Biometrics, Infrastructural Whiteness, and the Racialized Zero Degree of Nonrepresentation

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Introduction

This essay examines the point of intersection between biometric technologies, bodies, and race. The term *biometrics* refers to technologies that scan subjects' physiological or behavioral characteristics in order to verify or authenticate their identities. For those unfamiliar with the operations of biometrics, let me offer a brief introduction. There are three key steps in the operation of a biometric system. In the first instance, subjects present themselves to a biometric system in order to "enroll" in the system; this moment, which in the language of biometrics is called "presentation," allows the biometric imaging system to capture an image of the particular physiological "imprint" of the subjects, say, for example, in facial scan, an image of their facial characteristics. This image is then digitally converted through the use of particular algorithms into what is called a "template." This template of a subject's unique biometric characteristics is then stored in the system's server. Every time a subject attempts to gain access to either a physical site, such as a secure office space, or access restricted informa-

tion stored in a server, the subject must present him- or herself before the biometric system, which rescans facial details and proceeds to compare them with the original scan (or scans) that have been algorithmically processed and stored in the server as the reference template. Whether or not the new scan matches the template determines whether or not the subject is allowed access to the restricted information or secure area.

Biometric technologies, particularly post-9/11 and the consequent exacerbated concerns around questions of security and access, are experiencing a period of unprecedented growth and development. They are increasingly being deployed in order to secure access to business and government institutions and services. Biometrics can be succinctly characterized as technologies of capture: that is, they are fundamentally predicated on capturing images of subjects. It is this process of visual capture that enables the processes of template creation and consequent verification or authentication of a subject's identity. Situated in the context of this paramount concern with the visual capture of a subject's identificatory characteristics, this essay is preoccupied with those very instances where biometric systems fail to capture a subject's image—precisely because of the subject's race, precisely because the subject fails to conform to predetermined white standards that set the operating limits of particular biometric technologies.

Animating these racialized failures of representation is the power of whiteness. Whiteness is a racial category like no other.[1] Its power appears to spring from a fantasmatic quality that is simultaneously grounded in the very concrete and mundane infrastructure of everyday life. At this level, whiteness is so infrastructurally diffuse as to be imperceptible—that is,

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1. See, for example, Warwick Anderson, *The Cultivation of Whiteness* (Melbourne: Melbourne University Press, 2002); Sherene H. Razack, ed., *Race, Space, and the Law* (Toronto: Between the Lines, 2002); Diane Negra, *Off-White Hollywood* (London and New York: Routledge, 2001); Thandeka, *Learning to Be White* (New York and London: Continuum, 2000); Aileen Moreton-Robinson, *Talkin' Up to the White Woman* (St Lucia, QLD: University of Queensland Press, 2000); Thomas K. Nakayama and Judith N. Martin, eds., *Whiteness: The Communication of Social Identity* (Thousand Oaks, Calif.: Sage, 1999); Belinda McKay, ed., *Unmasking Whiteness* (Nathan, QLD: The Queensland Studies Centre, Griffith University, 1999); Richard Dyer, *White* (London and New York: Routledge, 1997); Mike Hill, ed., *Whiteness* (New York: New York University Press, 1997); Ian F. Haney López, *White by Law* (New York: New York University Press, 1996); Ruth Frankenberg, *The Social Construction of Whiteness* (Minneapolis and London: Routledge, 1993); Toni Morrison, *Playing in the Dark* (London: Picador, 1992); and Frantz Fanon, *Black Skin, White Masks* (London: Paladin, 1970).

whiteness, as I will demonstrate, so constitutes the molecular fabric of everyday technologies and practices that it cannot appear as a category as such. It is precisely because whiteness is so inscribed into the material weave of everyday life that one cannot talk of whiteness *as such*. One cannot talk of whiteness as such, as the power of whiteness resides in this capacity to occlude and so mystify its status as a racial category that it too often escapes taxonomic determination, while simultaneously remaining the superordinate racial category that effectively determines the distribution of all other classificatory categories along the racial scale.

In the course of this essay, I will ground this seemingly abstract argument on the power of whiteness in the context of established and emergent biometric technologies of identification and verification. I wish to stress, from the outset, that my examination of whiteness and biometrics is confined to such Western nations as the United States, Australia, and the United Kingdom. It is within this specific context that I discuss how nonwhite subjects are, according to the scientific literature, often precluded from biometric enrollment due to the fact that the technologies fail to "read" their biometric characteristics. I will argue, in other words, that a number of these biometric technologies are *infrastructurally calibrated to whiteness*— that is, whiteness is configured as the universal gauge that determines the technical settings and parameters for the visual imaging and capture of a subject. I will examine the operation of the racial category of whiteness in the context of three particular biometric technologies: facial-scan, finger-scan, and iris-scan systems.

From the outset, I also want to underscore that this essay does not presume to stage an ethnographic study of biometric technologies and race. In other words, I have not conducted ethnographic research that quantifies biometric failures to enroll, nor am I in a position to discuss how high-profile people of color (for example, U.S. secretary of state Condoleezza Rice) negotiate situations where the biometric systems might fail to enroll them. In stating the conceptual parameters and empirical limitations of this essay, I underscore that my central concern, as a cultural theorist of race and technology, is to begin critically to account for the ways in which Western technologies of representation have a long history of setting the operating infrastructure of these technologies according to white templates. I discuss below, for example, the white colonial histories of such technologies as photography and the inked fingerprint. Rather than approach this study of technology and whiteness from an ethnographic position (something I am not qualified to do), I will proceed to stage a discursive analysis of

the scientific literature, including biometric textbooks and manuals. In the context of the scientific literature, I focus on instances where the topics of race and technology are broached, precisely in relation to nonwhites' failure biometrically to enroll, in order to flesh out the racial presuppositions that found and encode the discursive practices of these technologies. This essay, then, must be seen as staging a discursive analysis of race and biometric technologies.

In the conclusion of this essay, I will focus on the lived effects of these processes of biometric discrimination for nonwhite subjects in the context of questions of equity and access.

Infrastructural Whiteness

In "The Light of the World," a chapter committed to disclosing the manner in which the racial category of whiteness informs the technologies of photography and film, Richard Dyer argues that "[a]ll technologies are at once technical in the most limited sense (to do with their material properties and functioning) and also always social (economic, cultural, ideological)."[2] He then proceeds to track the manner in which "photographic media and, *a fortiori*, movie lighting assume, privilege and construct whiteness" (*White*, 89). Focusing on the complex interplay of various technological elements, including film stock, different types of lighting, and camera apertures, Dyer shows how technologies of photography and film "were developed taking the white face as the touchstone" (*White*, 90). In the process, he explains why, for instance, in school photos "the black pupils' faces look like blobs or the white pupils have theirs bleached out" (*White*, 89).

I want to transpose Dyer's illuminating analysis of the racialized, specifically white, elements that inform the technologies of photography and film to the imaging technologies of digital facial scans and finger scans. Before I proceed down this track, however, I want to problematize Dyer's conceptualization of whiteness. Throughout his book *White*, Dyer deploys a concept of whiteness that is predicated on a totalizing, ahistorical, and essentialized understanding of the category. This is succinctly encapsulated in Dyer's argument that what he "is studying [is] whiteness *qua* whiteness . . . whiteness itself" (*White*, 4). As I have argued elsewhere, in deploying such a totalizing and ahistorical conceptualization of whiteness, he proceeds to range freely across a wide spectrum of historical contexts, genres, and

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2. Dyer, *White*, 83. Hereafter, this work is cited parenthetically as *White*.

media, and, in the process, generates an anachronistic schema in which, for example, a fifteenth-century painting by Giovanni Bellini participates in the same symbolic articulation of whiteness as does Sylvester Stallone in *Rambo*.[3] In the discursively untenable move of situating, under the ahistorical rubric of "whiteness," a Bellini painting in a politically and ideologically equivalent relation to *Rambo*, Dyer effectively erases that complex genealogy that marks the fraught relationship of Italian immigrants to the category of whiteness in the United States.[4]

In examining whiteness in contemporary biometric technologies, I want to pose whiteness in *infrastructural* terms, that is, as an element that is indissociable from the effective operations of a particular technology. In posing whiteness as infrastructural, I am not suggesting that this racial category is some sort of ahistorical and essentialized datum, what Dyer terms "whiteness *qua* whiteness"; rather, I will argue that whiteness be read in terms of a racial category that is historically situated, marked by the specificity of particular media and technological apparatuses, and calibrated by identifiable discourses, laws, and conventions. In talking of an infrastructural whiteness, I will be drawing attention to the very *structurality* of its infrastructure; in other words, I want to bring into focus what effectively gets "invisibilized" when technologies are represented as ideologically neutral "conduits" of data rather than ideologically inflected constructors of knowledge.

If whiteness is to be invested with any power, it must be capable of a potentially infinite process of situated, historical repeatability. Couched in Derridean terms, Dyer's conceptualization of "whiteness *qua* whiteness" is "in itself divided and multiplied in advance by its structure of repeatability."[5] Viewed in strictly rhetorical terms, the figure of *diacope* (repetition of a word [*whiteness*] with one word [*qua*] in between) constitutes its logic of signification, as it already underscores its (infra)structure of repeatability and its openness to alterity with every instance of transposition/iteration across

3. Joseph Pugliese, "Race as Category Crisis: Whiteness and the Topical Assignation of Race," *Social Semiotics* 12, no. 2 (August 2002): 149–68.

4. See Richard Gambino, *Blood of My Blood* (New York: Doubleday, 1974); David R. Roediger, *Towards the Abolition of Whiteness: Essays on Race, Politics, and Working Class History* (London: Verso, 1994); Matthew Frye Jacobson, *Whiteness of a Different Color: European Immigrants and the Alchemy of Race* (Cambridge, Mass.: Harvard University Press, 1998); Pugliese, "Race as Category Crisis"; and Jennifer Gugliemo and Salvatore Salerno, eds., *Are Italians White? How Race Is Made in America* (New York and London: Routledge, 2003).

5. Jacques Derrida, *Limited Inc* (Evanston, Ill.: Northwestern University Press, 1990), 48.

diverse media and contexts. In other words, the very *qua* of whiteness, its assumed essence, is dependent upon "its structure of repeatability," where its every iteration entails that "something new takes place."[6]

I stage this brief deconstruction of Dyer's essentialized concept of whiteness not in order to indulge in a series of rhetorical flourishes but to underscore the manner in which the power of whiteness resides in the fact that it is never, because of its very structure of repeatability, essentially identical to itself. In not being strictly identical to itself, while simultaneously being capable of potentially infinite iterations, whiteness can be seen to be invested with a power historically to mutate, adapt, and, in the process, arrogate different technologies, bodies, races, and ethnicities in its situated repetitions. If this colonizing flexibility, and imperial inventiveness, constitutes the power of whiteness as a racial category, then it also exposes whiteness to risk. Precisely in not being identical to itself because of its (infra)structural iterability, whiteness risks dissolving those very pliable borders that enable its "flexible positional superiority," to draw on a Saidian turn of phrase. This marks, in other words, the urgent need always to put in place legislation (for example, the White Australia policy[7]), laws (for example, the "one drop" of black blood rule in the United States[8]), and other regulatory mechanisms designed to control and govern its categorical purity in the face of historical forces and agents that may attempt to contest, contaminate, and miscegenate its illusory pristine status.

Subjects of Irreflectivity: Biometrics' Occlusion of Colored Bodies

In order to enroll within a biometric system, the subjects whose identity will be verified by the particular biometric system are required initially to enroll by supplying the requisite biometric data, such as a digital scan of their face, which is subsequently converted into a template. The template, which is generated by the algorithmic encoding of a subject's distinctive biometric features, is stored in the system and is used to verify a user's identity every time he or she presents for biometric screening—in other words, the initial enrollment template is matched against the user's verification template.

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6. Derrida, *Limited Inc*, 40.
7. James Jupp, *Immigration* (Sydney: Sydney University Press, 1991), 82–87.
8. F. James Davis, *Who Is Black? One Nation's Definition* (University Park, Pa.: Pennsylvania State University Press, 1991), 132–37, 175–187; and López, *White by Law*, 27.

In what would seem, in the first instance, to be a counterintuitive logic, "enrollment and verification templates should never be identical": "Because different templates are generated each time a user interacts with a biometric system, there is no 100 percent correlation between enrollment and verification templates";[9] indeed, an exact one-to-one identical match is seen as the sign of fraud, as the signature of an impostor who has stolen the initial enrollment template of someone else and is presenting it in order illegitimately to gain access to the system. This seeming counterintuitive logic, that demands iteration of identity with difference, graphically exemplifies the deconstructive movement of iteration, as a movement always already inscribed with alterity in every new instance of repetition. Derrida discusses this paradox precisely in the context of that exemplar of unique identity, the *signature*—a term that is now a fundamental signifier in the discourse of biometrics, where it is used to name the unique identity of enrolled subjects across diverse biometric systems, including gait signature, keystroke signature, and so on.

Derrida unpacks the paradox of the signature in the context of deconstructing its representation as a privileged signifier that marks an indissociable tie to an originary figure, what he terms the "tethering to the source": "In order for the tethering to the source to occur, what must be retained is the absolute singularity of a signature-event and a signature form: the pure reproducibility of a pure event. . . . But the conditions of possibility of those effects is simultaneously, once again, the condition of their impossibility, of the impossibility of their rigorous purity. In order to function, that is, to be readable, a signature must have a repeatable, iterable, imitable form."[10] And this iterable form can never, in biometrics, be identical across each instance of its repetition: "As opposed to an identical string of data," Nanavati et al. explain, "biometric templates vary with each finger placement, iris acquisition, and voice recording: the same finger, placed over and over again, generates a different template with each placement. This is attributable to minute variations in presentation—pressure, distance . . . which lead to the extraction of slightly different features for each template" (*Biometrics*, 262).

Conceptualized in Derridean terms, then, the biometric signature of a subject can only function as instantiation of a unique signature-event

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9. Samir Nanavati, Michael Thieme, and Raj Nanavati, *Biometrics: Identity Verification in a Networked World* (New York: John Wiley and Sons, 2002), 19 and 21. Hereafter, this work is cited parenthetically as *Biometrics*.
10. Derrida, *Limited Inc*, 20.

that signals the "presence" of a nonfraudulent subject through an iterable movement that must be differentially marked at every "presentation" (as the "process by which a user provides biometric data to an acquisition device" [*Biometrics*, 17]). And I place "presence" in scare quotes here, as there is inscribed in this aporetic movement not only a deconstruction of the concept of a unique identity indissociably tethered to a source, but there is also a simultaneous deconstruction of the metaphysics of presence that fundamentally informs the discourse of biometrics and its constitutive lexemes. As I discuss elsewhere, the risk of frauds, impostors, and digital spoofs that haunts biometric systems is underpinned precisely by this unacknowledged metaphysics of presence.[11]

It would seem that the process of biometric enrollment is a straightforward one: subjects present themselves to a biometric system, their biometric data is extracted and algorithmically converted into a template that is consequently used for either verification or identification. Yet, within the biometric industry, there is also what is termed "failure to enroll (FTE)," whereby certain subjects' features cannot be "extracted" or "acquired" by the relevant biometric systems. Significantly, this failure to enroll is neither random nor arbitrary. Rather, it is marked by the fact that only certain ethnic or dermographic groups appear to experience this phenomenon. "Certain ethnic and dermographic populations," write Nanavati et al., "are more prone to high FTE rates than others. . . . Those of Pacific Rim/Asian descent are more prone to FTE than control groups. . . . Users of Pacific Rim/Asian descent may have faint fingerprint ridges—especially female users" (*Biometrics*, 35–36).

This failure to enroll occurs across a number of biometric systems, including finger-scan, iris-scan, and facial-scan technologies. I want to focus specifically on FTE in the context of finger-scan and facial-scan technologies. "Testing of facial-scan solutions indicates," write Nanavati et al., "that the technology may not be as adept at enrolling very dark-skinned users. The increased FTE rate is not attributable to the lack of distinctive features, of course, but to the quality of the images provided to the facial-scan systems by video cameras optimized for lighter-skinned users" (*Biometrics*, 37). Despite the acknowledgment that FTE does not result because dark-skinned users "lack distinctive features," the fact that biometric technologies might be "optimized for lighter-skinned users" still fails to prompt

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11. Joseph Pugliese, "Biometrics, Originary Reproduction, Digital Spoofs, and the Metaphysics of 'Liveness' Testing," forthcoming.

the authors to proceed to name the constitutive role of whiteness as an infrastructural racialized gauge that sets the operating parameters of these image-acquisition technologies.

Nanavati et al. are attentive to the question of lighting/race without ever unpacking the larger ramifications of this powerful nexus: "facial-scan technologies are generally unable to acquire images that are somewhat overexposed or underexposed" (*Biometrics*, 65–66). We are here in the realm of the "black blobs" and "white bleachings" that Dyer draws attention to in his mapping of the effects of this nexus (*White*, 89). From this point on, Nanavati et al. continue to sidestep the problematic of whiteness as an infrastructural racialized gauge without naming it as such:

> Facial-scan systems' sensitivity to lighting and gain can actually result in reduced ability to acquire faces from individuals of certain races and ethnicities. Select Hispanic, black, and Asian individuals can be more difficult to enroll and verify in some facial-scan systems because acquisition devices are not always optimized to acquire darker faces. At times, an individual may stand in front of a facial-scan system and simply not be found. While the issue of failure-to-enroll is present in all biometric systems, many are surprised that facial-scan systems occasionally encounter faces they cannot enroll. (*Biometrics*, 66)

The articulation that "many are surprised" at this FTE regarding facial-scan systems marks a double moment of occlusion: the systemic, empirical occlusion of the nonwhite face before the biometric system calibrated to the white gauge, and the ideological occlusion that it is this very white calibration of biometric systems that precludes the acquisition of the features of nonwhite subjects. This moment of occlusion must be named in terms of a racialized blind spot: a technological and discursive point of irreflectivity that cuts in two directions at once: failure to begin to theorize on the technological/race nexus of these systems (thus the disingenuous "surprise" that some subjects are "simply not found") and failure of non-white bodies to function as reflective subjects that emit sufficient light to register precisely as template subjects of enrollment in the face of biometric systems whose image-acquisition parameters are predetermined by an infrastructural whiteness. Everything from this point gestures toward a racialized zero degree of nonrepresentation.

"Human-Free" Technology: Invisibilizing the
Template White Body in the Machine

This racialized zero degree of nonrepresentation must not be viewed in terms of some mystifying technological "anomaly" or "glitch." On the contrary, I would argue that particular biometric technologies are infrastructurally *calibrated to whiteness*—that is, whiteness is configured as the universal gauge that determines the technical settings and parameters for the visual imaging and capture of a subject. I will draw on the term *calibration* as it effectively encapsulates the three key levels of signification that inscribe the operation of whiteness in biometric technologies. On one level, to calibrate a technology is "to graduate a gauge of any kind with allowance for its irregularities."[12] As universal gauge, whiteness is the absolute standard within certain biometric technologies, targeting the capture of white subjects but also allowing for a degree of white variations in skin tone and color—that is, allowing for a certain range of "irregularities" that may fall outside this standard. These "irregularities," however, are circumscribed within a clearly delineated zone of whiteness and its various chromatic variations. Outside of this diffuse, gray-scale zone of whiteness reside nonwhite subjects who are literally beyond the pale. As I have demonstrated, this degree of allowance literally cuts off when biometric imaging technologies are confronted by subjects whose biometric details—for example, their dark skin color—are so "irregular" as to fall outside the technical parameters set for image capture. Here the term *irregular* graphically illustrates the disciplinary power of the white gauge in determining the normative standards of imaging technologies. In such instances, nonwhite subjects, in literally failing to appear before the biometric system despite their physical presentation, are dispatched to the outer limits of nonappearance, to the zero degree of nonrepresentation. *Calibration* perfectly resonates with this imaging economy in that it is a term that effectively belongs to the lexical set of camera settings: a camera operator has a repertoire of calibrations at hand when filming; these calibrations operate at the level of lighting, aperture, and lens focus.

On another level, the process of calibrating a technology means not only to establish "a set of graduations or markings" but also to generate a "classification."[13] The calibration to whiteness of biometric systems, in

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12. *Compact Oxford English Dictionary*, 2nd ed. (Oxford: Clarendon Press, 1992), s.v. "calibrate."
13. *Compact Oxford English Dictionary*.

other words, not only determines the universal gauge of these imaging technologies, it also implicitly reproduces the legendary racial system of classification and hierarchy that places whiteness at the apex followed, in a graduating scale, by Asians and blacks.[14] Within Western economies of visual representation, this racial hierarchy has systemically guaranteed the nonrepresentation of nonwhites within a wide spectrum of visual media, including film and television.

Finally, the semantic core of calibration is derived from the term *caliber*. Caliber refers to a "degree of social standing or importance, quality, rank; 'stamp,' degree of merit or importance."[15] In the context of the calibration to whiteness of biometric technologies, the term *caliber* underscores questions of power and hierarchy that inflect the physical settings of imaging technologies, as whiteness assumes the gauge of "merit or importance" that determines who may or may not be visually captured within the calibrated zone of representation.

I have spent some time here unpacking the infrastructural calibration to whiteness in facial-scan technologies in order to interrogate ongoing, doctrinal assertions in the scientific literature that biometric technologies are to be celebrated because of their objectivity and impartiality in processing racial and ethnic subjects. For example, Woodward et al. argue,

> The technological impartiality of facial recognition . . . offers a significant benefit for society. While humans are adept at recognizing facial features, we also have prejudices and preconceptions. The controversy surrounding racial profiling is a leading example. Facial recognition systems do not focus on a person's skin color, hairstyle, or manner of dress, and they do not rely on racial stereotypes. On the contrary, a typical system uses objectively measurable facial features, such as the distances and angles between geometric points on the face, to recognize a specific individual. With biometrics, human recognition can become relatively more "human-free" therefore free from many human flaws.[16]

The "technological impartiality" of facial recognition can be maintained only by continuing to invisibilize the infrastructural calibration to

14. Michael Banton, *Racial Theories* (Cambridge: Cambridge University Press, 1987), 28–31.
15. *Compact Oxford English Dictionary*.
16. John D. Woodward, Nicholas M. Orlans, and Peter T. Higgins, *Biometrics: Identity Assurance in the Information Age* (Berkeley, Calif.: McGraw-Hill/Osborne, 2003), 254.

whiteness that inscribes specific facial-scan systems. Contra Woodward et al., I would argue that this calibration to whiteness constitutes simply another example of racial "prejudice and preconception" in that it biometrically discriminates between white and nonwhite subjects. The untenability of arguing that facial recognition systems "do not focus on a person's skin color" is graphically exemplified when one considers that it is precisely a nonwhite subject's skin color—specifically, the degree of epidermal and chromatic saturation to blackness—that will determine whether he or she will be situated outside the operating parameters of a biometric system's image-acquisition zone (of whiteness), despite its inbuilt "allowance" for chromatic "irregularities." The consequent invocation of "objectively measurable facial features" and "the distances and angles between geometric points on the face," put forth by Woodward et al. in order to prove their argument for technological impartiality, clearly resonates with the language of such discredited nineteenth-century racist scientific disciplines as anthropometry, craniology, phrenology, and so on (as racializing and racist disciplines all predicated on the so-called objectivity of geometry in the measurement and classification of human bodies). In the discourses of the sciences, whenever the specter of race is evoked, inevitably the discourse of mathematics, specifically of geometry, is mobilized in order magically to transcend the prejudices and preconceptions of the observer that are in danger of contaminating their object of inquiry. Through this sleight of hand, the human elements that labor to construct the racialized software of biometric systems are effectively effaced, leaving a "human-free" geometry to carry out its impartial scanning of subjects.

I want to elaborate on the power of this infrastructural calibration to whiteness in biometric technologies by focusing on finger-scan technologies. In the context of finger-scan biometric systems—marked by the fact that "some Asian populations are more likely to be unable to enroll in some finger-scan systems" because they "have lower-quality fingerprints," in particular "faint fingerprint ridges—especially female users" (*Biometrics*, 60 and 37)—the bodies of certain Asian subjects are represented as illegible bodies; their "lower-quality" "faint fingerprint ridges" are, because of this gendered and racialized infrastructural gauge, finessed beyond schematicity: they literally fail to figure, imagistically and digitally, as templates. That the "lower-quality" or "faintness" of the fingerprint ridges of certain "Asian" or "Pacific Rim" subjects might be the result of a calibration of image-acquisition gauges that are set to capture the racial specificities of white subjects must remain, in keeping with the power of white suprema-

cism, unthought. In one stroke, both whiteness (as the constitutive image-acquisition gauge) and the nonwhite subject (as FTE nonsubject) get invisibilized. This process of occlusion and invisibilization must be displaced to that region of irreflection that construes the problem as intrinsically technological and not also as discursive or ideological in the infrastructural sense.

The Social Darwinian resonances of "lower-quality" fingerprints must not be ignored, as they paradigmatically situate Asian bodies on a lower position on that racial hierarchy constituted, respectively, by Caucasian, Mongoloid (Asians), and Negroid races.[17] Furthermore, following in the conceptual wake of these massified racial configurations—"Asian" and "Pacific Rim"—what remains to be determined are the specific ethnicities (Thai? Japanese? Samoan?) that constitute the heterogeneity of these totalizing categories. Informing the homogenizing operations of these totalizing categories is a racializing logic that invariably presents itself as self-evident. For example, the figure of the "Asian" need not be ethnically specified, as it is always precomprehended and interchangeable: it is enough rhetorically to gesture to the seeming qualification of "certain Asian populations" without having, in practice, to qualify the specificity of the "certain" as such. In the context of this Orientalist logic, driven by the perceived seriality of the figure of "the Asian," such a move would be already redundant.

The failure of some Asian populations, "especially female users," to enroll in some finger-scan systems discloses the unacknowledged racialized and gendered coordinates that determine the discursive infrastructure of particular biometric systems. These racialized and gendered coordinates are clearly enunciated in the opening position statement on biometrics by Woodward et al.: "Biometrics uses automated techniques to measure man in order to better describe himself."[18] That the figure of "man" here is naturally assumed to be white is evidenced by the calibration to whiteness that infrastructurally marks particular biometric systems. The failure of some Asian populations, "particularly female users," to enroll in some finger-scan systems must be seen as opening up an "ontological/epistemological" split marked by gendered and racialized axes; this is a split that "pits subaltern

17. I discuss how this seemingly outdated hierarchy is actively deployed for the purposes of racial identification in such contemporary professions as forensic pathology in "'Demonstrative Evidence': A Genealogy of the Racial Iconography of Forensic Art and Illustration," *Law and Critique* 15 (2005): 283–320.
18. Woodward, Orlans, and Higgins, *Biometrics*, xxvii.

being against elite knowing."[19] On the one hand, as I have argued above, it effaces the question of racial differences from the epistemological infrastructure/software of the finger-scan technology. On the other hand, this effacement of "certain" Asian women from the epistemological infrastructure of these biometric technologies generates another type of occlusion and displacement. Even as certain populations of Asian women are invisibilized at this higher-order level of biometric technologies, what must simultaneously remain unacknowledged is their dispatch to the empirical level of the ontological, where, as laborers prized because of the very nimbleness of their "Oriental" fingers, they are instrumental in producing the very digital technologies that, at the epistemological/software level, will fail to read their fingers in the process of biometric enrollment.

In her analysis of the gendered and racialized dimension of the economies of the digital revolution, Suvendrini Perera, citing Gayatri Spivak, underscores the fact that "'it is the urban sub-proletarian female who is the paradigmatic subject of the current configuration of the International Division of Labor.'"[20] In her mapping of the geopolitical configurations of this division of labor, Perera draws attention to the neocolonial and Orientalist selling of this urban subproletarian female by particular Asian governments keen "to attract technologically advanced industries" into their "Free Trade Zones." "These zones, everyone knows, offer the appeal of cheap labour combined with no taxes and almost non-existent union regulation."[21] Perera elaborates on the marketing of this urban subproletarian female labor by quoting from a brochure issued by the Malaysian government: "'The manual dexterity of the oriental female is famous the world over. Her hands are small and she works fast with extreme care. Who, therefore, could be better qualified by nature and inheritance to contribute to the efficiency of a bench assembly production line than the oriental girl?'"[22]

In her ironically titled essay "At Your Service: Latin Women in the Global Information Network," Coco Fusco, in the course of her visits to the "places where the hardware of the digital revolution is assembled," identifies the process of what she terms "digital disembodiment's fiction of transcendence [that] relies on the expulsion of the abject interrelations

19. Gayatri Chakravorty Spivak, *In Other Worlds* (New York: Methuen, 1987), 268.
20. Suvendrini Perera, "Representation Wars: Malaysia, *Embassy*, and Australia's *Corp Diplomatique*," in *Australian Cultural Studies: A Reader*, ed. John Frow and Meaghan Morris (Sydney: Allen and Unwin, 1993), 27.
21. Perera, "Representation Wars," 26.
22. Perera, "Representation Wars," 26.

between bodies and technologies from the virtual imaginary."[23] Fusco discloses the brutalizing and expropriative dimensions of this digital "fiction of transcendence" in her mapping of third world digital assembly plants, or maquiladoras:

> If the Industrial Revolution created the factory town, then the digital revolution must be credited with the perfection of the export processing or free trade zone, the sites in third-world countries where low-end production takes place. In the Dominican Republic, they are nicknamed *zonas de la muerte*. Work in these territories takes place in assembly plants or *maquiladoras*, an Arabic term that entered colonial Mexico via Spain to signify the processing of foreign gains. Approximately 70 percent of the workforce is female. In the past year, I have been conducting research on women maquiladora workers in the US-Mexico border and the Caribbean. Though these women have virtually no access to the internet, they are a crucial component of the global information circuit. Not only do they assemble much of the digital revolution's hardware, but their low wages maximize multinational profits and facilitate accelerated consumption of electronic media for the virtual class.[24]

Both Perera and Fusco identify in their analyses of the underside of the digital revolution the systemic construction of gendered and racialized subaltern subjects effectively put to work at the "low-end" level of hardware/ontological production, while being simultaneously excluded from the "high-end" level of software/epistemological production. In the context of examining the failure of particular populations of Asian women to enroll in certain finger-scan biometric systems, the figure of the subaltern, as that figure that remains illegible within higher-order epistemological systems of representation, effectively describes the nonsubject status of these gendered and racialized populations.

Biometrics' Colonial Genealogies

The colonial dimensions of this finger-scan biometric discrimination need to be historicized in more detail. Inscribed in finger-scan systems of

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23. Coco Fusco, *The Bodies That Were Not Ours* (London and New York: Routledge, 2001), 188.
24. Fusco, *The Bodies That Were Not Ours*, 195.

identification and verification is a colonial moment of foundation—and I am referring here specifically to the fact that traditional fingerprint identification systems, based on acquiring a subject's inked fingerprint impression and then classifying it within a taxonomic filing system, were first developed by the colonial British administration in India "in response to the problem of administering a vast empire with a small corps of civil servants outnumbered by hostile natives."[25] Simon Cole explains how the colonial system of fingerprint identification emerged in response to an uprising in 1857 by Indian conscripts against the British, resulting in the temporary control of Delhi (*SI*, 63–64). "The Mutiny," writes Cole, "heightened 'the need to enforce law and order in the unruly colonies more severely,' and, at the same time, 'the need to reinforce a sense of Britain's proper role in history as a beacon of order and civilization in a world of darkness and barbarism" (*SI*, 64). In effect, the technology of fingerprint biometrics was developed in order to construct a colonial system of identification and surveillance of subject populations in the face of British administrators who "could not tell one Indian from another" (*SI*, 64). Inscribed in the incipient moment of the development of fingerprint biometrics is a racialized agenda driving the system's mode of identification.

I want to interlace, at this juncture, two different historical moments with two related biometric technologies: British colonial India and the digital assembly plants of contemporary Southeast Asia, and traditional inked-fingerprint technology with digital finger-scan systems. Where, in colonial British India, the "problem" of governance pivots on the white ruler's inability to discern or read for ethnic difference, a taxonomic system of fingerprint identification is developed and deployed in order to help these officials discriminate between a dangerous because undifferentiated mass. The consequent passing of the Criminal Tribes Act (1871) demanded the "registration, surveillance, and control of certain criminal tribes" (*SI*, 67). These certain criminal tribes were already cast within the criminalizing dragnet of the earliest form of racial profiling, as the act "made it possible to proclaim entire social groups criminal, on the basis of their ostensibly inherent criminality" (*SI*, 67). I need hardly remark here on the analogy between the nineteenth-century Criminal Tribes Act and the recently passed U.S. Homeland Security Act of 2002, which has ostensibly criminalized whole

25. Simon A. Cole, *Suspect Identities: A History of Fingerprinting and Criminal Identification* (Cambridge, Mass.: Harvard University Press, 2002), 63. Hereafter, this work is cited parenthetically as *SI*.

swathes of people of Arabic and/or Muslim ancestry and of people marked by the spurious ethnic descriptor "of Middle Eastern appearance."[26]

In the annals of colonial India, British officials repeatedly complain of the "problem of *racial homogeneity*": "One official complained that the 'uniformity in the colour of hair, eyes, and complexion of the Indian races renders identification far from easy, and the difficulty of recording the description of an individual, so that he may be afterwards recognised, is very great'" (*SI*, 81 and 71; my emphasis). Viewed from the contemporary context, even as finger scan is deployed as a system of identification and verification of both civil and criminal subjects, that foundational gendered and racialized blindness to the differential contours of other bodies inflects the technology's current deployment. Put succinctly, the transmutation of traditional fingerprint technology into a digital finger-scan system is marked by a graphic reversal of a discursive relation that still remains unbroken. Exemplified here is a structural irony that ensures that the inability of British colonial officials to read for ethnic difference has now been encoded in the systemic failure of contemporary finger-scan systems to read for ethnic-gendered difference. Regardless of this irony, the end result is the same: certain population groups are discriminated against because of their "racial homogeneity" and their epidermal chromatism.

Pixelating Race: The Racialized Color Spectrum of Digital Discrimination

The fact that certain nonwhite subjects "may stand in front of a facial-scan system and simply not be found" (*Biometrics*, 66) situates these individuals within a nonlocus (they are no place, even as they occupy a particular spatiotemporal location) constituted, digitally, by a zero degree of nonrepresentation. This zero degree of nonrepresentation operates at both literal and metaphorical levels. Literally, despite the corporeal presence of a subject, there appears to be no subject as far as the facial-scan system is concerned; metaphorically, the nonwhite subject is reduced, within the binary logic of biometric algorithms, to a negative: in pixel values, black-ness is, predictably, equivalent to the negative degree of zero, where white-

26. For a deconstruction of this charged ethnic descriptor, see Joseph Pugliese, "The Locus of the Non: The Racial Fault-Line 'of Middle Eastern Appearance,'" *Borderlands* 2, no. 3 (2003), available at http://www.borderlandsejournal.adelaide.edu.au/vol2no3_2003/pugliese_non.htm.

ness is inscribed with the positive value of one ("Pixels with value one and zero are called white and black respectively"[27]).

Viewed in this context, nonwhite subjects are marked by a failure of the very animating logic of the visual image, as they fail to possess, in Barthesian terms, any "indexicality" or "evidential force";[28] rather, they do not even appear in their appearance before the facial-scan device, and therefore they are neither present nor can they be represented. And I am aware that I am deploying here, in the context of digital imaging technologies, a seemingly anachronistic term in drawing upon "indexicality"—as a term exclusively used to describe predigital, analog imaging technologies (for example, analog photography traces the light that emanates from an object onto a chemically treated film, generating an analogous or indexical presentation). Yet, I would argue that despite the fact that digital imaging constructs images out of numerical codes that may have no indexical or causal relation to the photographed object, the very logic of biometric technologies designed to identify or verify subjects is still predicated, in theory if not software practice, on establishing a type of analogous or indexical, and thus *evidentiary*, relation between subjects who are scanned and their stored templates.

This racialized FTE inflects not only established biometric technologies such as finger- and facial-scan systems but emergent biometrics such as the iris scan. Iris-scan systems are designed to create templates based on the imaging of a subject's iris. Yet, as Nanavati et al. explain, "Locating the iris-pupil border can be challenging for users with very dark eyes, as there may be very little difference in color as rendered in the technology's 8-bit grayscale imaging" (*Biometrics*, 80). I would argue that there is encoded in the phrase "users with very dark eyes" a racialized group of nonwhite subjects. This is made evident when this phrase is juxtaposed against scientific literature dedicated to isolating, within the domain of forensic pathology, for example, distinct "racial" characteristics for the sake of body identification: "The eye colour is useful in the Caucasian race (negroid and mongoloid races virtually all have brown irises)."[29] The "problem" that some subjects' irises may have "very little difference in color" to help with the task of differentiation resounds with all the force of that Caucacentric

27. A. R. Roddy and J. D. Stosz, "Fingerprint Feature Processing Techniques and Poroscopy," in *Intelligent Biometric Techniques in Fingerprint and Face Recognition*, ed. Lakhmi C. Jain et al. (Boca Raton, Fla., and London: CRC, 1999), 41.

28. Roland Barthes, *Camera Lucida* (London: Vintage, 1993), 88–89.

29. Bernard Knight, *Simpson's Forensic Medicine* (London: Arnold, 1997), 32.

cliché that laments that black and Asian faces all look alike, as they seem to possess very little congenital markers of difference. Once again, the old colonial "problem of racial homogeneity," and the seeming "uniformity in the colour of hair, eyes, and complexion of the Indian races" (*SI*, 71), is actively at work here.

Nanavati et al. proceed to elaborate on one of the "potential limitations of iris-scan technologies": "the ability to locate distinctive features in very dark irises. Iris-scan technology is based on 8-bit grayscale image capture, which allows for 256 shades of gray; features from very dark irises may be clustered at one end of the spectrum" (*Biometrics*, 37). This "one end of the spectrum" is analogous to what Thandeka, in another context altogether, aptly terms the "non-white zone."[30] Transposed to the context of biometric technologies, the nonwhite zone is constituted by a racialized color spectrum that falls directly outside a digital grayscale image-capture system calibrated to whiteness. Within the parameters of this system, very dark irises literally fall beyond the grayscale pale.

What becomes apparent when discussing the ongoing racialized infrastructural dimensions of these technologies is the manner in which they so clearly reproduce the binarized racial zones of the larger Cauca-centric culture. I have already drawn attention to the ontological/epistemological racial split, and their attendant economies of knowledge/labor, that these new digital technologies reproduce. I want to elaborate on this split by resignifying Thandeka's concept of the nonwhite zone in the context of biometric technologies.

Biometric technologies such as the finger scan, facial scan, and iris scan are to be found throughout institutions and businesses primarily concerned with securing physical and/or symbolic access to important sites and/or information. As such, biometric technologies have the power to determine who may or may not enter and access critical sites of knowledge/power. The calibration to whiteness that inscribes the infrastructure of some of these biometric technologies functions, when situated in this context, to reproduce the type of stratified physical and symbolic zones of racialized exclusion that continue to pervade such multiethnic, multiracial nations as the United States, Australia, and the United Kingdom.

In the context of everyday life, this digital segregation divides into the three fundamental categories that constitute the practical application of biometric systems—it can preclude a subject in terms of gaining "*logi-*

30. Thandeka, *Learning to Be White*, 24.

cal access to data or information," "*physical access* to tangible materials or controlled areas," as well as identifying or verifying "the identity of an individual from a database or token" (*Biometrics*, 144). The racialized practices of segregation that I have been discussing dovetail perfectly with what David Lyon, in his analysis of surveillance post-9/11, terms "digital discrimination," which "consists of the ways in which the flows of personal data—abstracted information—are sifted and channelled in the process of risk assessment, to privilege some and disadvantage others, to accept some as legitimately present and reject others," and this is "increasingly done *in advance* of any offence."[31]

It is precisely in this context of hypersurveillance of targeted racialized subjects that I would argue against naïve celebrations of the type of failure of biometric representation that I have addressed. At a recent conference, for instance, after the delivery of a version of this essay, a number of responses from the audience argued that it was a good thing that certain subjects seemingly escaped the imaging capabilities of some biometric technologies. Biometric noncapture of a subject's image was viewed as a type of positive loophole or escape clause from contemporary systems of identification and surveillance. As I have attempted to demonstrate, this view entirely disregards the critical question of equity of access within civic spaces/institutions and the manner in which FTE systemically precludes particular racialized subjects from accessing both physical sites and knowledge/power. Moreover, I term this celebration of failure of representation as "naïve" precisely because it is predicated on a liberal-humanist understanding of contemporary systems of surveillance, where the question as to whether one gets visually imaged or not remains merely a question of choice. I would argue, on the contrary, that visual surveillance, in the context of omnipresent closed-circuit television, automated teller machines, and other related technologies, is always already at work.

I want to conclude this section by drawing attention to recent interventions by Chinese and Japanese biometric scientists working to construct biometric systems that would in fact be calibrated to capture people of color whose features might otherwise fail to be biometrically "read." The obverse side of the digital discrimination that I have been discussing must also be brought into focus. The overcoming of digital discrimination within biometrics would, for instance, in a criminal-justice context, be seen as also

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31. David Lyon, *Surveillance After September 11* (Cambridge: Polity, 2003), 81.

contributing to the development of biometric systems that would enable law enforcement agencies to use biometric systems in order to identify persons of color who are also violent criminals. Li Feng, Jianhuang Lai, and Lei Zhang, for example, are working on developing new algorithmic biometric formulas designed to be responsive to what they term "the complex and individual shape of the face and the subtle and spatially varying reflectance properties of the skin."[32] As I discussed above, in the biometric literature, talk of the "reflectance properties of the skin" must also be seen as encoding a type of epidermal chromatics of race. In the Japanese context, Shihong Lao and Masato Kawade are in the process of developing what they term "ethnicity estimation" for biometric facial feature extraction.[33]

What is interesting about this work is that it signals an attempt reflexively to integrate racial and ethnic difference into the operational software of biometric systems and thus override homogenizing white templates. Lao and Kawade reduce the question of ethnicity to three categories: "European, Asian, African."[34] Again, as I discussed above, situated within the genealogy of racializing and racist discourses, these three taxonomic categories are at once both hierarchical and, because of their globalizing homogenization, not necessarily conducive to reading the complex nuances of embodied ethnic differences.

Such moments in the biometric literature, where Eurocentric racial categories, taxonomies, values, and presuppositions are unreflexively reproduced by computational scientists of color, compel me to begin to account for the discursive forces at work in the very reproduction of Eurocentric positions by non-Western subjects. I would argue that one could begin to account for the reproduction of such Eurocentric values and categories precisely by proceeding to view science, technology, and bodies as always already socioculturally encoded and positioned. Contrary to the sort of statements articulated within the biometric literature, which posi-

32. Li Feng, Jianhuang Lai, and Lei Zhang, "3D Surface Reconstruction Based on One Non-Symmetric Face Image," in *Advances in Biometric Person Authentication: 5th Chinese Conference on Biometric Recognition, SINOBIOMETRICS 2004, Guangzhou, China, December 2004, Proceedings*, ed. Stan Z. Li et al. (Berlin, Heidelberg, New York: Springer, 2004), 268.
33. Shihong Lao and Masato Kawade, "Vision-Based Face Understanding Technologies and Their Application," in *Advances in Biometric Person Authentication*, 344.
34. Lao and Kawade, "Vision-Based Face Understanding Technologies and Their Application," 345.

tion these new technologies as objective, "human-free," and not "reliant on racial stereotypes," technologies, and bodies, are always influenced by the complex interplay of historical, political, and sociocultural factors that determine both their emergence and the uses to which they are put. Biometrics, as technologies predicated on the mathematical measurement of bodies, emerged, as I discuss above, out of the colonial scientific practices of anthropometry, craniology, phrenology, and so on. As has been well established by a considerable body of scholarship, these colonial scientific practices were fundamentally oriented by racial categories and hierarchies, with whiteness located as the apex of the hierarchy.

It is rather clear, then, that the knowledge/power nexus that inscribes biometrics is already oriented by what Ferdinand Henrique terms "white bias"; Kobena Mercer elaborates Henrique's term by elaborating on "the way ethnicities are valorized according to the tilt of whiteness."[35] In the context of a scientific field dominated by the United States and the United Kingdom (in terms of research centers and academic publishing), for biometric scientists of color who reproduce in their work Eurocentric values, "European elements . . . [are] positively valorized as attributes enabling upward mobility." Moreover, I would argue that these relations of racialized power, precisely because they are discursive, be viewed as establishing fundamental conditions of "intelligibility" for the very broaching of questions of race and ethnicity. Thus, for example, even as one would assume that a Chinese, Indian, or Japanese scientist would be well aware of the immense problematics and differences that inscribe a category like "Asian," the very intelligibility of a discussion of the category of ethnicity has to be cast into a homogenizing category that is intelligible to the West. The rewards—financial, social, and political—for reproducing "white bias" have been extensively documented.[36]

35. Kobena Mercer, "Black Hair/Style Politics," in *Out There: Marginalization and Contemporary Cultures*, ed. Russell Ferguson et al. (New York and Cambridge, Mass.: The New Museum of Contemporary Art and the MIT Press, 1990), 250. For a contextualized discussion of "white bias," see Suvendrini Perera and Joseph Pugliese, "Wogface, Anglo-Drag, Contested Aboriginalities . . . Making and Unmaking Identities in Australia," *Social Identities* 4, no.1 (February 1998): 39–92.

36. See, for example, George Yancy, ed., *White on White/Black on Black* (Lanham: Rowman and Littlefield, 2005); Thandeka, *Learning to Be White*; Ruth Frankenberg, *The Social Construction of Whiteness*; and bell hooks, *Black Looks: Race and Representation* (Boston: South End Press, 1992).

**"They Will Know We Are Christians by Our Walk":
Gait Signature and the Enunciative
Modalities of Racialized Kinesiology**

The use of biometric systems as technologies mobilized to capture subjects in advance of any offense is clearly evidenced in two emergent biometric technologies funded by the U.S. Department of Defense's Advanced Research Projects Agency (DARPA): the Video Early Warning (VEW) system and the Human Identification at a Distance (HID) project. Both VEW and HID are developing biometric systems that will focus on a subject's "behavioral" features, specifically, on the way they walk, that is, on the modality of their gait. "When gait research is perfected, its uses for antiterrorism surveillance will be invaluable," says a former program manager at DARPA who asked that his name not be used. He mentions the possibility of having software that would detect whether a stranger walking into a facility is a frightened woman or a terrorist with hidden explosives.[37]

In his landmark essay "Walking in the City," Michel de Certeau stages a critical reevaluation of walking by reading the kinesiology of a subject's walk in terms of rhetorics. In the process, he identifies a number of "enunciative functions" for what he terms "pedestrian speech acts."[38] These enunciative functions, among other things, serve to make intelligible the seemingly random practice of walking precisely in terms of cultural rhetorics to which can be attributed a series of values, including a "truth value," an "epistemological value," and an "ethical or legal value." It is on this last value that I want to focus in order to begin critically to address the cultural politics of gait signature within a biometric counterterrorist network. The enunciative modality of the walk in terms of its ethical or legal value refers to "'deontic' modalities of the obligatory, the forbidden, the permitted, or the optional. Walking affirms, suspects, tries out, transgresses, respects, etc., the trajectories 'it speaks.'"[39]

The biometric conceptualization of a subject's walk as constitutive of an identificatory "signature" perfectly dovetails with de Certeau's theorization of a subject's walk as ineluctably inscribed by a rhetorical systematicity. In the language of biometrics, the rhetorical systematicity of a gait signa-

37. Ann Geracimos, "Walking 'Signature,'" *Washington Times*, March 4, 2004, available at http://www.cat.nyu.edu/current/news/media/Wash_times.htm.
38. Michel de Certeau, *The Practices of Everyday Life* (Berkeley: University of California Press, 1988), 97.
39. De Certeau, *The Practices of Everyday Life*, 99.

ture is "characterized by the joint angles between body segments and their relationships to the events of the gait cycle."[40] In biometrics, however, this rhetorical "periodicity of human gait motion" is predicated on a set of gait algorithms entirely removed from the sociocultural contexts within which all subjects are situated and within which the biometric algorithms are themselves constructed. In contrast, de Certeau's approach insists precisely on situating patterns of human locomotion within the dense sociocultural fabric that inflects the constitution of a subject's kinematic characteristics. Viewed in this light, biometric uses of gait signature for counterterrorist practices must be seen as conceptually situated within the domain of *deontology*, as locus of the ethical, the legal, the transgressive, and the criminal. The tracking of suspect subjects will rely on the involuntary disclosure of the unique modality of their walk; their walk, both literally and metaphorically, signs or articulates the letters of their "name" with every ambulatory step they take: "And the target doesn't have to be doing a Michael Jackson moonwalk to be distinctive because the radar detects small frequency shifts in the reflected signal off legs, arms and the torso in a combination of different speeds and directions. 'There's a signature that's somewhat unique to the individual' [says Gene] Greneker [Georgia Institute of Technology, Defense Advanced Research Projects Agency]. 'We've demonstrated proof of this.'" The gait signature of the target will disclose whether they are listed on the Pentagon's Total Information Awareness [TIA] database: "a vast surveillance system. . . . Conceived and managed by retired Adm. John Poindexter . . . TIA is an effort to design breakthrough software 'for treating these databases as a virtual, centralized grand database' capable of being quickly mined by counterintelligence officers even though the data will be held in many places, many languages and many formats."[41]

Situated within the domain of the deontological, the biometric gait signature of the suspect will determine, in advance of the fact, whether they are transgressing a security space or are in the process of committing some other crime: "The system could be used by embassy security officers to conclude that a shadowy figure observed a few hundred feet away at night in heavy clothing on a Monday, Wednesday and Friday was

40. Jang-Hee Yoo, Mark S. Nixon, and Chris J. Harris, "Extracting Gait Signatures Based on Anatomical Knowledge," available at http://www.bmva.ac.uk/meetings/meetings/02/6March02/soton2.pdf.
41. Michael J. Sniffen, "Pentagon Anti-terror Surveillance System Hopes to Identify People by the Way They Walk," Security Focus HOME News, available at http://www.securityfocus.com/news/4909.

the same person and should be investigated further to see if he was casing the building for an attack, Greneker said."[42] Already encoded in the trope of the "shadowy figure" is the Orientalist construct "of Middle Eastern appearance."[43] In other words, already inscribed within the kinesiology of the biometrics/rhetorics of gait signature is the specter of racial profiling. Located at the very inception of kinesiology, as a discipline concerned with the study of body movement, tonus, and posture, is a preoccupation with the racialized dimensions of kinesics. Kinesiology, inflected by the colonial ideology of its master discipline, anthropology, was from the outset fixed on constructing a typology of kinesics, and their enunciative modalities, which would reveal, through movement and gesture, the racial indices of particular groups. Writing at the beginning of the twentieth century, the anthropologist Marcello Levi Bianchini was concerned to develop a kinesiological typology of race by arguing that fundamental motory and gestural differences separated the "primitive" races from more "advanced" races:

> A psychological characteristic intrinsic to primitive peoples, which still exists in Calabria, is the kinesiological equivalence of the sentiments. This law can be articulated in the following manner:
>
> In primitive societies all the affective reactions of the individual and collective psyche are essentially manifested with phenomena of movement, investing, in the process, complex and numerous motor expressions that are always inadequate to the stimulus: in all these cases, the more evolved societies have either reduced to a minimum these manifestations by substituting them with a simple word, with writing, with a measured gesture, or they have abolished them altogether by burying them in silence.[44]

Unsurprisingly, the kinesiological typology of race, and its binary of "advanced" and "primitive" societies, divides, in Bianchini's schema, along well-established hierarchical lines: the advanced Northern Europeans/Caucasians and the primitive rest, including Africans and Arabs.[45] In the contemporary context, this racialized kinesiological binary is graphically

42. Sniffen, "Pentagon Anti-terror Surveillance System."

43. On the Orientalist construction of the "shadowy figure" of the terrorist, see Pugliese, "The Locus of the Non."

44. Marcello Levi Bianchini, "La mentalità della razza calabrese: saggio di psicologia etnica," *Rivista Psicologica Applicata alla Pedagogia ed alla Psicopatologia* 2 (1906): 17–18. All translations from the Italian are mine.

45. Bianchini, "La mentalità della razza calabrese," 14.

evidenced in Western media representations of Arab peoples protest-
ing against U.S. imperialism: massed in undifferentiated hordes, gesticu-
lating wildly, ululating and chanting, they embody the face of Bianchini's
"primitive" peoples, inscribed with "hyperbolic kinesic forms" that have an
"excessive duration and exaggerated proportions" when compared to the
"rarefied affective kinesic expression" of Northern Europeans.[46] The cul-
tural inscription of the rhetorics of walking and gait signature brings into
focus that other magnetized binary, Christian/Muslim, when contextualized
in the contemporary "clash of civilizations" propaganda generated by the
so-called war on terror. Citing the above-mentioned biometric project on
the identification of terrorists by their gait signature, the online McDonough
Presbyterian Church writes:

> *Researchers at Georgia Tech, sponsored by the Defense Advanced
> Research Projects Agency, have reported a success rate between
> eighty and ninety-five percent in identifying individuals simply by
> their gaits, and they hope before long to increase the accuracy to
> the "high ninety percent range."*
>
> Does your "*gait signature*" give you away as a follower of Jesus, as
> one who walks with the Lord?
>
> . . . We, who claim to be Christians, are Jesus' hands and feet in
> the world today . . . Christ's contemporary disciples charged to
>
> *"Go out and train everyone you meet, far and near, in God's way
> of life; marking them by Baptism in the threefold name: Father, Son
> and Holy Spirit.*
>
> . . . *"By this we may be sure we are in Christ: anyone who says
> they abide in Christ ought to walk in the same way in which Jesus
> walked."*
>
> *(Chorus) "And they will know we are Christians by our walk, by our
> walk, Yes, they'll know we are Christians by our walk."*[47]

The McDonough Presbyterian Church here brings into sharp focus
the sociocultural and ideological inflections that mark gait signatures.
Articulated in this text is an unsurprising point of ideological intersection
between military concerns and religious missionary zeal. The biometric of
gait signature deployed to advance Western counterterrorism strategies

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46. Bianchini, "La mentalità della razza calabrese," 18.
47. McDonough Presbyterian Church, "'They Will Know We Are Christians by Our Walk,'"
sermon dated November 16, 2003, available at http://www.mcdonoughpersbyterian.com/
Sermons/they_will_know_we_are_christians_by_our_walk.htm. Accessed May 1, 2004.

is here neatly sutured to a religious worldview that remains implicit in the moral-imperial language of the former. Lieutenant Colonel Kathy De Bolt, deputy director of the Army Battle Command Battle Laboratory at Fort Huachuca, Arizona, explains the aims and goals of the biometric system that is being developed in order to realize this global and omniscient capability of eyes and ears everywhere: the Biometrics Automated Toolset—"Any place we go into—Iraq or wherever—we're going to start building a dossier on people of interest to intelligence. . . . We're trying to collect every biometric on every bad guy that we can."[48]

"Being Invisible and without Substance":
The Aporetic Figuration of Embodied Technology

"Being invisible and without substance, a disembodied voice . . . what else could I do? What else but try to tell you what was really happening when your eyes were looking through?"[49]

I want to conclude this essay by underscoring the continuing failure of biometrics critically to theorize the relation between the body and technology. Perhaps what is most startling about this critical failure is that the entire logic of biometric technologies is predicated on *the body as "the password for access."*[50] It is here that I locate the crux of what is problematic about these biometric conceptualizations of the relation between the body and technology. Within the conceptual schema of the biometric sciences, the body is represented in terms of a purely biological datum that is then processed by particular technologies designed to acquire a digital simulacrum or algorithmic template of its distinctive features. What remains untheorized here are two key points. Firstly, the body that presents itself before a biometric system is not a purely biological datum; on the contrary, it is already inscribed with a system of technological mediations and signifying relations that mark it *before the fact* of physical presentation: the body is already technologically mediated before the fact of being screened by the particular biometric system. That the body is already technologically mediated before the fact of biometric presentation becomes graphically evident in the face of the digital discrimination that is enacted by certain biomet-

48. Associated Press, "Irises, Voices Give Away Terrorists," available at http://www.cnn .com/2002/TECH/ptech/11/07/terror.biometrics.ap/index.html. Accessed November 8, 2002.
49. Ralph Ellison, *Invisible Man* (New York: Random House, 1972), 439, my emphasis.
50. Woodward, Orlans, and Higgins, *Biometrics*, i; my emphasis.

ric technologies when particular nonwhite subjects present themselves for enrollment. Before the fact of attempted biometric enrollment, the body has already been marked and made legible or *not* according to both its race and gender.

Secondly, biometric technologies are not the neutral, objective systems that their proponents argue they are. On the contrary, their seemingly pure geometry, their transcendental algorithms, and apparently unmotivated digital formulas are all inflected with the dense sociocultural and historical significations of their designers. The subject's presentation for enrollment before a biometric system, then, exemplifies a moment where a dense network of mediations is already at work. This is not to say that the corporeality of the flesh is somehow made less relevant because of these mediations. Rather, the point of interface between these biometric systems and the mediated body is what precludes the mystical transcending of the irreducible corporeality of the body—as always already signifying corpus. And I mark this point in the face of repeated claims celebrating the increasing irrelevance of the corporeality of the body (for example, as epidermal figure) in the context of new information technologies. For instance, in his discussion of "the effects of technological acceleration arising from digital processing and computer-mediated communications," Paul Gilroy argues that these effects "mean that the individual is even less constrained by the immediate forms of physical presence established by the body. The boundaries of the self need no longer terminate at the threshold of the skin."[51] It is, on the contrary, the threshold of the skin that continues, in the context of biometric technologies, to constrain the physical presence established by the body. The chromatic contours of the skin, its very epidermal reflectivity in the face of technologies calibrated to an infrastructural whiteness, determine whether a subject will be read as present or not in the process of biometric enrollment.

If the racialized contours of the epidermis do not terminate at the threshold of the skin, it is because they extend beyond the physical parameters of the subject into the larger sociocultural domain, inflecting the operating parameters of technologies and determining critical questions of knowledge/power, equity, and access. At the threshold of the skin, that empirical point of terminus dividing the corporeal from the noncorporeal, the skin is metaphorized into its seeming other: *technè*. And, in a reverse direction, *technè* is metaphorized as body: literally, *biometrics*. The plasticity of

51. Paul Gilroy, *Between Camps: Nations, Cultures, and the Allure of Race* (London and New York: Routledge, 2004), 108.

integument, the chromatics of the dermis, the topology of its racialized morphology, its epidermal reflectivity—all these aspects of skin overflow the threshold of the embodied subject as they are assimilated into the *technè* of culture; all these features of flesh, through metaphorical exposition and extension, constitute a continuum across the threshold of embodied subject and technological object. Simultaneously, algorithms, optical settings, lighting—all these technological features function to determine the very possibility of the subject appearing as embodied template figure. What emerges, in effect, is the aporetic figuration of embodied technology: biometrics. Biometrics dreams of a univocal deployment of pure geometry in its desire objectively to apprehend the subject of flesh. Yet already encoded in the machine, already orienting its algorithms and pixelated templates, is a phantasmatic body that it fails to acknowledge: invisibilized because white, this body must remain unthought even as it overdetermines the very possibility of biometric appearance/nonappearance.
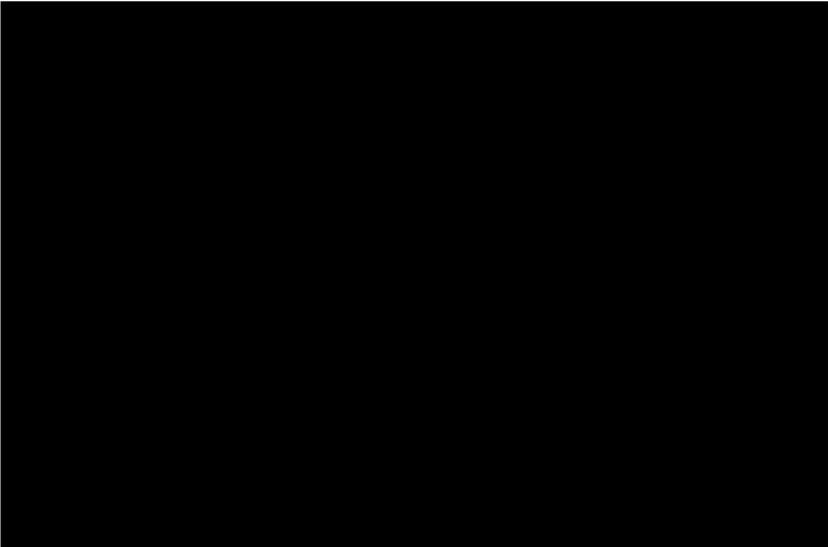

Figure 1. Failure to Enroll (FTE).

FTE: In the nonhorizon of biometric nonappearance there hovers the occulted figure of the other: recalcitrant to light, algorithmically unintelligible, beyond the gray scale of pixelated thematization—ghostly shadow radiating blackness in the high noon of digital resolution, black hole, void: "individual simply not found."