STATISTICS REASONING, GOVERNING EDUCATION, AND SOCIAL INCLUSION AND EXCLUSION

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Abstract: Organization of Economic Co-operation and Development (OECD)'s Program for International Student Assessment can be understood historically as a particular way of telling the truth about people and change. Central to this style of reasoning in contemporary research and school reforms is statistics. Historically, modern statistics entail the paradox of the state administration of populations in the name of freedom and liberty. Contemporary international calculations and ranking of student performance embody this paradox of the administration of populations. Their numbers fabricate principles about who the child is and should be. The fabrication or making the child as a certain kind of person is produced through the distinctions, categories, and magnitudes embedded in statistics. Further, the comparativeness in the inventories or profiles of classes of people produces difference and exclusions in the impulse to include. The analysis is directed to science studies and to the politics of knowledge.

Keywords: Statistics. System of reason. Governing. Inclusion/exclusion. Fabricating human kinds.

A fundamentação estatística, o governo da educação e a inclusão e exclusão sociais

Resumo: O Programa Internacional de Avaliação de Estudantes (PISA), da Organização para a Cooperação e o Desenvolvimento Econômico (OCDE), pode ser entendido historicamente como uma forma particular de dizer a verdade sobre as pessoas e a mudança. Primordial nesse estilo de raciocínio da investigação contemporânea e das reformas escolares é a estatística. Historicamente, as estatísticas modernas envolvem o paradoxo da administração das populações pelo Estado em nome da independência e da liberdade. Os cálculos internacionais contemporâneos e o *ranking* do desempenho dos alunos incorporam esse paradoxo da administração

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das populações. Os seus números fabricam os princípios sobre quem é — e como deverá ser — a criança. A fabricação que torna a criança certo tipo de pessoa é produzida por intermédio das distinções, categorias e magnitudes incorporadas nas estatísticas. Além disso, a comparabilidade nos inventários ou perfis dos tipos de pessoa produz, no impulso para a inclusão, diferenças e exclusões. A análise realizada neste artigo é direcionada para os estudos da ciência e para as políticas do conhecimento.

Palavras-chave: Estatística. Sistema de razão. Governo da educação. Inclusão/exclusão. Fabricação de tipos humanos.

Le raisonnement statistique, le gouvernement de l'éducation, et l'inclusion et l'exclusion sociale

Résumé: Le Programme International pour le suivi des Acquis des Élèves (PISA) de l'OCDE (*Organisation de coopération et de développement économiques*) peut être compris historiquement comme un mode particulier de dire la vérité sur les sujets et le changement. Primordial de ce style de raisonnement de la recherche contemporaine et de la réforme de l'école est la statistique. Historiquement, les statistiques modernes impliquent le paradoxe de l'administration des populations par l'État au nom de l'indépendance et de la liberté. Les calculs internationaux contemporains et le classement de la performance des élèves intègrent ce paradoxe de l'administration des populations. Leurs numéros fabriquent les principes sur qui est l'enfant et comment il devrait être. La fabrication qui fait de l'enfant une sorte de personne est produite par les distinctions, les catégories et les grandeurs incorporées dans les statistiques. En outre, la comparabilité dans les inventaires et les profils des types de personnes produit différence et exclusions dans la poussée pour l'inclusion. L'analyse est dirigée vers les études de la science et les politiques de la connaissance.

Mots-clés: Statistiques. Gouverner. Inclusion/exclusion. Fabrication des types humains. Système de raison.

Introduction

Populations are seen as merely data that locate a field of intervention and social planning in order to bring social betterment and progress. International and national statistical reports, for example, invite comparisons over time and space, between categories, and which can be used in various kinds of quantitative analyses, particularly as researches relate to educational policy. *Education at a glance 2014: OECD indicators* (OECD, 2014),[1] a report of the Organization of Economic Co-operation and Development (OECD), provides multiple statistical comparisons, not only about the populations enrolled and completing

schools that relate to social and economic factors, but also about school results and student achievements. OECS's Program for International Student Assessment (PISA), Trends in International Mathematics and Science Study and the United States' National Assessment of Educational Progress (NAEP) use populational indicators to report national progress, for example, in science and mathematics achievement. Less obvious but included are inscriptions of populational categories of the poor, racial, and immigrant groups.

The inscription of populational "thought" in reforms and research is important to consider beyond the overt desire to provide more productive and just societies. The inscription of populations as the autonomous subject targeted as the substance of change in reforms and research is not only of data ordered by the numbers. The numbers of statistics are given plausibility and intelligibility through overlapping and multiple historical practices that are not merely only about the logic of the numbers. It is this system of reason in which statistical grouping of people into populations we give attention to. Our argument is that the "thought" of populations in educational practices entails double gestures and a paradox: the practices to include populations and produce equity doubles back on itself as processes of abjection that produce exclusion (POPKEWITZ, 2008).

We proceed in the following way. The first section considers modern statistical reporting as an element of the governing of modern social life. That governing is through the inscription of a particular system of rules and standards that orders the problems, judgments, and the system of rectifications that are made to shape educational change. The second section explores the set of rules and standards embodied in "thinking" about populations. It uses the notion of fabrication as having a double sense of a fiction and a making of kinds of people that schooling can administer. Theoretically and historically, fabrications of human kinds enable a consideration of the relation of individuality and social belonging in school reforms. The final section considers the notion of "at-risk", a common category in national and international statistics, to consider how this phrase embodied a system of reason that simultaneously excludes in its impulse to include.

Our approach is diagnostic and historical: to ask historically how numbers are given plausibility and considered "reasonable" as a way of thinking about policy and research, and to ask the limits of such thought in questions about social inclusion and exclusion.[2] Arguing in such a manner provides a different mode of studying educational questions than found in analytical strategies of empiricism (what works!) and the dialectics of critical theories of education. Thus, our argument about educational statistics is not about its "goodness/badness," usefulness, bias; nor it is to censure or condemn numbers or statistics used in education. It is to place those practices within a broader cultural and political context of rules and

standards inscribed in reforms as the political through its normalizing, dividing, and excluding.

Statistics as cultural practices: political arithmetic and the taming chance

Thinking of people through statistical reasoning is so much a part of our "reason" that we are often unaware of this "belonging" as a historical invention. Statistical reasoning about large groups of people is one of the important inventions of the 19th century.[3] Statistics did previously exist, but it was about individual phenomenon. It was not possible to "think" about populations or large aggregates of people through numbers until different historical inventions came together from mathematics, statistics, physics, and state administration in the 19th century.

This section explores three qualities of modern statistics as a mode of thinking about populations. One is statistics as a particular way of reasoning in the governing of modern societies. Second, the "homeless mind," a double movement in the knowledge associated with modernity. That knowledge entails its distancing strategies formed through abstractions that function as methods for ordering daily life, experience and belonging. Statistical reasoning about populations is one such strategy. Third, statistics functions to tame change and the seemingly uncertain modern life through providing administrative tools that stabilize and harmonize social relations and processes.

Statistics as a technology of governing

Statistics joins with the idea of the welfare state in the governing of the modern nation.[4] Social histories of statistics locate it in the formation of the modern German, French, and British state. German theorists' concerns with the science of police in the 18th century were about regulating and keeping order. *Statistik,* the German term, was historically a method of policing. It was to calculate the administration of the population to secure the ends of wealth, public order, virtue, and happiness. Statistics, for example, ordered the populations to control for epidemics and to regulate tax collections. By the 19th century, the French word *statistique* and the British *statistics*, words signifying the arithmetic of the state, were to coordinate the relation of human needs to state interventions. State administrators, for example, spoke of social welfare in terms of biological issues — such as reproduction, disease, and education (human "nature," individual development, growth, and evolution).

Statistics as a tool of social intervention embodied a particular system of reason that is not merely that of the numbers themselves. By the 19th century, state planning for progress was linked to notions of planning people: the state could intervene in social life to enable the action (agency) of the individual to plan one's life for future happiness, the latter as a central political theme of the republic and democracy. When people spoke about police, Foucault (1979) argues, they spoke about the specific techniques by which a government in the framework of the state was able to govern so that individuals would be "productive" citizens. Statistical knowledge makes it possible to conceive of economy and society as modes of intervention. It is a technology that composes people into probability theories about populations. The creating of populations was a way to think about and plan in order to rectify "harmful" social and economic conditions as well as to enable the individual to become a self-governing citizen capable of acting with freedom and liberty (HACKING, 1990; ROSE, 1999).

Statistics defined qualities and characteristics of humanness into populational categories. Populational characteristics function as associations between statistical groups of people and the attributes of particular children, even though, strictly speaking, statistical predictions have no bearing (or predictive power) on individuals. The War on Poverty in the United States, for example, entailed the invention of the category of poverty as a schema for social administration and intervention. Poverty existed prior to that, but it was not classified and tabulated as a device of state policy and research to plan for intervention with specified populations for moral and economic purposes. Poverty was conceptualized in instrumental and empirical terms related to statistical aggregates from which specific characteristics could be ascribed to the person and according to which his or her growth and development could be monitored and supervised.

The construction of populations is a social technology for thinking, seeing, acting, and feeling about changing social conditions and, while not often considered, changing people (CASTEL, 1991; HACKING, 1990; 1991; in education, POPKEWITZ, 1991). Defining how people "fit into" a group is more than just a way to classify. Statistical knowledge embodies distinctions that overlap with the politics and culture of daily life. From the various characteristics of child development related to age and school grade to social characteristics of children (urban, at-risk, disadvantaged, gifted, adolescent, achievement), contemporary schooling is ordered through statistically derived categories of populations and is heightened, for example, through current American policy discussions of high stakes testing and of international comparisons of student academic performance in Swedish policy and research.

Populational reasoning is no longer deployed solely as state or administrative reasoning, but also as the teacher's reasoning about how to order and identify children in relation to the selection of curriculum and instruction (POPKEWITZ, 1998b). When educators talk about children as adolescents, disadvantaged or gifted, for example, such reasoning embodies populational (probability) reasoning.

The reasoning, however, is not merely about statistical aggregates of uniform members of group with particular characteristics — such as children with low self-esteem, from broken homes, or low-achieving ones. First, the categories provide a materiality to the problem and causes for rectifying social issues. The principles order and structure what matters in school planning, and for individual to think and act their experiences. Populational categories, for example, are inscribed in research about "funds of knowledge" (GONZALEZ & MOLL, 2002). The research directs attention to what teachers are to recognize for organizing instruction of the learning styles related to children "belonging" to particular classifications of populations. Programs are established for remediation of targeted populations; books are written about groups classified as ethnic populations; research is organized through concepts and theories of cultural and social patterns of family child-rearing practices among those populations. And, classroom teaching entails modes of classifying children as members of populations for teachers to experience and act on.

The inscription of populational reasoning is prominent in international comparisons by means of large-scale assessments. During the last decades, this kind of research has expanded radically and it is often used in policy-making in order to identify and find solutions to educational crises; for example, the results on PISA studies in Germany and Sweden have played an important role in policy and research. Similarly, there is an expansion in research publications based on dealing with outcomes of such international comparisons. Lindblad, Petersson & Popkewitz (2015) identified more than 11,000 publications on this topic during the period of 2003–2014. Populational reasoning has played a vital role in determining differences in achievement defined between taxonomic groups that serve to delineate a nation's educational system — in terms of gender, social or geographic origin. The differences are compared to social, institutional, and management qualities of school systems to analyze the reason for such gaps in education, culture, or society, as well as in relation to individual characteristics and career directions.

This work of statistics functions as making children into cultural objects is comparative. The style of reasoning about populations is presented through categorizations, associations between taxonomic groups and normalcies in performances of different social and economic groups, and modeling of change that embody the hope (sometimes as the promise) to rectify inequities and inequalities

on behalf of these groups by means of different education measures. This style of reasoning is translated into educational policy discourses in order to improve international ranking or to minimize educational deficits, as defined by international comparative research.

This leads to a second quality of populational reasoning. Numbers and categories enter into the cultural and political spaces of policy, research, and programs to inscribe a comparative style of reasoning. The comparativeness is never merely about the numbers, its magnitudes and equivalences. While we return to this latter, statistics is a social technology that differentiates, normalizes, individualizes, and divides.

If we turn to the progressive political and educational reforms of the turn of the 20th century, statistical laws governed a population, so as affect what was previously understood as inevitable historical development. The fundamental operations of the new statistical knowledge were embedded in what was called a moral science. It was to bring the greatest happiness to the greatest number. But this notion of happiness counted and measured not so much men and women's happiness, but oddly enough the happiness of populations classified as outside the realms of happiness: the poor, the immigrant, races other than "American," and so on. In an important sense, the populations identified for planning were those constituted as the "unhappy" and outside of normalcy because of immorality, criminality, prostitution, divorces, poverty, and hygiene.

The relation of normalcy and pathology is (re)visioned in contemporary research to recognize differences for inclusion by establishing difference. The achievement gap and categories of the "urban," social disadvantaged and at-risk child in North-American and many European contexts entail the recognition of the child who is different that inscribes differences and divisions. The statistical ordering and classifications to include simultaneously embody relations between normalcy and pathology. Statistical tables about learning, achievement, and the characteristics of the teaching instantiate social and cultural distinctions that loop into everyday life to divide the individual attributes of the child who "achieves" from the child who does not "fit". Maybe this comparativeness is the albatross of modern social science that represents differences as the qualities and attributes of populational kinds of people. The paradox of the statistical reporting places people in a continuum of values that classifies and enumerates central tendencies with the extremes as the pathological.

What is important is to make visible how the very technologies of science are political practices, not withstanding the methodological rigor. The system of reason and comparative distinctions stabilize the structuring principles of the present in the name of rectifying of social wrongs.

Numbers as promoting the Common Good and Human Agency

In many ways, the discussion of populations is related, with some irony, to the idea of agency. Using the language of political theory, agency entails the movement of the objective order of institutions into the realm of subjectivity that is administered in the name of freedom (POCOCK, 2003). European reformation concepts of the person were revised as categories of the human mind whose soul had moral and rational qualities for intervening and changing one's life (MAUSS, 1938/1979). The agency of the individual was made into the primordial category of progress as human interventions to bring perfection to the future.

The invention of statistics to order and differentiate large groups of people is embodied in this broader historical and political commitment to human agency. Statistics brought together large numbers of discrete attributes of the individual into a social whole that could be operated on in order to promote the general good and freedom of the individual. That was, at least in theory, what political arithmetic was to bring to civil society. Theories of agency constituted people as autonomous subjects of motives and perceptions to determine the actions that shape the future (MEYER, 1986). Concepts of agency and human interests in Anglo-Saxon-, French-, and German-speaking worlds inscribed an individual who could know and act in the world that allowed the discovery of an autonomous social order subject to its own laws (WITTROCK, 2000). The invention of modern political polling, for example, was a response to mass government during the 1930s in the Unites States, where representative government replaced the town hall meeting and there was a need to symbolically reassert agency in the new contexts of governing (MERELMAN, 1976; in relation to methods of science in education, POPKEWITZ, 1981).

Yet against such divisions is the historical invention of agency coincided with the "invention" of society and the social. Varela (2000) argues that the formation of individual personalities, individual subjects, and the idea of society emerge at the precise historical moment when the legitimacy of power was being based on the idea of a general "will." The individual in the 18th-century French *philosophé*, for example, was bound to the "discovery of society" in a process of disengagement from the religious representations. While the word *society* is presented prior to the enlightenment, it emerges to provide a way to think about collective human existence instituted as the essential domain of human practices. Prior to the 18th century, society was a notion about associations of people, and not about collective "homes" and belonging. Ideas about progress, civilization, and pluralism are possible only with ideas of society as their implied reference (BAKER, 1994). They assume the logical priority and moral values of society as the frame of collective human existence.

Taming chance and ordering change

The "reason" embedded in statistics is the *taming of chance and change* (see, e.g., HACKING, 1990). Statistical reasoning can be historically thought about as related to the erosion of determinism in the 19th century. Predetermined social order or religious cosmologies no longer are able to give direction to action. The history of modern statistics is "the measurement of uncertainty" (STIGLER, 1986). The particular historical virtue of statistical reporting is that diverse and social phenomena in flux are stabilized to order the phenomena amenable for observation, calculation, and administration. Modern statistics (and the social sciences that incorporate elements of statistics in its discovery practices) replace the 19th-century notions of human nature with the idea of the normal person (and people) through which order and regularity can be given to contingency.

The taming of chance is important to modern democratic governing. The emergence of democracy, the rise of organized capitalism, as well as social and philosophical thought, made change and uncertainty seem a precondition of life itself. The notion of incessant change, for example, is built into the very idea of progress and the idea of the republic that brings the enlightenment's cosmopolitan citizen into political theories. The future is built through the citizen whose participation is necessary for the government. The ideas of liberty, freedom, and the agency of the citizen are built on notions of the contingency of the present in the development of progress.

The contingency, however, continually embodies certainty. This relation of certainty and uncertainty appears in turn of the century psychologies of the child that were translated into models of curriculum. The child studies of G. Stanley Hall and the connectionist psychologies of Edward L. Thorndike at the turn of the 20th century embodied images and narratives about the child that was a normalized vision about who the child should be. The universalizing of the child provided comparative principles to reason about differences in the growth, development and modes of thinking of immigrant and racial populations (POPKEWITZ, 2008). The probability theories about allowed a continuum of difference from what was "natural" for the child at any point in life.

Contemporary international measurements of student performance maintain the relation of certainty and uncertainty, but with a different assemblage of principles about nature and process. The assumption is that the right classification and the correct sorting can be arranged, so that social problems can be confronted through a course of action that will change people for the better and will prevent others from joining the ranks in which those social problems are located (HACKING, 1995, p. 360).

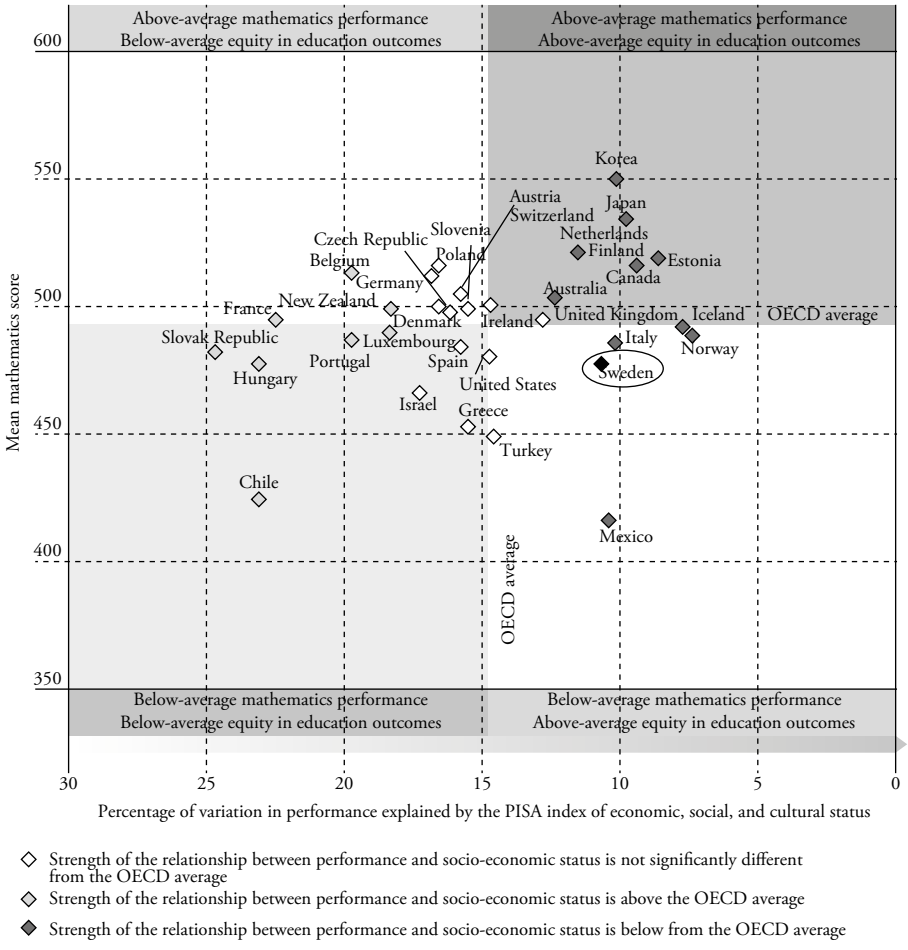
Figure 1 from the OECD portrays different national school systems in terms of student performances on achievement tests and how these test results correlate to the individual's socio-economic status. Sweden, for example, appears as below average in test performances and it also has an increasing connection between socio-economic status and test results. These and similar statistics are used to fabricate and to visualize the decline of education in Sweden in comparison to other nations. The statistics also serve to identify the imperative for implementation of change models to improve schooling. The imperative for change coexists with fear that improvement in Swedish schools is to prevent not only further decline in schooling, but the dangers of decline of society itself.

As the international comparisons of student performance are examined more closely, the related sets of principles concerning certainty and uncertainty with hope and fear in the change of schooling become more visible. The certainty and uncertainty are embodied in the assessments ordered through the abstractions of the school as a system whose desired qualities are called "international benchmarks" that establish the norm of reference to the theory of effective schools. The benchmarks are what is to be achieved for the successful future of the student and society. The statistical measures of OECD generate principles of certainty as they are to provide "knowledge to real-life situations and be equipped for full participation in society" (OECD, 2016).

The descriptive quality of language is not descriptive at all. It is productive through tying the descriptions to design models of intervention. The authors of an OECD national report in Sweden, for example, assert, "We provide external and independent assessments of education policy and practice, from an international perspective, to raise education outcomes" (PONT & DONALDSON, 2014). Its subtitle is "main issues and next steps" and offers highways for nations to increase performance. The design of processes that OECD declares is tailor made for each nation context unites principles of contingency and uncertainty with certainty — the logic of its practice is more complex than the practice of logic that would separate and pose the certainty and uncertainty as at oppositional poles.

The principles of certainty and uncertainty (contingency) overlap with principles of normalcy and pathology. Statistical comparisons of student performances emphasize the components that concern teacher professional selection and development, as well as ascribe social and psychological categories of the child and family that do not succeed on the assessments. These are then related to curriculum designs so as to maximize performance outcomes. The OECD report in Sweden (OECD, 2015), for example, maps differences among nations and Swedish performances to talk about strengths and challenges — disequilibrium or pathologies that prevent the nation from maximum system utility. The initial

Figure 1
Student performance and equity, PISA, 2012.



Source: OECD (2015), based on OECD (2013).

graphs of the report focus on measures of social equity and social economic impact of student performance. This is followed textually through the reporting of the performances of 15-year-old ones who do not reach minimum performance levels in mathematic assessments.

Contextual factors are those statistical differences that produce disequilibrium. This "background" knowledge correlates performance assessments to differences in psychological and social characteristics of students and teacher pro-

fessional development. Psychological differences among nations are defined, for example, through categories of student motivation, student perception of self-responsibility for failure, and student truancy. The psychological differences among students are textually followed by elucidating the differences in national teacher professional development and school leadership factors, recorded as differences from OECD averages in relation to national averages (how school leaders spend time, allocation of resources and school funding).

Context is those characteristics of differences that can be calculated, managed, and administered through models of interventions. The correlation to the benchmarks that served to define "context" elides specific historical, national, and cultural qualities of schoolings for assessing national characteristics. Context referred only to those elements that "fit" into the classification scheme of the management model that erased every specificity to historical places and cultural/political spaces.

Statistical knowledge that orders and classifies populations is so deeply embedded in modern thought that it is difficult to think about the socialization of the modern child without reasoning through the probability theories of statistics. Yet, we rarely consider the numbers of populations as a particular system of reason with certain epistemic characteristics and qualities related to governing through particular rules and standards of reason, such as the taming of change and chance and those of the "homeless mind."

"The homeless mind"

One of those qualities of the "reason" embedded in classifying people as populations is what Berger, Berger, and Kellner (1974) call "the homeless mind," that is, being able to reflect about the *self* as both object and subject. Drawing on the sociology of knowledge, the authors see "the homeless mind" as a way of acting and "seeing" in the modernity that entails a particular consciousness. They associate this way of seeing and thinking with bureaucratization and technological production. Our interest in "the homeless mind" is less about these institutional characteristics and more about how much quantification embodies broader historical principles about the relation of individuality and collective belonging and "home."

"The homeless mind" captures the idea of the reason of the "enlightened" person as having the capacity to see "facts" as external to the self, but it still passed through the subject's consciousness. This consciousness provides conditions that replace previous reliance on face-to-face relations to assess truth, honesty, and honor. Truth is tied to modes of conceptualizing and analyzing, a rational temporary order to daily life and its possibilities of change

(see, e.g., SHAPIN, 1994; BLEDSTEIN, 1976). That consciousness embodies possibilities to systemize, conceptualize, and administer the self in social relations. The method for understanding is to create abstract sets of concepts to talk about society, nation, a citizen, family, and childhood in ways that were not available previously. Moreover, it creates a separate realm for human reason in processes of change from the reasoning about finding the heavenly rules in God's earthly world.

The abstractions entail a particular "homelessness" to modern consciousness. That "homeless" entails abstractions about distinctly human existence that seem to have no historical location, cultural specificity, or geographical boundaries. The classifications and measurements that accompany these concepts in the 19th century embodied the logic for interpreting distant events that works back into everyday life and human experience. The new probability theories enabled the codification and standardization of dispersed phenomena under a singular umbrella of population's societal attributes and economics. Statistics provided new ways to think about changing conditions through the abstractions of society, economy, and culture. People were classified within populations to identify or rectify "harmful" social and economic conditions as well as for policing and organizing the security of populations.

At one level, the social practices associated with numbers and populations are just the opposite of producing places of belonging. Quantification, for example, is a technology of social distancing from the immediate and the local by providing a common and universal language (PORTER, 1995). The distancing and abstracting of the self as a reflectivity is a hallmark, if we can use this word, of the modern expertise of the human sciences, found in Freud, Marx, Durkheim, Weber, Vygotsky, and Dewey and carried into contemporary social and educational practices.

The quality of numbers as locating the self in an abstract order of human things is to lose sight/site of one's home and its immediacy to create strategies of distancing for reflection. The distancing is a process of individualizing that becomes reinserted into everyday life as theories about what is seen and acted on. The previous examples of thinking of one's self as a worker, in an ethnic group, or as an adolescent, are this double quality of distancing and abstracting in a manner that serves as a global positioning system (GPS) for everyday life. "Thinking" through probability theories about populations provides a way of "seeing" oneself in the universal time of humanity that also loops back into that life and its principles of ordering. The homeless mind is a characteristic of numbers, and statistics is its technology for placing individuals in a relation to transcendental categories that seem to have no particular historical location or author to establish a home.

Nevertheless, this distancing is a rapprochement with the immediate and the recreating of belonging and hope. Here is the paradox of the enlightenment and its "modern." If we use the categories of the psychologies associated with the conscious/unconscious, zones of proximal development, and problem solving as classifications common in schooling, they are abstractions for thinking about the child and about how the child should "think" and act. The abstractions of kinds of people are inscribed as systems of reflection in the spaces of personal knowledge. The reflective teacher and action research, for example, deploy abstractions about "practice" as simultaneous concepts about what to notice in classroom teaching and as a theoretical canopy about the processes for thinking about what should be done in the application of "reflection." The abstraction of "the reflective practioner" is brought into programs, theories, and narratives about the expert and professional teacher who administers children. The "homeless" mind, if we can use the phrase, finds its home in everyday life. The teacher becomes the problem-solver as a model of life that "acts" as a flow between universals where the self is made into a distanced object of reflection and the immediate site of acting and experiencing.

The homeless mind, then, is a way of thinking about one's self outside of a particular place that yet gives meaning, attachment, and affiliation that links individuality to collective spaces of belonging embodied in concepts of the citizen and the nation. To think through populational reasoning is to engage in a particular consciousness of the homeless mind that render domains as representable and applicable for calculation, deliberation, and administration. International comparisons of school results are *inscription devices* for governing conduct through processes of distancing and attach the self to particular sets of rules and standards.

Making up people and biographies: ordering agency and action

We began the discussion by arguing that statistics embody cultural and social distinctions when deployed in schooling. We further argued that statistics in educational phenomena embodies a particular form of "modern" consciousness related to the homeless mind. In this section, we further purse how numbers circulate and are connected to the system of reason that gives intelligibility to school reforms.

First, we discussed that there is nothing natural or inevitable about "seeing" children in schools as belonging to populations, such as using achievement performance levels, stages of childhood (adolescence), or differentiating the child in the "normal" distribution from the disadvantaged one, the immigrant, and the "at-risk." One way to think about the classifications of populations is fabrications that make particular kinds of people. Hacking (1995; 2006) says

that the human sciences produce human kinds in the very processes of discovering "facts" about people. This process of producing kinds of people can be thought as a fabrication. Fabrication is an intellectual "tool" to think about the ordering and classifications of children's learning and achievement as making up people. The notion of fabrication helps to explore the particularities of statistics in making *kinds of people*; i.e., inventories or profiles of classes of people that can be managed and self-managed.

Second, the fabrication of kinds of people is not merely about management techniques. It brings into its categories and analyses a particular modern mode of life. The abstractions about kinds of people instantiates change as embodied in processes that link past, present, and future. The temporality is embodied in Hegelian dialectics and analytical notions of identifying processes for managing development and growth. One's biography is planned as a series of ordered events — *being* a lifelong learner, an adolescent, a teenage parent, and so on.

The fabrication of kinds of people brings us back to the earlier discussion of "the homeless mind" in linking individuality with social belonging and "home." This historicizing of statistics within a system of reason makes possible cultural and political processes of making kinds of people. However, it also brings into view the comparative distinctions that establish equivalences and standardized norms as simultaneously producing differences. These differences are not merely those of the numbers and the calculations of magnitudes. The making kinds of people embodied the making of differences, inclusions, and exclusions.

Fabricating people and the problem of exclusion

Statistics as inscription devices that fabricate kinds of people have four different, but overlapping, qualities in the social sciences that relate to numbers, international assessments, and issues of teaching and curriculum.

First, and discussed before, are the double nuances of fabrication. To fabricate is to create a fiction, and to fabricate is to manufacture something. At one layer are notions of minority, immigrant, and teenage parent as categories invented or brought into social science and policy as ways to order and classify things of the world that are thought as requiring attention. Categories of the immigrant and "guest worker," the gifted child and the disadvantaged one are fictions to respond to things happening in the world. The fictions, however, are not merely about thinking or imaginary classifications. *The fabrications manufacture kinds of people*. This double nuance of fictions and manufacturing makes possible as new techniques for structuring reality and producing new phenomena to consider. Survey instruments and databases about the worker and non-worker,

gifted and delinquent child, and immigrant populations order information that can manage programs for rectification of social problems — to provide for diversity and intercultural education, and for programs to ease the difficulties of being an immigrant, and so on.

The child study movement and its classifications of youth and adolescence entail the fabrication of human kinds. Hall's classification (1904) of children's development as an "adolescence" is not an object that one can touch, but ways of thinking, "seeing," and feeling about "the things" of the world that were (and are) deemed important. Hall (1904) used the notion of adolescence to respond to perceived events of the world of childhood and with it to manufacture theories and programs that would influence how the teacher taught along with how families and children think about themselves.

It is not that the notion of adolescence was not used earlier. The Romans used the word *adolescence* to talk about growing up, but they and the medieval world did not make the child as a distinguishable populational group in society whose particular presence required attention. Adolescence is, in part, to provide a way of ordering conduction of children coming into the newly formed mass school that includes "urban" youth associated with European immigrant and African-American populations that moved from the south to attend mass schooling at the turn of the 20th-century America.

More than we like to think, the human kinds fabricated in schooling targeted for administrative intervention are populations seen as different or deviating from the normal — as in opposition to what is captured in the notions of the normal child, normal speech, and normal development (HACKING, 1995, p. 371). Adolescence was not only a way to think about who the child is and should be. Adolescence loops into and becomes a thing to act on and to think about whom one is in the world. Theories of children's growth and development, programs of remediation for children who were not learning, self-help books for parents, and medical languages mapped the normal and abnormal.

The naturalness of adolescence as a category of childhood is unquestioned nowadays. The "profiles" or "personal inventories" of the adolescent as human kinds aggregate that they are acquired to fill in details for the abstraction about its constitution to reason about people's capabilities and capacities (HACKING, 1995, p. 354).[5] Theories of youth and adolescence create impersonal categories that move across different sectors of schooling that currently provide benchmarks for teachers to work on the territories of youth conduct.

Second, the fabrication of people embodies normalizing and dividing. Fabricating people is mapping cultural spaces about the qualities and characteristics of the normalized qualities and characteristics of the kinds of people included,

differentiating and classifying the qualities and characteristics that normalize and pathologize differences.

The distinctions and differentiations that ordered the child's growth and development in child study were never merely that created through science alone. Hall's child studies at the turn of 20th-century America enunciated a particular cultural thesis of who the child should be. Adolescence was deployed as a particular strategy that not only standardized the normal, but simultaneously recognized different populations through their qualities of development and growth. Its distinctions and differentiations assembled and connected enlightenment hopes of "reason" and science with political theories of participation, Christian ethics, and social biology to articulate a psychology of the child as the future cosmopolitan citizen.

The making kinds of people has made differences that embody double gestures. The fabrication of adolescence, for example, connected discourses of medicine, psychology, and pedagogy to calculate what was normal and pathological, treating the problems that arose from calculable deviations. The discourses embodied the gesture of hope that the transitional stage of adolescence can be managed to ensure the proper development in becoming an adult. Nevertheless, simultaneously with the gesture of hope there were fears of youth as a dangerous population that threatened the moral order through sexuality, criminality, among others. Parents, authors of childrearing books, or teachers would argue about the need to pay attention to the adolescence of the child in order to produce a productive and self-responsible adult.

Those hope and fears were inscribed as the conditions of urban life and the reforms about how people lived. Hall's study of the adolescent, for example, embodied reform movement concerned with the social question, a term used by Protestant reformers and social scientists in American progressive social and educational reforms. It was concerned with the moral disorder of the city and differences among particular groups and qualities of living abjected as outside of the cultural spaces of the "American race." The latter was a phrase to describe the kinds of people who embodied the promise of American republicanism and as different from women not at home, particular immigrant and religious groups (Irish Catholics, Italian, Eastern immigrants), and racialized groups such as Chinese immigrants and African-American who were freed from slavery after the American Civil War.

Third and related, the double gestures embodies in the comparative codifications and standards. One contemporary kind of person is the teenage parent, who is recognized as different for inclusion through the inscription of double gestures. The teenage parent is classified as having succinct chronological, physiological, and legal clauses and can be applied to many cultures — *the kind* is a teen-aged female, pregnant, and (an unwritten premise) unmarried. The nor-

malization of the "teenage parent" ("school-aged mothers"), Lesko (1995) argues, is produced through an interpretation of need produced in the cultural and political debates about American morals and family values. *Teenage parent* was constructed in the white American suburbs of the 1960s, but it connotes the early parenting in the Black urban ghettos in the 1980s and 1990s (see, LESKO, 2001). Cultural debates about family deterioration, permissiveness, and dependency are translated into individual faults related to bad values, hopelessness, and lack of future. Statistical measures are made to compare poverty levels of children, school achievement at specified grades, and other social and culture factors (e.g., *teenage parent*), in order to direct funds and programs to failing schools. Statistics collected by the United States Centers for Disease Control and Prevention, for example, identified 68% of parents who have children out-of-wedlock are African-American (MARTIN et al., 2015). Recently, a new euphemism was introduced by sociologists: early parenting.

Fourth, the distinctions embodied in the statistical measures make biographies as kinds of people. A script or narrative forms as a biography in which the numbers are augmented with qualitative practices, such as portfolios in the new curriculum and teacher education standards about diversity. The representations in the U. S. census after World War Two embodied new classification of people for ethno-racial management. The category of Latino emerged, for example, to classify people from, for example, Brazil, Haiti, Argentina and Mexico as a single population. Today, this category of statistical reporting works into social movements and policy in education to define heterogeneous populations as homogeneous through the system of reason applied.

The profiles and inventories of the adolescent as a kind of child codified and standardized "youth" as a category of kinds of people in international assessments. The statistical data to see *Are students ready for the technological-rich world: what PISA studies tells us* (PISA, 2005) or *Risks and outcomes of social exclusion: insights from longitudinal data* (BYNNER, 2000) embody categories of different human kinds. The reports identify students who fail; instructional programs were devised for remedial measures of children who fit these categories of "not passed subject" and foreign background. Summaries, charts, graphs, and tables identify the characteristics of youth to provide profiles of the child who did not fit the picture of the successful student.

The kind of child profiled was then used to invent a plan for intervention through curriculum designs and instructional processes to target groups excluded categorically while simultaneously normalizing and individualizing the categories and distinctions on particular children. In a study that we conducted on educational governance and social exclusion in nine European countries, the distinctions of national and international statistics overlapped with principles generated to interpret experience as different layers of education —

among governmental ministry officials, educational system leaders, and teacher interviews. Swedish governmental reports describing categories of educational nonperformance of students of "foreign background" or "newly arrived", for example, circulated with "on-the-ground" planning of reforms and organizing instructional programs.[6]

Reason, populations, and inclusion/exclusion

The double gestures point to the effect of populational measures as a comparative system of reason that differentiates, distinguishes, and divides. As Dreyfus and Rabinow (1983) argue, all societies have norms. Normalization involves the ordering and individuating of groups in relation to each other for social administration. The distinction imposed through statistical reporting is a special kind of strategic directedness in which norms are always on the move to create standards of the normal in order to isolate and deal with abnormalities given that definition.[7] The categories of school dropout or leaver, minority, or special education are important administrative categories deployed in the problem of social inclusion. The categories of *human kinds* in statistical reporting distinguish, enumerate, control, and orders deviations in relation to bureaucratic imperatives.[8]

Populational distinctions organize difference. That entails comparative installations that differentiate and divide those who are enlightened from those who do not have those qualities — the backward, the savage, and the barbarian of the 19th century and the at-risk and delinquent child of the present. School reforms, for example, are to provide an inclusive society in which "all children learn" and there is "no child left behind." The gesture is to make all child the same and on equal footing. That gesture of hope overlaps with fears of the child whose characteristics are not cosmopolitan and a threat to the moral unity of the whole — the backward and feebleminded at the turn of the 20th century and the disadvantaged, the poor, and those populations designated as ethnic and immigrant, signified in the American context as the child "left behind." Teaching and learning theories simultaneously embody the assertion of the homogeneity of values, and norms that downplay differences of people by emphasizing what is common — or what should be common to and "the nature" of — all human beings.

The construction of difference is complex as it entails processes of abjection. The hope to include "all children" simultaneously entails a jettisoning of those particular groups. This jettisoning or casting out is called "abjection" in feminist and social theories and post-Kantian political theory. The apparatus of abjection is a way to consider how certain principles of inclusion produce others that do not enjoy the status of the subject, but whose lives are circumscribed by the cosmopolitan modes of living. The abjection is embodied in narratives of free-

dom and democracy in 19th-century American literature. Morrison (1992) argues that such literature inscribed a language that "powerfully evoke[s] and enforce[s] hidden signs of racial superiority, cultural hegemony, and dismissive 'Othering' of people and language" (MORRISON, 1992, p. X). Today, that "Other", who is not yet inside, but recognized to be included yet different, is expressed in notions of the disadvantaged and the "child left behind" as signified in recent United States' legislation.

The process of abjection is embodied in the recognition given to excluded groups marked for inclusion, yet that recognition radically differentiates and circumscribes something else that is both repulsive and fundamentally undifferentiated from the whole (see SHIMAKAWA, 2002). The category of "immigrant" is illustrative. The immigrant is a category of a group and individuals whose status is somewhere not quite "in" — worthy for inclusion, but excluded. The immigrant lives in the in-between spaces between requiring special intervention programs to enable access and equity and at the same time established difference and the Other, outside by virtue of their qualities of life.

Abjection, then, is a way to think about the complex set of relations of inclusion and exclusion; the casting outside and placed in an in-between space and excluded in the same phenomenon as the cosmopolitanism of schooling. Pedagogical practices are simultaneously drawing in and yet placing outside certain qualities of life and people. The processes of abjection are embodied in the differentiation of the cultural thesis of the lifelong learner from that of the disadvantaged child or "the child left behind" as simultaneous inscriptions in the phenomenon of reform. The latter child is recognized for inclusion yet placed in different spaces that produce otherness.

We can explore the construction and abjection in the *kind of people* "at-risk." At-risk is a category found in statistical reports as well as school programs concerned with rectifying social injustices. At-risk is a word that travels with a range of policies and research practices to organize programs for social inclusion and as a category to critically examine questions of normalizing and differentiating children of color and class (SWADENER & LUBECK, 1995).

The notion of risk and "at-risk" embodies particular rules and standards for ordering problems, making judgments, and forming the possibilities of educational change. When national and international statistics are examined, certain indicators of "at-risk" children are used to recognize those populations to be included. United Kingdom's statistics, for example, use the category "at-risk" to differentiate populational groups that are classified as *ethnic minority* children; a "high risk" category "since 16% of permanently excluded children belong to it, with nearly half of the high risk category being African-Caribbean, even though they make up only 1% of the population" (ALEXIADOU, LAWN & OZGA, 2001). Embodied in the statistics of "at-risk" children are different categories of

numbers that overlap educational, cultural, social, economic, and gendered discourses: truancy, school exclusion and crime, and students with special educational needs defined through a populational discourse of African-Caribbean children and children in childcare.

Classifying children and families as at-risk is a technology of governance through the rules of reason. Risk is "foremost a schema of rationality, a way of breaking down, rearranging, ordering certain elements of reality" (EWALD, 1991). No one "properly" evades it. Its organizing schema of management and rationality can be realized in any and every kind of institution. It can be applied to everyone, depending on how the dangers are analyzed and the events are considered (EWALD, 1991; DEFERT, 1991).

Risk is a category that represents a complex system of ideas that, in a Kantian sense, refers to a no specific reality. It is a category that fabricates human kinds: it is a fiction and it makes kinds of individuals. The recognition of populations at risk addressed is "factors, statistical correlations of heterogeneous elements" (CASTEL, 1991, p. 288). As Castel (1991, p. 291) stated, "we are situated in a perspective of *autonomized management* of populations conducted on the basis of differential profiles of those populations established by means of medico-psychological diagnoses which function as pure expertises".

Risk illustrates a "double hermeneutics." The governing of people is not only institutional. It is also interactive as specific categories are linked to the individual to create individual biographies. This is done by defining the individual as a member of a population that can be monitored and administered in order to prevent the displays of "risk" behaviors. Such reasoning produces knowledge of "otherness." It also embodies the homeless mind. Individuals begin to see their personal lives in relation to a trajectory that is provided by the actuarial tables of insurance. Time is no longer limited to the life space nor interactions of the individual.

Constructing the other: curriculum and research

While there is a disciplinary and political reflexivity about the uses and abuses of statistics, such reflexivity does not examine nor bring into question the rules and standards that are historically mobilized. Contemporary social and educational research rarely asks about the cultural principles that order the theories, concepts, and methods of curriculum research. This is particularly evident where curriculum research takes official categories and distinctions as its framework of investigation — such as the way that state categories of poverty, minority, and ethnicity formed the core conceptual assumptions and the origin of studies to correct inequities.

Our focus on the reasoning is to recognize a significant fact of modernity: governing is exercised less through brute force and more through the systems of reason that fabricate kinds of people and biographies. We have explored this governing through the cultural and political principles that are inscribed in statistics and numbers. Statistical reason embodies the hope of social planning that a better life can be produced for individuals, but this hope involves tensions and paradoxes. Statistics is never merely its numbers, magnitudes, and equivalences. We argued that statistical reasoning connects social, cultural, scientific, and political discourses that form a single plane to make kinds of humans — people who are sites for state intervention and as biographies. We focus on populations as fabricating particular "kinds of people" and biographies that inscribe subjectivities through planning people. The differentiating qualities of the populational data have self-referential qualities that not only define the individualities, but also the trajectories that order the problem and solutions for the life that one should live.

We argued further that the making of kinds of people inscribes a continuum of values and double gestures that normalizes and differentiates the efforts toward inclusion. While seeking inclusion, the very principles that are generated for inclusion divide and render certain groups as different, dangerous, and in need of intervention. It is possible to examine the territories marked for the freedom of the child and parent as simultaneously internments and enclosures that divide and exclude.

The argument poses a dilemma when focusing on international assessments of student performance as addressing inequities. The very acts of social administration deployed by statistical reporting to address issues of progress requires intervention through a practical causality that differentiates, distinguishes, and divides individual characteristics in a continuum of values about the normal and the deviant. By not questioning the kind of system of reason of statistics as it circulates in policy and research, the social and educational sciences lose their ability to diagnose the present critically.

The analysis also raises an important set of distinctions that circulate in the folklore of teaching, research, and policy.[9] That folklore is that division between research and practice, or theory and the experience of the school, such as captured in much of the research on "teacher expertise" or "the wisdom of the teacher." These divisions make possible the thinking of statistics as a set of tools for policy that is different from what people do with the numbers. The division is seen in the decoupling of policy and practice in organizational theory and the often-found dismissal of research as part of "the ivory tower" of the university. The latter is treated as having no connection to "what happens on the ground." We have argued that the system of reason is a material practice that has "real" effects in ordering the nature of social problems, creating kinds of humans that

are acted on, and fabricating biographies. The decoupling and the distinction between theory and practice can, at this point in the analysis, be seen as historically and practically naïve and eliding of issues of power and the political.

The distinction of theory and practice, if we use the previous analysis, serves epistemological obstacles, to use loosely Gaston Bachelard's famous term, for understanding the governing functions in modern society and the different circuits through which inclusion and exclusion are produced. Important to the reflexivity of educational and curriculum research is how particular conceptions and rules of reason circulate — how is it that the theoretical notions of probability theories and populational reasoning "fit" so well and are "seen" as "practical" to policy makers as well as to teachers in organizing school improvement plans that we discussed earlier? What is narrated as practice is not something providing a "real" and natural knowledge, but something that is produced through a complex set of discursive structuring that situates one as a historical actor and agent.[10]

Notes

1. "This annual publication is the authoritative source for accurate and relevant information on the state of education around the world. Featuring more than 150 charts, 300 tables, and over 100,000 figures, it provides data on the structure, finances, and performance of education systems in the OECD's 34 member countries, as well as a number of partner countries" (OECD, 2016).

2. Since we began this project on statistics in 2000 with a European Union 7th Framework study of educational governance and social exclusion, there have been extensive studies of statistics in policy. These studies have generally focused on the social field and networks in which statistics are deployed with Europe. See, e.g., Grek (2009). Our interest earlier and here complements these studies, but it is different in its concern with systems of reason.

3. There are informative histories of the discipline of statistics for the interested reader. See, for example, Stigler (1986) and Alonso & Starr (1987). See also Bowker & Star (1999), Hanson (1993), and Gould (1981).

4. *Staatenkunde*, the systematic study of states, an early form of what was called comparative politics, appeared in municipal censuses in Nuremberg in 1449 (Alonso & Starr, 1987, p. 13). The English tradition of political arithmetic was the application of rational calculation to the understanding, exercise, and enhancement of state power. In the 18th century, it was to reverse the growth of the state. Statistical societies in the 19th century were to gather objective facts, mostly numerical, but also data that is today called "qualitative."

5. Hacking (1995) directs our attention to differences between things of "nature," such as quarks and tripeptides, and those of human kinds, such as teenage pregnancies and adolescence. When comparing "things" such as camels or microbes, what they do is not dependent on how the categories are used to describe them, but this is not so with human kinds.

6. Foreign background is an example of the many concepts that form a comparative concept that establishes "deviancy" even when created as a moral/political obligation of a society to ensure equity and justice. In one sense, as we will talk about later with the concept of minority, it is only through certain assumptions about the normal "being" of the citizen/individual that the classification of foreign born is applied.

7. While there are multiple modernities, our concern is with the emphasis on reason and science in the European enlightenment in the 18th century that is transported into the 19th-century human sciences, industrialization, urbanization, and the professionalization that accompanied the newly formed democratic states and its citizens.

8. The categories of school leaver or dropout, minority, or special education are important categories deployed in the problem of social inclusion as administrative categories. Hacking (1995) suggests, for example, that the categories of autism or physically or emotionally handicapped are specific administrative kinds. They are not specific disease labels, but an umbrella for many.

9. This is not only a problem of educational theory. From Latour's (1999) discussion of science to Wallerstein (1991) and Wagner's (2001) discussion of modern social theory, there is a continual questioning of the ways in which modern social theory has divided phenomena — what Latour calls the modernist settlement which has sealed off into incommensurable problems questions that cannot be solved separately. Latour talks about the relation of human and nonhuman in science, Wagner about the relation of certainty and uncertainty. Also, see Popkewitz (1998a) as it relates to the social epistemology of educational research.

10. One way of thinking of this construction of experience is to recognize that there is always a double sidedness to the "I" — the historical and the biographical ones.

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