and responsive machines throughout spaces—alters both these architectures of visibility and the ability to negotiate the sense and meaning of spaces. Because it affects the structures that mediate social relations, ubiquitous computing is an appropriate subject for public policy or regulatory intervention. However, most current approaches to such regulation have focused on protecting personal autonomy or privacy. Semiotic democracy, or the equitable distribution of the resources for social meaning making, provides a more productive framework for understanding the potential risks and benefits of ubiquitous computing.

Principles of telecommunications regulation may be effectively applied to the infrastructures mediating ubiquitous computing to more ethically design and distribute access to that infrastructure.

II. IDENTITY AND SOCIAL PERFORMANCE

Identity is the sharing, creating, and performing of socially meaningful relationships. As Erving Goffman put it in his classic *The Presentation of Self in Everyday Life*,

> to *be* a given kind of person . . . is not merely to possess the required attributes, but also to sustain the standards of conduct and appearance that one's social grouping attaches thereto. A status, a position, a social place is not a material thing, to be possessed and then displayed; it is a pattern of appropriate conduct, coherent, embellished, and well-articulated . . . It is something that must be enacted and portrayed, something that must be realized.[1]

Identity is social not merely in the sense of being relational; it is also social in that it is negotiated. Identity is both internal and external, simultaneously projected and imposed.[2] We do not stride into the social world as wholly formed individuals. Nor are we putty in the hands of the collective. Instead, we become who we are in relation to others, as others become themselves in relation to us. We realize who we are by noticing how we are treated, and we demand to be treated as the person we sense ourselves to be. Thus identity is a process, a becoming. It is the "systematic establishment and signification, between individuals, between collectivities, and between individuals and collectivities, of relationships of similarity and difference."[3] It is work.

Just because identity and social relations are continually coconstructed, doesn't mean that anything goes. These performances and negotiations occur in particular settings and call upon a variety of resources. These include, among others, a) resources structuring mutual awareness, b) shared vocabularies, grammars, or genres of identity, and c) tact.

Goffman uses the dramaturgical metaphors of front stage and backstage to discuss the negotiation of mutual awareness and visibility.[4] For example, to successfully enact a social role, individuals retreat to "back regions" to prepare for later performances before audiences in the "front region." In these back regions, performers collaborate with other team members in their preparations.

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1. Erving Goffman, *The Presentation of Self in Everyday Life* (New York: Doubleday, 1959), 75.
2. Richard Jenkins, *Social Identity, 2nd Ed.* (New York: Routledge, 2004).
3. Jenkins, *Social Identity*, 5 (n. 2).
4. Goffman, *The Presentation of Self in Everyday Life* (n. 1).

Should the audience penetrate those back regions and become aware of those preparations, the front region performance loses some of its credibility. Therefore barriers are erected to control communication. In Goffman's work, these tend to be physical barriers such as doors or curtains.[5] Yet cultural codes, in-jokes, or shibboleths can also act as discriminating techniques, directing meanings and conversations among groups.[6]

Meaningful relations and identities are not created anew. Culturally shared ideal identities—waiter, crofter, man, woman—are called upon and reenacted in performance. These ideal identities are useful as shared cognitive frames, as paths of least resistance, and as ready-made symbolic resources. Successful performance can be understood as a command of these idioms and genres of identity.[7]

But these idioms and genres are themselves the result of complex and historically embedded social interaction. In a process of structuration,[8] the performances both call upon and create enduring patterns and genres of identity, relationship, and interaction. Bourdieu's concept of habitus describes this process.[9] The habitus, according to Bourdieu, is a set of dispositions, or "generative schemata of cognition, perception, evaluation etc."[10] Shared perspectives on normalcy, propriety, value, and sameness or difference may all be understood as aspects of habitus. While the habitus may be seen as the internalization of social structures, it also informs the practices which, in turn, reproduce social structures.[11] Thus the habitus "is the dynamic intersection of structure and action, society and the individual."[12] Familiar patterns and genres of identity are the product of the interactions they facilitate.

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5. *Ibid.*, 106–140.

6. David J. Phillips, "From Privacy to Visibility: Context, Identity, and Power in Ubiquitous Computing Environments," *Social Text* 23, no. 2 (2005): 95–108.

7. Judith Butler, "Imitation and Gender Insubordination," in *The Lesbian and Gay Studies Reader*, ed. H. Abelove, M. A. Barale, and D. Halperin (New York and London: Routledge, 1993), 307–320; Goffman, *The Presentation of Self in Everyday Life* (n. 1).

8. Anthony Giddens, *The Constitution of Society: Outline of a Theory of Structuration* (Berkeley: University of California, 1984).

9. Pierre Bourdieu, *Distinction: a Social Critique of the Judgment of Taste* (London: Routledge, 1984).

10. Nicos Mouzelis, "Habitus and Reflexivity: Restructuring Bourdieu's Theory of Practice," *Sociological Research Online* 12, no. 6 (2007), par 1.1, http://www.socresonline.org.uk/12/6/9.html.

11. Mouzelis, "Habitus and Reflexivity: Restructuring Bourdieu's Theory of Practice," (n. 9).

12. C. Calhoun, E. LiPuma, and M. Postone, "Introduction: Bourdieu and Social Theory," in *Bourdieu: Critical Perspectives*, ed. C. Calhoun, E. LiPuma, and M. Postone (Cambridge: Polity Press, 1993), 4.

Finally, performances call upon tact. They call upon an audience willing to go along, to negotiate a mutually acceptable definition of identities, relationships, and situations.[13] The tact, the degree of play that one can rely upon, varies enormously. For example, unusual gender performances notoriously call forth intransigence, as can attest anyone who has tried to live a queer identity.

At stake in these negotiations is neither autonomous decision-making nor the protection of any core self, but the structure of rights, resources, and power. As Goffman put it, an identity claim is an effort to control the conduct of others toward oneself, a demand to be treated in a certain way, as a certain sort of person.[14] And as Eliza Doolittle put it, "The difference between a flower girl and a lady is not how she behaves, but how she is treated."[15]

In assessing these negotiations in terms of social justice, we might look at where power lies in these negotiations. Whose definitions of situations, whose identity claims, whose strategies of performance, count? As we intervene in these negotiations, either through policy or technology, we might look specifically to new practices and structures that alter visibilities, meaning-making, or tact. Who is able to see or conceal what, and in what conditions? Who is able to influence schemas of cognition and evaluation? How rigid are these structures? How much leeway is granted, and how great is the cost of transgression?

III. IDENTITIES AND PERFORMANCES IN SPACE

As Dourish and Bell put it, "the organization of space [is] an infrastructure for the collective production and enactment of cultural meaning."[16] Spatiality is implicated in identity negotiation in at least two ways. First, and most obviously, spatial arrangements structure resources of visibility and copresence. Goffman's notions of front and back stages are inherently spatial and architectural. People retire behind closed doors before they drop one role, one set of social demands, and take on another. Curtains, one-way mirrors, street lighting, and ha-ha's all shape the interactions between individuals and their audience.

Second, though, spatial organization permits different possibilities for the "mutual coordination of actions" and so for collective meaning-making.[17] Certain

13. Goffman, *The Presentation of Self in Everyday Life*, 9 (n. 1).

14. Goffman, *The Presentation of Self in Everyday Life*, 3 (n. 1).

15. George B. Shaw, *Pygmalion* (Baltimore: Penguin Books, 1951), 99.

16. Paul Dourish and Genevieve Bell, "The Infrastructure of Experience and the Experience of Infrastructure: Meaning and Structure in Everyday Encounters with Space," *Environment and Planning B* 43 (2007): 414–430, 415.

17. Dourish and Bell, "The Infrastructure of Experience and the Experience of Infrastructure: Meaning and Structure in Everyday Encounters with Space," 419.

settings carry expectations of appropriate actions and exchanges; certain roles and relations are easier to sustain in certain places.

Yet the logic of space does not precede the logic of interaction. Again in a process of structuration, settings themselves are negotiated and created along with the performances, the roles, and the identities that they support. Space is produced by the actions it mediates. Standards of appropriate activity, and hence the meaning of spaces, are under constant renegotiation. Dodge and Kitchin refer to this as "transduction"—"the constant making anew of a domain in reiterative and transformative practices."[18]

As with the negotiation of identity, the negotiation of space calls upon genres of interaction. Spaces are "negotiated through learnt, relational, or familiar practice."[19] They are given meaning, they inform action, with respect to habitus. Individual decisions, informed by habitus, take on a "collective logic."[20] That collective logic is expressed in patterns of spatial organization. Thus although space is produced in improvised interactions, those improvisations conform to learned and familiar genres and idioms, and spaces tend to coalesce into relatively stable and recognizable places, neighborhoods, or regions. Certain places become more attractive to people of shared habitus. This "clustering of people of similar habitus" produces what Parker et al. refer to as "class places."[21]

This recursive construction of habitus and place is itself structured by laws, economics, and cultural norms. Berlant and Warner, for example, talk of how zoning laws that relegate erotic bookstores and clubs to unpopulated areas deeply impacts the street life of urban neighborhoods and hence the opportunities for queer interactions, identities, and visibilities.[22] The boundaries of tact and the potential for practical ambiguity are imbricated with economic interests and physical structures. The strategic ambiguity of department store windows, for example, provides opportunities legitimately to dawdle and tarry (and perhaps, covertly, to flirt).[23]

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18. Martin Dodge and Rob Kitchin, "Code and the Transduction of Space," *Annals of the Association of American Geographers* 95, no. 1 (2005): 162–180, 162.

19. Dourish and Bell, "The Infrastructure of Experience and the Experience of Infrastructure," (n. 17), 420.

20. Roger Burrows and Nick Ellison, "Sorting Places Out? Towards a Social Politics of Neighborhood Informatization," *Information, Communication, & Society* 7, no. 3 (2004): 321–336, 331.

21. Simon Parker, Emma Uprichard, and Roger Burrows, "Class Places and Place Classes: Geodemographics and the Spatialization of Class," *Information, Communication, & Society* 10, no. 6 (2007): 902–921, 905.

22. Lauren Berlant and Michael Warner, "Sex in Public," *Critical Inquiry* 24 (1998): 547–566.

23. George Chauncey, *Gay New York: Gender, Urban Culture, and the Making of the Gay Male World, 1890–1940* (New York: Basic Books, 1994), 187–205.

IV. SURVEILLANCE, UBIQUITOUS COMPUTING, AND IDENTITY NEGOTIATION

Two cultural shifts are causing deep structural changes to the negotiations of space and identity. The first is the increasing prevalence of surveillance as a mode of knowledge production. Although Lyon has described surveillance as "any collection and processing of personal data, whether identifiable or not, for the purposes of influencing or managing those whose data have been garnered," I wish to think of surveillance as a very particular form of the collection and processing of data and the management of populations.[24]

In this idealized form, surveillance individualizes each member of the population, and permits the observation and recording of each individual's activities, then collates these individual observations across the population. From these conglomerated observations, statistical norms are produced. These norms are then applied back to the subjected individuals, who are categorized and perhaps acted upon according to their relation to the produced norm. Thus surveillance produces both discipline (that is, conformity to the norm), and the disciplines (regulated fields of knowledge and expertise).[25] It alters both the structures of visibility and the structures of meaning making. It renders us visible—it identifies us—in relation to the norms it produces.

This model of knowledge production operates every day, usually silently and without notice, in computer-mediated communication systems. A paradigmatic example is the *Wall Street Journal Online*. The system uses "cookies" to uniquely identify individual users, then to monitor and track their traversal of the site. The information thus gathered is statistically analyzed to place each user in one of eight categories (car buffs, consumer techies, engaged investors, health enthusiasts, leisure-minded, mutual-fund aficionados, opinion leaders, or travel seekers). This categorical identification then becomes the knowledge guiding the treatment of each individual, as different advertisements are served to members of different classes.[26]

Surveillance as a technique of knowledge production and population management is becoming a central organizing principle of modern institutions. It is being adopted in more and more institutional settings. It is especially important in the understanding and management of populations in space.

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24. David Lyon, *The Surveillance Society: Monitoring Everyday Life* (Buckingham: Open University, 2001), 2.

25. Michel Foucault, *Discipline and Punish: The Birth of the Prison* (New York: Pantheon Books, 1979).

26. Nat Ives, "Online Profiling, Separating the Car Buff from the Travel Seeker, Is a New Tool to Lure Advertisers," *The New York Times*, June 16, 2003, C10.

Geodemographics is the "codification and spatial mapping of habitus."[27] Geodemographic systems correlate residential data with personal data, including credit card purchases, subscription data, and public records, to produce statistical identity categories. These categories include, for example, "Blue Blood Estates" ("The nation's second-wealthiest lifestyle,. . . characterized by married couples with children, college degrees, a significant percentage of Asian Americans and six-figure incomes . . .") and "Shotguns and pickups" (". . . young, working-class couples with large families . . . living in small homes and manufactured housing"). These lifestyle clusters are associated with particular neighborhoods. Subscribers to geodemographic services can then choose a neighborhood and discover the prevalence of particular lifestyles within that neighborhood. As one of these services puts it, "You are Where You Live."[28]

These categorization techniques work. They seem to be correlate both with the observations of ethnographers and with the subjective perceptions of inhabitants. Thus they can be seen as one mechanism of normativity, entrenchment, and stabilization in the cocreation of identities and places.[29]

The second deep structural shift in the resources of identity negotiation is the development of ubiquitous computing. Also known as ambient intelligence or pervasive computing, this is the trend toward distributing computing systems throughout space. Sensors, computation devices, and responders are being embedded into everyday objects and linked in networked communication to create an environment that is itself "perceptive, interpretive, [and] reactive."[30]

Ubiquity implies spatiality; ubiquitous computing mediates our awareness of places and our ability to create, engage, and use those places. It "modulates space by significantly altering the conditions through which space is continually beckoned into being."[31] It mediates the practices of "locating and hailing people and things."[32]

Like zoning laws, the infrastructures of ubiquitous computing and surveillance become resources in the mutual construction of habitus and place. Corporations and police agencies have been particularly vocal about their interest in using them

27. Parker et al., "Class Places and Place Classes: Geodemographics and the Spatialization of Class," 905, (n. 21).

28. Claritas Inc. 2008. "Customer Segmentation > 66 PRIZM Marketing Segments, Claritas Customer Segmentation," http://www.claritas.com/claritas/Default.jsp?ci=3&si=4&pn=prizmne_segments (accessed March 4, 2008).

29. Parker et al., "Class Places and Place Classes: Geodemographics and the Spatialization of Class," (n. 21).

30. Anne Galloway, "Intimations of Everyday Life," *Cultural Studies* 18, no. 2/3 (2004): 384–408, 388.

31. Dodge and Kitchin, "Code and the Transduction of Space," 178 (n. 18).

32. Mike Crang and Stephen Graham, "Sentient Cities: Ambient Intelligence and the Politics of Urban Space," *Information, Communication & Society* 10, no. 6 (2007): 789–817, 794.

to normalize places and the activities that constitute them. With ubiquitous computing, physical stores hope to mimic the classificatory and responsive actions of online sites such as the *Wall Street Journal*.[33] RFID tags (small tags that emit short, unique identifiers) or iris scanners might recognize return shoppers, or infer genres of behavior from a new shopper's actions, and respond accordingly. Perhaps the system will automatically send an enticing message to the shopper's PDA. Perhaps the security cameras will be automatically trained on a suspected shoplifter.

Some in the U.S. military have advocated for a "Manhattan project" to develop pervasive identification and tracking, especially in urban areas. The goal would be to identify the abnormal from a background of normalcy. This is a project of "anticipatory seeing," extending codes of normativity from the past into the future.[34]

It is important to remember first that ubiquitous computing does not necessarily imply surveillance as we have defined it here, and second that the knowledge produced in surveillance is not necessarily oppressive. All individuals and groups call on norms and genres to make sense of themselves and the world, if only to question their position relative to those norms and genres. The question is not how to stop the expansion of ubiquitous computing and surveillance. Rather, the question is how that expansion will be regulated and structured to allocate access to the resources that ubiquitous computing and surveillance provide.

The time for this is ripe. Although the technologies exist for the aforementioned scenarios, the "commercial logics" of these networks—mutually agreeable technical and economic arrangements among those who would provide, transport, and manipulate data—are unstable.[35] Intervention at the level of policy, especially policy that addresses these nascent commercial logics, might now determine whether ubiquitous computing and surveillance are useful mostly for the replication, reentrenchment, and amplification of existing power relations, or whether the infrastructure might be available for novel, even transgressive and transformative, coalitions.

V. POLICY RESPONSES

Privacy has been a common response to the changes in visibility that ubiquitous computing entails. But, for several reasons, privacy fails as an antidote to

33. Jerry Kang and Dana Cuff, "Pervasive Computing: Embedding the Public Sphere," *Washington and Lee Law Review* 62 (2005): 93–146, 106–107.

34. Crang and Graham, "Sentient Cities: Ambient Intelligence and the Politics of Urban Space," 803 (n. 32).

35. *Ibid.*, 795.

surveillance.[36] In general, privacy law is geared toward protecting the autonomy and dignity of the individual. It offers a naive treatment of the relation between the individual and society, in that it understands individual awareness and cognition as preceding social interaction. Especially in the United States, privacy law is profoundly ambivalent and even inept in its approach to the effects of technical mediation. For example, it offers no legal distinction between face-to-face visual monitoring and 24-hour video recording of the workplace.[37] Moreover, the extent of privacy law's protection is inextricably linked to an essentialist definition of the space one inhabits at the moment. That is, activities in a private place are private; activities in a public place are public. Hence it is difficult to apply privacy principles to ubiquitous computing as a technical mediation of public space. New legal theories interpreting privacy as the protection of "contextual integrity"[38] offer some hope here, but so far that work has failed to adequately address context not as merely the container of activities, but as the product of activities.

Data protection is often conflated, both administratively and conceptually, with privacy protection. It is important, though, to carefully disentwine the two. Data protection both narrows and broadens the scope of privacy protection. Unlike privacy law, it is concerned only with the creation, storage, and transfer of information about individuals. However, it explicitly expands privacy interests beyond physical spaces, and recognizes that new forms of technological mediation require new forms of regulatory principles and practice.

The principles of data protection require that information relating to identifiable individuals be collected only with notice and consent and for an explicit purpose. The information is to be used only for that purpose, and to be retained only as long as is necessary for that purpose. The data holder is responsible for the accuracy, completeness, and security of the data. Data subjects have the right to access and correct data held about them. These principles are generally enforced by government commissions with oversight authority.[39]

These are certainly useful principles for structuring access to the resources of ubiquitous computing. In theory, transparency and consent are essential to exercising meaningful decisions. In order to translate Goffman's back and front regions to the world of ubiquitous computing, one must know what systems of data gathering are in operation and one must be able to consent to that gathering. In practice, though, these principles become not only difficult to enforce, but

36. Felix Stalder, "Privacy Is Not the Antidote to Surveillance," *Surveillance & Society* 1, no. 1 (2002): 120–124.

37. *Vega-Rodriguez v Puerto Rico Tel. Co* [1997] 110 F. 3d 174 (US 1st Cir).

38. Helen Nissenbaum, "Technology, Values, and the Justice System: Privacy and Contextual Integrity," *Washington Law Review* 79 (2004): 119–157.

39. Colin Bennett and Charles Raab, *The Governance of Privacy* (Cambridge: MIT, 2006), 12–13.

problematic in themselves. As anyone who has set their browser to inform them whenever they accept a "cookie" can attest, it is in fact impossible to consider and consent to each instance of pervasive data gathering.

Just as consent becomes more and more impracticable, so does the obligation to hold data only for specified purposes. Not only are there countless exceptions to this requirement, but the requirement itself is construed so broadly that virtually any "legitimate business purpose" is considered sufficient.[40]

Finally, protection is limited to data relating to a personally identifiable individual. But often the purpose of surveillance and ubiquitous computing is to discover or create usable patterns in vast amounts of data, rather than to isolate or act upon any particular individual. Any social, rather than personal, implications of that sort of knowledge production are orthogonal to the principles' intent. Recently, though, an EU policy team has recommended that data be subject to protection if it "is used to determine or influence the way in which [a] person is treated or evaluated."[41] This would certainly seem to cover, for example, mobile carriers supplying marketers with anonymized locational data that would nevertheless permit the marketers to deliver location-specific messages to mobile phones. However, the recommendations specify that the data be used to influence a "person," and it is not clear that it would apply to the wholesale use of large quantities of anonymized locational data if that information were used in ways that affected the lives of many people (for example, in siting billboards or roadblocks), so long as none of them were targeted individually.[42]

Some recent trends in intellectual property law might have some bearing on ubiquitous surveillance. These trends attempt to extend intellectual property to aboriginal or tribal artifacts or knowledge in order to protect not merely the economic value of the artifact, but the cultural identity of its producers. The harm to be addressed is inauthentic cultural representation, resulting in a "misrecognition" that is "demeaning or contemptible."[43] At first glance, insofar as geodemographic models or other typifications of place,

40. Oscar H. Gandy, Jr., "Legitimate Business Interest: No End in Sight? An Inquiry into the Status of Privacy in Cyberspace," *The University of Chicago Legal Forum* 77 (1996): 77–137.

41. European Union. 2005. *Working document on data protection issues related to RFID technology*. Working Party on the Protection of Individuals with Regard to the Processing of Personal Data. Brussels. WP 105 (19 January 2005), http://ec.europa.eu/justice_home/fsj/privacy/docs/wpdocs/2005/wp105_en.pdf (accessed August 15, 2007).

42. David J. Phillips, "Locational Surveillance: Embracing the Patterns of Our Lives," in *Handbook of Internet Politics*, ed. P. Howard and A. Chadwick (London: Routledge, in press).

43. Madhavi Sunder, "Intellectual Property and Identity Politics: Playing with Fire," *Journal of Gender, Race & Justice* 4 (2000): 69–98, 69–72, quoting Charles Taylor, "The Politics

identity, or activity can be seen as cultural representations, an approach aimed at protecting their authenticity might seem to hold promise. But in fact, these models and typifications are often, by any objective measure, authentic. As previously mentioned, geodemographic categories capture fairly well the lived sense of place, nor are they obviously demeaning or contemptible. The problem is not their authenticity, but the reentrenchment and reenactment of very particular, predictable, manageable types of authenticity. Just as the protection of "contextual integrity" as a privacy principle ignores the emergent qualities of context, so does the protection of "authentic cultural representation" ignore the emergent qualities of culture. Cultural identity is always a work in progress, "a matter of 'becoming' as well as 'being.'"[44] Protecting "authenticity" adds a perhaps unwanted and stultifying restraint to this process of becoming.

None of these policy frames—the protections of privacy, data integrity, or cultural representation—specifically address that process of becoming. None of them focus on the equitable distribution of the resources necessary for the cultural production of identity. We are not concerned merely with protection from the excesses of administrative management. Instead, we want to facilitate active engagement in the cocreation of the informational/geographic/social landscape. The question is not how to protect our privacy; it is how to be public, how to engage in public life, how to figure out one's situation, identity, and desires *in community*. To turn in that direction, we might look again to current work in intellectual property law to borrow and extend the idea of "semiotic democracy," or common sense making.[45]

The phrase, "semiotic democracy," was first coined by John Fiske in 1987.[46] Fiske used the term to refer to the process of returning to audiences the power to recode cultural symbols to express meanings divergent from the intent of their creators. More recently, it has been taken up by legal activists in their fight against exclusive ownership of meaningful cultural icons.[47] While many of these scholars deploy the ideal of semiotic democracy in specific legal battles over the right to use industrially produced cultural symbols such as Barbie or Mickey Mouse, it has also been more generally referenced in what Benkler refers to as

> the capacity and need to observe a cultural production and exchange system and to assure that it is as unconstraining and free from manipulation

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of Recognition," *Multiculturalism*, ed. Amy Guttmann (Princeton: Princeton University, 1992): 25–73, 25.

44. *Ibid*, 86, quoting Stuart Hall, "Cultural Identity and Diaspora", in *Identity: Community, Culture, Difference*, ed. Jonathan Rutherford (London: Lawrence & Wishart, 1990): 223–240, 225.

45. Madhavi Sunder, "IP3," *Stanford Law Review* 59 (2006): 257–332, 279.

46. John Fiske, *Television Culture* (London: Routledge, 1987).

47. For example, Lawrence Lessig, *Free Culture* (New York: Penguin, 2004).

> as possible. We must diagnose what makes a culture more or less opaque to its inhabitants; what makes it more or less liable to be strictly constraining of the conversations that rely on it; and what makes the possibility of many and diverse sources and forms of cultural intervention more or less likely.[48]

When we imagine cultural production and exchange as not merely the traffic of symbolic artifacts, but instead as the creation and interpretation of patterns of lived, embodied interactions in space, then the ambit of concern about semiotic democracy extends well beyond intellectual property. What we seek to protect and nurture is the project of "world-making,"[49] the possibilities for "new genres of communication, new styles of contestation, new solidarities or enmities, and new settings for interaction,"[50] by providing for "space[s] of entrances, exits, unsystematized lines of acquaintance, projected horizons, typifying examples, alternate routes, blockages, [and] incommensurate geographies."[51] As Noveck puts it, people "com[e] together, not just to create content, but also to create power."[52]

Crang and Graham, among others, offer visions for ubiquitous computing practices that might "reenchant and reanimate" cities, "destabiliz[e] space," decenter subjectivity, and enable new social performances and new public identities.[53] They suggest three things that ubiquitous computing must provide to enable this generative sociality. First, the environment's coding must be "transparent and/or aesthetically problematic."[54] Ubiquity need not imply invisibility or seamlessness. Indeed, Ratto has outlined the ethical problems of "seamlessness":

> . . . the seams between systems provide the most opportunity for extending, troubling, and repurposing infrastructures . . . If the infrastructures themselves hide these seams from view, we are left with little recourse to the kinds of actions, behaviors, and identities infrastructures presuppose . . . By removing our knowledge of the glue that holds the systems that make up the infrastructure together, it becomes much more difficult, if not impossible,

48. Yochai Benkler, *The Wealth of Networks* (New Haven: Yale University Press, 2006), 298–299.

49. Berlant and Warner, "Sex in Public," 558 (n. 22).

50. Mustafa Emirbayer and Mimi Sheller, "Publics in History," *Theory and Society* 28 (1999): 145–197, 164.

51. Berlant and Warner, "Sex in Public," 558 (n. 22).

52. Beth Simone Noveck, "A Democracy of Groups," *First Monday* 10, no. 11 (2005), under "The Wisdom of Crowds," http://firstmonday.org/issues/issue10_11/noveck/index.html.

53. Galloway, "Intimations of Everyday Life," 397 (n. 30); Crang and Graham, "Sentient Cities: Ambient Intelligence and the Politics of Urban Space," 806, 812 (n. 32).

54. Crang and Graham, "Sentient Cities: Ambient Intelligence and the Politics of Urban Space," 806 (n. 32).

to begin to understand how we are constructed as subjects, what types of systems are brought into place (legal, technical, social, etc.) and where the possibilities for transformation exist.[55]

Second, the ubiquitously coded environment should admit of plural authorship, folksonomies, lay classifications, and community mapping.[56]

Finally, the infrastructure should promote "new practices of direct contact and association."[57] Coded, aware, and responsive environments can provide opportunities for new kinds of gaming, new modes of interactive art. For example, Kang and Cuff discuss an urban artscape where inhabitants anonymously relay biometric information such as heartbeat or respiration to a central server, where it is aggregated and used to control a light display, publicly visualizing the city's "mood."[58]

All of these are structural prerequisites for nonnormative play, for "ephemeral . . . and fugitive" acts of world-making, for space that is "public in the sense of accessible, available to memory, and sustained through collective activity."[59] We might look to telecommunications policy for ways to sustain these structural prerequisites. The most obvious reason for this is that telecommunications companies and services in fact permeate the infrastructures that mediate ubiquitous computing. For example, telecommunications companies own the backbones that transport IP traffic. They own many of the ISPs through which households access the backbone. They are the first holder of the locational data generated through their mobile systems. They control access between mobile users and services through contract agreements with each.[60] They own or have financial interests in informational content—from directories to sports teams to movies. They care deeply about the demographic, cultural, and economic composition of the markets for these services. Because ubiquitous computing has the potential to reconfigure those markets, and the means of their construction, telecom companies have complex and contradictory interests in providing interconnections to the services and devices that comprise ubiquitous computing.

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55. Matt Ratto, "Ethics of Seamless Infrastructures: Resources and Future Directions," *International Review of Information Ethics* 8, no. 8 (2007): 20–27, 25; http://www.i-r-i-e.net/inhalt/008/008_5.pdf.

56. Crang and Graham, "Sentient Cities: Ambient Intelligence and the Politics of Urban Space," 806 (n.32).

57. *Ibid.*

58. Kang and Cuff, "Pervasive Computing: Embedding the Public Sphere," 144 (n. 33).

59. Berlant and Warner, "Sex in Public," 561–562 (n. 22).

60. David J. Phillips, "Texas 9–1–1: Emergency Telecommunications, Deregulation, and the Genesis of Surveillance Infrastructure," *Telecommunication Policy* 29, no. 11 (2005): 843–856; Larry Magid, "Global Positioning by Cellphone," *New York Times*, July 19, 2007, C7.

Telecommunications policy has a rich history of addressing this complexity through sophisticated synthesis of industrial, technical, and social policy. Although the trend for the past two decades has been to abandon that sophistication in favor of a no-holds-barred grab for territory and power, it is nevertheless instructive to remember and resurrect the traditional theories and mechanisms of telecommunications policy.

Historically, telecommunications policy has, to one degree or another, approached information and communication infrastructure as a public resource. Its objective has been to provide universal access to the communication services that are deemed essential to social and political participation. Not only is service to be universally available, it is to be amenable to all sorts of content without public censorship or private gatekeeping.[61] This approach and these goals are increasingly crucial political tenets as communication, information, networks, geography, sociality, identity, and political power become more intimately interdependent.

In recognition of this interdependence, especially between physical and informational spaces, policy should address the concern that monopoly ownership of physical space can be leveraged to colonize information space. For example, Kang and Cuff suggest that mall owners can manage the information space of malls by providing WiFi access, but requiring registration and imposing filters. Telecommunications policy can thwart this colonization by supporting the development of broad range, high bandwidth data services. If these are offered under common carriage requirements, then jamming or filtering (for example, by mall operators) would constitute unlawful interference with radio signals. Thus the private space of the mall might be overlaid with a mosaic of information spaces, and the information infrastructure can support positions apart from the mall from which to negotiate its meaning and the interactions it affords.[62]

This then shifts the concern over filtering and jamming to the carriers themselves. How can policy structurally prevent telephony operators, with their complex economic interests, from shaping access to the information space to advance those interests? In the past, in the United States, this was accomplished through the strict structural separation of economic interests in content and conduit. AT&T may have been the only phone company in the country, but (in theory at least) they could deny access to no one, and they could only make money by carrying other people's content. So, again at least in theory, their sole

61. For a comprehensive set of desiderata for advanced telecommunication in the public interest, see Amelia Potter and Andrew Clement, "A Desiderata for Wireless Broadband Networks in the Public Interest," 35th Research Conference on Communication, Information and Internet Policy (Arlington, VA, 2007).

62. Kang and Cuff, "Pervasive Computing: Embedding the Public Sphere," 140 (n. 33).

economic incentive was to promote as much communication as possible, regardless of the content or among whom that content flowed.

Since the mid'90s, and again especially in the United States, the structural walls between content and conduit have vanished, and their return is extremely unlikely. This policy trend in telecommunications has supported an industrial configuration with intrinsic tendencies toward closure, gatekeeping, and control. This trend is not total, however. The Federal Communications Commission, under pressure from a coalition of equipment manufacturers and service providers, recently ruled that licensees in some wireless spectrums must use that spectrum for open platform services.[63] The debate over net neutrality, requiring nondiscriminatory access to network capacity, is far from over.

VI. CONCLUSION

I have argued in this chapter that ubiquitous computing alters the resources available for the construction and embodiment of social identities. I have outlined some of the activities entailed in that construction and embodiment, and suggested how ubiquitous computing, as mediated by industrial arrangements, potentially restructures those activities. I have offered "semiotic democracy" as a unifying frame for policy responses to ubiquitous computing, and I have laid out a palette of existing regulatory principles and practices that might be creatively synthesized to formulate new regimes that simultaneously address economic, social, and technical structures as an organic whole.

However, I have two final suggestions, only peripherally related to information policy.

Tact was mentioned earlier as one of the primary social resources in the negotiation of identity. There must be some leeway, some willingness to go along, some balance of power before anything like negotiation can occur. This resource is under severe pressure in a political and social environment almost obsessively concerned with security and engaged in an apparently unending "war on terror" that itself produces and depends on a climate of fear and distrust. This social and political climate nurtures the kinds of technical and policy decisions that relish the production of the normal and the fear and punishment of deviancy. Until we find a way to counteract the political rhetoric of "good guys vs. bad guys," policies supporting nonnormative cultural production and exchange are pie-in-the-sky.

63. Stephen Labaton, "Airwaves, Web Power At Auction," *The New York Times*, January 22, 2008, C1.

Finally, we need to put good ethnographic work on an equal footing with policy analysis. Networked, ubiquitous, and pervasive computing infrastructures are transforming interactions, spaces, places, identities, and relations that we used to take for granted. New practices are altering the ways in which we get along in the world. We must look at how we actually do get along. Because we *do* get along. In myriad ways and every day, we act *ourselves*. We get out of each other's way, we mind our own business, we live and let live, we are strategically intransigent, we watch our backs. I suggest we look carefully at the conditions and resources that permit us to do so, try to discover how the information environment is implicated in those activities, and so develop new paradigms for democracy, sociability, and self-determination.[64]

64. For an excellent treatment of user and group centered analysis, modeling, and visualization of social, physical, and informational overlays, see Jeni Paay, Bharat Dave, and Steve Howard, "Understanding and Representing the Social Prospects of Hybrid Urban Spaces," *Environment and Planning B* 34 (2007): 446–465.