

# The Fictions of the Statistical Gaze

*Luis A. Avilés*

What if a society suddenly and unexpectedly loses its sense of vision? According to Nobel-laureate José Saramago's (1998) novel, *Blindness*, such society will turn into an appalling nightmare. As a policy of compulsory quarantine of the blind failed to stop the spread of blindness, the city turned into an irrational maze with lines of blind people leading the blind. Since there was a war of every man against every man, with vanishing notions of right or wrong, justice and injustice, it seems that the state of nature described in Hobbes' *Leviathan* (1968 [1651]) has befallen. As a card-carrying member of the Portuguese Communist Party, Saramago is certainly prone to fashion political allegories. When many leaders of contemporary society are blind to the possibility of imagining a different world, *Blindness* expresses a desideratum: individuals who can see the world in ways others cannot.

Why is it that there were no statisticians in *Blindness*? Beyond the possible argument that muses seem not to be particularly fond of statisticians (judged by the amount of statisticians in modern fiction), the scarcity of knowledge and debate about the statisticians' worldview does not facilitate such undertaking. Accordingly, this essay seeks to address a lacuna in the theorization of the statisticians' role in society. More specifically, this essay: (1) identifies the main elements of the statisticians' worldview, (2) analyses its neglect of the dual nature of science, and (3) suggests an alternative worldview.

A worldview, the aptitude to perceive the world in a specific way and the identification of one's role in such world, cannot be reduced to a matter of personal idiosyncratic judgment. Professional education instils paradigms of practice that influence such perceptions. The popularization of the advancements of statistics in many facets of contemporary life provides a good rationale for analysing the worldview of statisticians, which I refer to as *the statistical gaze*. Its key elements are to be found in the atheoretical stance and hostility towards rhetoric of statisticians, and in the consequent claim of political neutrality.

Before delving into these issues, it is important to delineate certain terms. For the purpose of this essay, statisticians are persons formally trained in statistics or professional producers and consumers of statistics. Second, this essay focuses on social statistics, which

includes the areas of interests of sociologists, political scientists, demographers, epidemiologists, criminologists, policy analysts, and other quantitative scientists. Excluded from this analysis is the area of statistical graphs, since the visual representation of statistical analyses deserves a theorization of its own. Finally, the lack of neutrality of statistics must not be confused with the perversity of vulgar statistical manipulation, a popular topic that has inspired many books.

The German tradition of statistics developed in the 18<sup>th</sup> century was a descriptive and a seldom numerical approach to the study of states (Hacking, 1990). Professor August Ludwig Schlözer, a prominent scholar of this tradition, considered statistics as the nemesis of despots, as an instrument to check and to indict them, and as a register of their political sins (Bödeker, 2001). Schlözer described the statistical gaze (*der statistischer Blick*) as a way of empirically perceiving the world. Contemporary statistics have brought into being a particular statistical gaze that differs substantially from its elaborate German forerunner, especially in its philosophy of *aliis exterendum*.

“*Aliis exterendum*” appeared in the emblem of the Statistical Society of London in 1834, meaning “to be threshed out by others,” as it has been conventionally translated.<sup>1</sup> Others had the task of doing the “threshing out,” the extraction of conclusions, while statisticians professed to abstain themselves from opinions or conjunctures, limiting their role to that of collecting data and analysing it. As Hilts (1978, p.43) asserts in relation to *aliis exterendum*,

“at one blow, the phrase deflected accusations that the Statistical Society was excessively political, it satisfied the previous ideas about the nature of statistics developed by the political economists, and it suggested an objectivity worthy of science.”

Unfortunately, by promoting *aliis exterendum*, the Statistical Society of London also promoted “and intellectual attitude hostile to all theoretical advance” (Hilts, 1978, p.42).

Contemporary statisticians who uphold the belief in *aliis exterendum* make their practice of statistics to be atheoretical, a characteristic that

---

<sup>1</sup> The official website of the Royal Statistical Society acknowledges that there is a debate on what is the actual translation of the phrase, if it really means “to be threshed by others” or “to be threshed for others.” The sub-page with the title *Aliis Exterendum and beyond!* written by Vic Barnett (<http://www.rss.org.uk/main.asp?page=1203>) asserts that the correct expression is “to be threshed for others.” In this essay I prefer to follow the rather conventional translation used by most scholars.

Mills (1959) called abstract empiricism. While Mills recognized the “blindness of empirical data without theory and the emptiness of theory without data” (p.66), current understandings of statistical research confers primacy to empirical data neglecting the role of theory and history. As a consequence, most statisticians hold the firm and erroneous belief that the collection, analysis, and reporting of facts are independent from theory. The atheoretical stance of statistics is fundamental to support the fiction of neutrality, as it drafts a separation between the methods of statistics and the theories of the specific science that uses statistical analysis. The *alii* (the others) may or may not be neutral but the statisticians must be, since, allegedly, their theoretical preferences do not interfere with their practice as long as they follow the methods of the discipline.

A second key element of the statistical gaze is revealed in a common assertion of popular and professional wisdom, “*let the data speak for itself*,” a belief that the discipline of statistics is beyond the need of any rhetorical strategy. Early statisticians promoted their new science by discrediting rhetoric, arguing that figures of arithmetic were superior to any figure of speech (Poovey, 1998). Contemporary statistics still embodies this rhetoric of anti-rhetoric, a sophisticated rhetorical mechanism that promotes the validity of an argument by conveying the worthlessness of rhetoric (Valessio, 1980).

As other communities of scholars do, statisticians rely on rhetoric by promoting recognizable strategies of acceptable argumentation. It is common to find statistically-based journal articles and research reports that have significance tests as the “scientific crescendo of the paper” (McCloskey, 1985, p.127), presenting it as the supreme piece of evidence of any argumentation. The anti-rhetorical stance of statistics makes hypothesis testing an overrated method of validating a theory, at times becoming “more a matter of faith than an ultimate criterion of truth” (Collins, 1984, p.335). Statisticians use hypothesis testing as a highly persuasive strategy since it conveys the illusion of plain scientific and mathematical rigor free from the vacuity of elaborate argumentation. The use of anti-rhetorical strategies to elicit the support of audiences cannot be overemphasized. The furor caused by the publication of the book by Richard Herrnstein and Charles Murray *The Bell Curve Wars: Race and Intelligence in America* (1994), was based on the allure of numbers and hypothesis testing. According to Grey (1999), one of the factors that explain the popularity of a book that asserts the American anathema of enduring racial differences in intelligence is the authors’ underlying statistical methodology that fuelled the controversy in a country that popularized the idea of bell curves. Since the objectivity associated to the statistical gaze provides

an aura that bestows trust and credibility, social statistics has been at the forefront of social criticism, a matter that deserves our attention.

## **Hitting the blind spot: The dual nature of science**

The statistical gaze holds the fiction that its relation to social justice is an indirect one-way linear path from statistics to social justice. Social statisticians use their abilities to gaze on the (unjust) world and express their observations through numbers, letting others to extract their conclusions and to plan desired interventions, if any. Accordingly, social statistics can eventually have an impact on social justice.

For example, the noble goal set by United Nations, “*To reduce by half the proportion of people living on less than a dollar a day by 2015,*” reveals this fiction of the statistical gaze. This goal, an apparently objective numerical expression to pursue social justice is the centre of a heated controversy among scholars of poverty. Selecting to reduce by half a *proportion* as opposed to a *number* is problematical. The history of thinking on the subject demonstrates that previous goals of international organizations aimed at halving the *number* of undernourished, not their *proportion* (Pogge, 2003). According to data provided by Pogge, halving the *proportion* of persons living under \$1.00/day will make U.N. officials to celebrate, even when it entails an extra 109 million people living in those circumstances because the *number* was not reduced by half (Table 1). A ventriloquist trick may be at play if deliberate numerical decisions were made before the data could speak for itself.

In addition, the \$1.00/day indicator is not a cut-off point free of theorization. The universal applicability of the \$1.00/day has been challenged too, since it demarcates an exceedingly low poverty line. The purchasing power required to satisfy basic human needs in the base country, United States, is several times higher than \$1.00/day (Reddy, 2006). The conversion of \$1.00 to other currencies, based on the purchasing power parity method (PPP), is inappropriate for poverty measures since it is based on a series of commodities that are beyond the reach of the poor (Pogge, 2003). These criticisms attest to a bias that lowers the official count of the poor which is supposed to be cut by half. The \$1.00/day benchmark is not an objective, neutral, and consensus-based figure, it is a theoretically-based decision that facilitated social injustice to make its way through statistics.

<b>Table 1</b>		
<b>The differential consequences of halving the number and the proportion of people living under \$1.00/day</b>		
	<b>Year 2000</b>	<b>Year 2015</b>
Total world population (millions)	6071	7197
Population living under \$1.00/day (millions)	1170 (19.27%)	If the number (1170) is halved: 585 (8.13%)
		If the proportion (19.27) is halved: 694 (9.64%)
Source of data: Pogge, Thomas W. 2003. The First Millennium Development Goal.		

As the United Nations’ goal illustrates, statistics as a field of practice is not immune to politics and ideology. When statisticians believe in the neutrality of their methods, they are blind to the dual nature of science. Science (and statistics) is both, a tool that enlightens and guides human actions in the world, and a human activity that reflects the conditions and ideologies of its producers and owners (Lewontin and Levins, 2007). The idea of statistical neutrality is a fiction, as “no one can adopt a point of view that is completely impersonal and dispassionate, completely separated from any particular context and commitments” (Young, 1990, p.103). The assertion that there is a clear cut distinction between facts and theories, between numbers and rhetoric, or between science and values is another convenient fiction. The belief in *aliis extendum* serves as an ideology that keeps social statisticians from the required inquiry to identify possible theoretical assumptions with crucial social justice implications embedded in a statistical analysis. The statistical gaze has its blind-spot in its inability to recognize the dual nature of science and, therefore, the dialectical relation of social statistics and social justice.

## **Dialectical Statisticians Wanted!**

The banalization of dialectics, reduced to the inexorable process of thesis, antithesis, and synthesis, provides poor guidance for

researchers whose worldview acknowledges the dual nature of science. Harvey's (1996) careful explanation of a dialectical mode of inquiry, emphasizing processes and relations, interrogating concepts and assumptions that appear to be fixed or unchangeable, and incorporating ethical, moral, and political choices into research, opens a much needed line of thought for statisticians. Similarly, a dialectical worldview avoids a reductionist magic bullet research technique and demands an examination of complexity, connectedness, dynamism, historicity, and internal contradictions (Lewontin and Levins, 2007).

The dialectical approach to science challenges the traditional tenets of the statistical gaze by requiring statisticians:

- (1) To interrogate facts, categories, and methods usually considered as fixed, homogenous, universal, and unchangeable, looking for the historical process that produced them. Consequently, it is crucial to search for the hidden theorization of each fact, category, and method used by statisticians.
- (2) To recognize that statistics has produced its own rhetorical arguments and audiences, and at the same time, it is permeable to apparently external rhetorical discussions. Accordingly, it is a fundamental task of statisticians to place statistical issues into their broader rhetorical context.
- (3) To honestly accept that the practice of statistics, far from being neutral, has normative consequences. The incorporation of issues of power, politics, policy, and social justice must be essential elements of any statistical analysis. Therefore, it is imperative to look for the social justice issues embedded in statistical practices.

A dialectical perspective on the much debated issue of overpopulation will help understand this dialectical mode of inquiry for statisticians. Many scientists consider the Caribbean island-nations of Barbados and Puerto Rico as overpopulated places, blaming excess population for their problems of poverty, violence, emigration, and environmental decay. When the concept of overpopulation is interrogated, a different picture emerges.

Overpopulation is usually defined in terms of a high crude population density ( $D_1$ ) using the formula:

$$D_1 = \frac{\text{population}}{\text{area}} .$$

$D_1$  is a crude summary measure of population density, and therefore, it is prone to conceal the heterogeneity of the observed territory. In nation-wide comparisons of crude densities, small island-nations and small territories tend to fare higher than continentally-based nations, since their insular condition or limited geographical span leave no hinterland to occupy. Recognizing that crude population density is an area weighted density, Craig (1984) proposed the use of the geometric mean of the population weighted density ( $D_{GM}$ ), equivalent to:

$$D_{GM} = \prod_{i=1}^n \left[ \left( \frac{\text{population}_i}{\text{area}_i} \right)^{\frac{\text{population}_i}{\text{total population}}} \right]$$

where the national area is divided in  $n$  regions and  $\text{population}_i$  and  $\text{area}_i$  are the corresponding measures for the  $i^{\text{th}}$  region of the national area.

By introducing a correction factor so that vast hinterland areas exert little leverage in the overall national density,  $D_{GM}$  represents the average density at which people live (Craig, 1984). The average density at which people live in the three most populous cities of the Barbados, Puerto Rico and United States (Table 2) reveals that the mean of the most populous cities of the United States experience a population density that is at least two and a half times those of its Caribbean counterparts. For Barbados, Puerto Rico and United States, weighted densities reversed the ranking of crude densities.

The extensive literature on Caribbean overpopulation, as far as this researcher knows, does not include a population density indicator besides the crude  $D_1$ . Caribbean overpopulation, based on a high ranking of population density, is an artefact created by the theoretical choice of the researcher who prefers to use a crude indicator of the average density at which people live.

<b>Table 2</b>			
<b>Comparison of Crude Population Densities and Weighted Population Densities (persons/km<sup>2</sup>)</b>			
<b>country</b>	<b>crude population density</b>	<b>weighted population density (geometric mean)</b>	<b>population densities in three most populous cities</b>
Barbados	654	2,476	Bridgetown    2,476 *
Puerto Rico	446	2,519	San Juan      3,509
			Bayamón      1,948
			Carolina      1,585
United States	31	6,651	New York      10,487
			Los Angeles    3,168
			Chicago        4,819
Notes:			
* Data is available for the city of Bridgetown only.			
Sources:			
CIA World Fact Book (total population estimates 2008) and Wikipedia (population and land areas of the cities of Bridgetown, San Juan, Bayamón, Carolina, New York, Los Angeles, and Chicago).			

Social statistician’s proclivity to Caribbean overpopulation should be understood in the cultural context of centuries old alarmist assessments on population increase. From Reverend Malthus’ hordes of people to be checked by epidemics, famine, or war (Malthus, 2007 [1803]); to Paul Ehrlich’s population bomb (Ehrlich,1968); to Nobel laureate Al Gore’s claim of climate change related to excess fertility (David, Bender and Burns, 2006), overpopulation has been portrayed as an imminent danger to our survival. Cultural critics sustain that modern knowledge on Atlantic regions is not strictly based on empirical and scientific investigations, as they are intertwined with long-standing pre-encyclopaedic mythical imaginations (Hernández-Adrián, 2006). Taking into consideration the Western historical cultural imagery that conceived islanders as “racial others” who live in exotic places of hyperbolic realities, threatening circumstances, and uncontrollable desires it is not surprising that Caribbean islanders were the focus of the fixation of population controllers.

Finally, to recognize the normative character of statistics means that the customary activities of statisticians offer certain prescription of the way nature and society should be conceptualized and organized. Roberts' population projection for the island of Barbados assumed a constant rate of population increase for the next 190 years, which forecasted an island population of "standing room only," equivalent to one person for three square yards (as cited in Cummins, Lovell, and Standard, 1963). This is not a neutral description of a population projection, but a deliberate unwarranted inducement of fear to request the immediate action of population controllers, regardless of its consequence for social justice.

## **Conclusion**

As Thomas Kuhn asserted in his book on scientific revolutions, worldviews are susceptible to the advancement of science:

"Led by a new paradigm, scientists adopt new instrument and look in new places. Even more important, during revolutions, scientists see new and different things when looking with familiar instruments in places they have looked before. It is rather as if the professional community has been transported to another planet where familiar objects are seen in a different light and are joined by unfamiliar ones as well." (Kuhn, 1970, p.111)

Advocating a dialectical mode of inquiry is a request to see new and different things in places statisticians have looked before. The encouragement of dialectical thoughts on statistics as a way of overcoming the fictions of the statistical gaze is not a radical departure from the ways many social investigations are conducted, if they bring into the analysis, social theory, rhetoric, and social justice.

Some statisticians might feel quite apprehensive and uneasy since the use of dialectics evokes the spectre of Karl Marx. It is important to assert, along with Valessio (1980), that to try to exorcise this uneasiness would mean to become a victim of exorcisms. The request for dialectical statisticians is simply a demand to be truly enlightened and honest, to liberate ourselves of the fictions of neutrality that are still instrumental in cultivating the support of naïve audiences. Not to accept the dialectics of social statistics and social justice means to be content in having a partially blind worldview. It is like wanting to be a character in Saramago's novel, where lines of blind leading the blind stumble with each other, this time being lead by statisticians.

**Acknowledgements:**

The author expresses his gratitude to librarian Luis Marín and to the staff of the Interlibrary Loan Office of the University of Puerto Rico, Mayagüez.

**References**

- Bödeker, H. E. (2001). *On the origins on the “statistical gaze”: Modes of perception, forms of knowledge, and ways of writing in the early social sciences*. In P. Becker and W. Clark (Editors) *Little Tools of Knowledge: Historical Essays on Academic and Bureaucratic Practices*. Ann Arbor: University of Michigan Press.
- Central Intelligence Agency (CIA). (2008). *The World Fact Book*. Available at <https://www.cia.gov/library/publications/the-world-factbook/> Accessed on June 23, 2008.
- Craig, J. (1984). Averaging Population Density. *Demography*. 21(3):405-412.
- Collins, R. (1984). Statistics versus words. *Sociological Theory*. 2:329-362.
- Cummins, G.T., Lovell, H. G., and Standard, K. L. (1965). Population control in Barbados. *American Journal of Public Health*. 55(10):1600-1608.
- David, L., Bender, L., and Burns, S (Producers) & Guggenheim, D. (Director). (2006) *An Inconvenient Truth* [Motion Picture]. United States. Paramount Pictures.
- Ehrlich, P.R. (1968) *The Population Bomb*. New York: Ballantine Books.
- Grey, S. (1999). The Statistical War on Equality: Visions of American Virtuosity in "The Bell Curve." *Quarterly Journal of Speech*. 85(3):303-329
- Hacking, I. (1990) *The Taming of Chance*. Cambridge: Cambridge University Press.
- Harvey, D. (1996). *Justice, Nature and the Geography of Difference*. Cambridge, Massachusetts: Blackwell Publishers.
- Hernández-Adrián, F-J. (2006). Atlantic Nescologies: Image, Territory, Value. *Studies in 20th & 21st Century Literature*. 30(1): 20-43
- Herrnstein, R. J. and Murray, C. A. (1994). *The Bell Curve: Intelligence and Class Structure in American Life*. Free Press.
- Hilts, V. L. (1978). *Aliis exteendum*, or, the origins of the Statistical Society of London. *Isis* 69(1): 21-43.
- Hobbes, T. (1968 [1651]). *Leviathan*. New York: Penguin.

- Kuhn, T. (1970). *The Structure of Scientific Revolutions*. Chicago: The University of Chicago Press.
- Lewontin, R. and Levins, R. (2007). *Biology Under the Influence: Dialectical Essays on Ecology, Agriculture, and Health*. New York: Monthly Review Press.
- Malthus, T. (2007 [1803]). *An Essay on the Principle of Population*. New York: Dover Publications.
- McCloskey, D. (1985). *The Rhetoric of Economics*. Madison: The University of Wisconsin Press.
- Mills, C. W. (1959). *The Sociological Imagination*. New York: Oxford University Press.
- Pogge, T. W. (2003). *The First UN Millennium Development Goal*. Oslo Lecture on Moral Philosophy, September 11, 2003.  
<http://www.globalpolicy.org/socecon/develop/2003/pogge.pdf>. Accessed May 19, 2008.
- Poovey, M. (1998). *A History of the Modern Fact: Problems of Knowledge in the Sciences of Wealth and Society*. Chicago: University of Chicago Press.
- Reddy, S. G. (2006). *Counting the Poor: The Truth about World Poverty Statistics*. In L. Panitch and C. Leys (Editors). *Telling the Truth: Socialist Register 2006*. New York: Monthly Review Press.
- Saramago, J. (1998). *Blindness*. New York: Harvest Books.
- United Nations. (2008). *Millennium Development Goals*. Available at <http://www.un.org/millenniumgoals/> Accessed: May 3, 2008.
- Valessio, P. (1980). *Novantiqua: Rhetorics as a Contemporary Theory*. Bloomington: Indiana University Press.
- Wikipedia contributors (May 15, 2008) *Wikipedia: The Free Encyclopedia* and *Wikipedia: La Enciclopedia Libre*. Entries (New York, Los Angeles, Chicago, San Juan, Carolina, Bayamón). Retrieved from:  
[http://en.wikipedia.org/wiki/New\\_York\\_City](http://en.wikipedia.org/wiki/New_York_City),  
[http://en.wikipedia.org/wiki/Los\\_Angeles](http://en.wikipedia.org/wiki/Los_Angeles),  
<http://en.wikipedia.org/wiki/Chicago>,  
[http://es.wikipedia.org/wiki/San\\_Juan \(Puerto\\_Rico\)](http://es.wikipedia.org/wiki/San_Juan_(Puerto_Rico)),  
[http://es.wikipedia.org/wiki/Carolina \(Puerto\\_Rico\)](http://es.wikipedia.org/wiki/Carolina_(Puerto_Rico)) ,  
<http://es.wikipedia.org/wiki/Bayamon>.
- Young, I. M. (1990). *Justice and the Politics of Difference*. Princeton: Princeton University Press.

Luis A. Avilés  
University of Puerto Rico  
[laviles@uprm.edu](mailto:laviles@uprm.edu)

# **Statistics out of their element: The link between socio-economic status and health in West Africa**

*Sarah DalGLISH*

## **1. Introduction**

Social and economic stratification is a feature of virtually all known human societies, but the various manifestations of high and low status are far from uniform. Wealth, for example, may be denominated in currency (as is the case in Western nations), or in camels, cattle, wives, or any number of items. Thus, it seems that devising appropriate indicators for developing countries would be a simple matter of understanding their social and economic context. And yet, there is little consensus on appropriate measures of socio-economic status in the developing world.

There is an emerging consensus in the literature examining the statistical relationship between socio-economic status and health, which finds a robust – if somewhat obscure – link in both rich countries and poor. Medical studies consistently show that low socio-economic status is detrimental to health outcomes in the individual patient. This is also true at the level of the population – that is, more unequal societies experience worse health than more equal societies. Epidemiologists, economists, and medical doctors concur: health and socio-economic status are linked. But how to measure status, already a slippery concept, in settings where Western-style statistics on income and wealth are inappropriate, not to mention unavailable? This paper will attempt to address this question by examining a case study: namely, the link between socio-economic status and health in West Africa.

Teasing out the specifics of this link will become increasingly important as more medical services are offered in the developing world, either under international aid programs, such as those of the Global Fund, or as rising incomes impel developing-country citizens to demand better care. Let us take the example of HIV/AIDS: as recently as the year 2000, the number of Africans receiving effective treatment could be counted in the tens of thousands. Today, over a quarter of HIV-positive Africans needing treatment receives it, representing some