**Biomedical Attunement: A Study of Genetic Biomarkers as Suasive Materials**

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Saturday, 12:30 pm | Hilton 306

**Introduction**

The United States is in the early stages of a major paradigm shift to a new medical model. Over the next decade, “Precision Medicine” will envelop “Evidence-Based Medicine” as the most sound and reliable scientific method for making medical decisions. While still “evidence-based,” precision medicine values one particular form of evidence over all else: Genetic information.

Epideictic rhetorics surrounding the shift to “Precision Medicine” frequently invoke what is perceived to be its major affordance: Precision Medicine is more *personalized* than previous medical models.

This desire to achieve more personalized medicine is a response to critiques and failures associated with population-based, one size fits all treatments for diseases. Results from genetic testing pose the potential to provide evidence in support of arguments about the effectiveness of certain medical interventions for individual patients: what the cancer community calls “Targeted Therapies.” According to the National Cancer Care Network (NCCN), “Targeted therapies” are designed to halt “the action of molecules that are key to the growth of cancer cells.” Essentially, targeted therapies preserve the lives of healthy cells by detecting and then eliminating cancer cells.

Targeted therapies are possible because of the presence of what are called “genetic biomarkers.” Genetic biomarkers are suasive biological actors that perform a kind of living trace or what the cancer community sometimes calls a “signature” of the presence of bad biological actors, or cancer cells. Biomarkers are at once both forensic and deliberative evidential materials. By detecting individual patients’ unique genetic biomarkers and attuning to what they have to “say,” medical professionals can get a better sense of how a particular cancer (and the body as a whole) might respond to an intervention or treatment. Biomarker testing lies at the center of personalized, precision medicine.

Genetic biomarkers “have demonstrated important roles as diagnostic, prognostic, and predictive biomarkers in cancer research and therapy, leading to their integration into drug development trials” (Brennan & Lim, 2015, p. 327). In addition to mammography, biomarkers can help “to detect breast cancer at an early stage, to identify aggressive disease or predict metastasis” and “could have a major impact on the management and outcome” (De Leeneer & Cales, 2015, p. 263) of breast cancer.

The emphasis on genetic evidence in Precision Medicine requires practitioners become experts in attuning rhetorically to otherwise ambient phenomena. This construct, “rhetorical attunement,” hails from Rickert’s argument that there exists an “ensemble of material elements bearing up, making possible, and continually incorporated in the conducting of human activity” (Rickert 2013, 93). Rhetorical attunement is a way of being with and there—a way of listening, discerning, noticing. Precision Medicine’s use of biomarkers to make decisions about future action is the quintessential model for what it looks like to practice rhetorical attunement by recognizing the agential qualities of not-quite-human (or in this case, genetic) actors (Bennett).

Despite rhetoric’s recent turn toward new materialist theories, we still grapple with how to characterize the relationship between material phenomena and concomitant discursive constructions. No doubt, there are life-changing power dynamics associated with such characterizations. We know this from,

* Kelly Happe’s (2013) work on the reification of racism vis-à-vis breast cancer genomics;
* Celeste Condit’s (2008) work on the continual recirculation of racism in scientific discourse;
* J. Blake Scott’s (2009) work on what he calls the “knowledge-power regime” in mandatory newborn HIV testing; and
* John Lynch’s (2009) analysis of the “overlapping material, social, and rhetorical registers” in the so-called “gay gene” study.

Precision medicine’s material-discursive labor is, at its heart, a series of rhetorical performances. Intra-actions (Barad) between biological materials, scopes, slides, and stains perform the body as it is or was at one particular time and place. Ontology and oncology are inextricably linked.

Our bodies, therefore, are not as some narrative medicine theorists have argued “stubbornly incommunicative,” making it necessary for us to speak on its behalf. This project is about more than what we can learn about ambient rhetorics by exploring the mysterious world of powerfully predictive proteins on and in cancer cells. If bodies do, in fact, “talk,” — if they do, in fact, “hail” us, how then do we respond? Asking this question requires a materialist feminist focus on consequences and effects.

Materialist feminists argue that we need a “form of accountability, based on a strong sense of collectivity and relationality, which results in a renewed claim to community and belonging...” (Braidotti, 2013, p. 191)

From epigenetics and environmental effects on human health, we know that the human genome is not fixed and finite, but malleable in so many ways. Under a materialist feminist rubric of rhetorical attunement, is the practice of precise, personalized medicine even possible? Moreover, as we attune to disease with what we assume is greater personalized precision, what falls out of focus?

Attuning rhetorically—especially to bodies differentially effected by ancestry, biology, and environment—requires response. What claims, therefore, do genetic biomarkers have on us, or at least those who perform precision medicine? Rickert notes that we can agree that “Nonhuman actants certainly have agency,” yet, “when it comes to a politics that addresses how we are to dwell together with nonhuman actants, their role is circumscribed as one of already present things that have no claims on us...” (p. 238).

He goes on to say that such claims on us require “**deeper transformations in our lived relations to the world** in ways that in turn attune us differently to world” (p. 239).

When in 2015 President Obama announced during his State of the Union Address that hundreds of millions of dollars would be allocated to the Precision Medicine Initiative, the White House made the case that such an initiative “will leverage advances in genomics, emerging methods for managing and analyzing large data sets...and health information technology to accelerate biomedical discoveries" (fact sheet).

But here are some alarming facts: Many of our nation’s sickest citizens don’t have an electronic health record, a fitbit, or other wearable health device; and while more accessible than ever before, at home genetic testing kits are still unaffordable or simply said not a priority to our nation’s most underserved populations. These are the technologies from which Precision Medicine data will hail—data that fuel the fires of Precision Medicine’s technoscientific furnace (cf. (Haraway, 1997, p. 129). Currently, much of our existing data—data upon which healthcare providers and scientists make medical decisions—are extrapolated from participants who are white, male, urban, and of a privileged socioeconomic status. According to the NIH, for example, in the U.S. alone, African-Americans represent 12% of the nation’s population but only 5% of clinical trial participants; Hispanics make up 16% of the population but only 1% of clinical trial participants (see 73-75). How will Precision Medicine work against such exclusionary biomedical practices? How will Precision Medicine afford “deeper transformations in our lived relations...in ways that in turn attune us differently to world”?

Here are some more alarming facts to consider alongside epideictic rhetorics of Precision Medicine: While there is no biological basis for race, the majority of breast cancers in African-American women are characterized as hormone negative; hormone negative cancers have very poor prognoses. Said more cynically: Those who happen to not have white skin are the patients for whom the cancer community (in the name of “precision”) cannot detect certain biomarkers. The highest incidences of prostate related cancer deaths occur among black male populations. There are clear correlations between being Black in America and certain kinds of cancers. But to draw a causal link between genetics and cancer rates is a logical fallacy. The correlation between African American women and higher incidences of the deadliest form of breast cancer—triple negative—is of our own doing.

I argue that the medical model of “Precision” and “Personalized” Medicine helped create that correlation. I argue that genetic rhetorics aren’t only *used* to other (TallBear, 2013, p. 202); the genomic material-discursive backstage (Barton) is *made* to other. Such an assertion is not that new: Celeste Condit’s (2008) work on “race-based biological inferiority” (p. 385) teaches us that “the human body is a medium with specific properties that drive and shape discourse both in the moment and through time” (p. 387). She notes that, “Marx’s theory that interests drive circulation of ideas is apt precisely *because* bodies are the kinds of things moved by interests—a characteristic that does not hold for atoms that are not structured into biological bodies...cultural and socio-political interests are in part the product of the interaction of (a) biological proclivities and (b) the sedimented history of discourses in bodies” (p. 388, emphasis in original).

Using performativity as her primary theoretical lens—or the understanding that language is a form of social action—Happe (2013) argues that over time, the biological body and race in particular has become a “common sense marker of difference” (p. 135). In particular, “genes are presumed to be a natural, biological facticity of the body, existing outside the bounds of culture and discourse—a ‘prediscursive’ reality” (p. 137). Happe makes the case that “the act of constituting the racialized other is simultaneously the constitution of the grounds by which consent to a racialized order (by the privileged) can be secured” (p. 138). Borrowing from Happe, therefore, I ask: Under the new medical model of “Precision Medicine,” how is race “maintained anew” (Happe, p. 139)? Happe reports that ecosocial hypotheses which eschew biological or genetic bases for disease suggest that “racism, not race, may explain why black women are dying from breast cancer” (p. 147). In particular: “differential treatment of those already presumed to be biologically and culturally discrete, and thus inferior, results in different disease outcomes” (p. 147).

Given its privileging of suasive genetic biomarkers as its primary source of evidence for medical decision-making, Precision Medicine is an ideologically loaded practice that poses the potential to be even more exclusive, harmful, and neglectful than evidence-based medicine ever was. What are the unintended consequences associated with trying to make medical practice more precise and personalized? What non-biological noise (or so its perceived) is filtered out as we hone in on genetic vulnerabilities of the elite few? We’re at a critical juncture right now where by embracing a medical model that is based on genomic analyses we actually run the risk of reifying health disparities and differences between and among certain populations. As Atkinson, et al. have argued: “While the medical humanities has done a lot to challenge dominant medical perspectives, it seldom if ever ventures beyond a neoliberal, humanist notion of the individual body-subject and associated conceptualizations of responsibility, rights, and risk management to really explore alternative ‘collective’ and ‘relational’ approaches to ‘flourishing’” (p. 77). What can rhetoricians who are experts in symbolic action and investigations into the material consequences thereof offer up as alternative “collective and relational” medical models?

While genetic biomarkers are, indeed, powerfully suasive actors in the new medical model of Precision Medicine, we must also ask: To which *human* actors do we remain largely unattuned? What material-discursive networks of exclusion risk reifying race-based health disparities? Can Precision Medicine as a racialized medical model and economic order “withstand greater recognition of differently raced bodies” (Happe, 2013, p. 139)? Will we be able to guard against the way “persons” in “personalized medicine” have come to be synonymous with “genes?” Will we be able to guard against the way a genetically based “precision” requires racialized exclusion? What medical models exist that eschew the synecdochic relation not just between genes and persons, but also White America and precision?

Thank you.