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PISA

Numbers, Standardizing Conduct, and the Alchemy of School Subjects

OECD's Programme for International Student Assessment (PISA) is part of the new toolkit for the management of school improvement. That management focuses on measuring expectations related to school performance and benchmarks rather than on school inputs, such as increasing teacher credentials and the allocation of resources (Hopmann, 2008). The international measurements of what students learn in schools are related to earlier OECD programs. What is an innovation of PISA is its international benchmark that compares students' practical knowledge across nations in literacy, science and mathematical ability. The official documents describing PISA suggests that its numerical assessments rank the "readiness" of nations' schools for the economical imperatives of the 21st century knowledge economies and Knowledge Societies. The assessment of the practical skills in everyday life situations is believed to be correlated to student's eventual participation in the labor market and being productive citizens.

I admit that the promise of PISA is daunting. The concern with practical knowledge necessary for the future is laudable. Yet anyone reading the history of social science and policy would recognize that predicting that future in the present is no easy task. The difficulty is compounded by the mind boggling effort to conceptualize practical knowledge in a world of dissensus rather than consensus. The challenge becomes more intimidating with the tag-along assumption about having foresight in defining the applied knowledge in a world of continual flux and with change as its singular constant. Classifying the future and taming chance to govern change are never a straightforward and practical errand!

Thus my task here is more modest than the goals of PISA. I examine the grid of practices that give intelligibility to PISA's organizing the knowledge of school subjects. PISA is treated as an historical event. Its study is to make visible the principles that order and classify the objects "seen" and acted on the "practical knowledge" of school subjects. The politics of PISA, I argue, are in the principles that order what children should know, how that knowing is made possible, and issues of inclusion and exclusion embodied in these practices.

The first section historically traces the making of numbers as "facts", a presumption that makes the comparisons of PISA possible. Categories of equivalence are established to give uniformity among diversity. The uniformity and diversity, however, entail particular technologies through which the "facts" of numbers are produced through the very methods that are designed to measure children's knowledge. In the second section, I turn attention to the principles of school

M A. Pereyra et al. (eds.), PISA Under Examinarion: Changing Knowledge, Changing Tests, and Changing Schools, 31–46.

subjects that order and classify the "facts" of PISA's measurements. The notion of alchemy is to consider the translation of disciplinary knowledge into the pedagogical knowledge. The practical knowledge about science, mathematics, and literacy education measured by PISA, I argue, has little or nothing to do with the practices of disciplinary fields! Pedagogical knowledge is concerned with the ordering conduct. The internal rigor in PISA's measurement practices is, I argue, built on a chimera; an illusion that has consequences. The third section explores the consequences. The pedagogical models inscribed in PISA assessment of learning science and mathematics generate principles about who the child is, should be, and who is not that child. The principles embody cultural theses about modes of living that are named, as one gesture, as the lifelong learner in the Knowledge Society. These notions of the individual and society, I argue, are not only about a particular kind of person and community. The pedagogical style of thought instantiates a comparative style of thought that differentiates and divides populations in its practice to include.

The strategy is to study PISA as an historical event. It numbers and magnitudes are placed in a grid of practices that give its pedagogical distinctions intelligibility. I use the notion of grid to draw attention to the notions of practical knowledge and the lifelong learner as not "things" or concepts to measure. The objects seen, thought about and acted on in PISA are given plausibility and reasonableness through the scaffolding of different social and cultural practices. The kind of human named as lifelong learner is analogous to a recipe for baking a cake. The cake is made through ingredients mixed together. The outcome is "the cake", an object or a determinant category that appears as having its own ontological existence! The subject of PISA – the practical knowledge of the lifelong learner – is as the cake, determinate categories about the present and future in which different principles come together to order what is thought and acted. The particular grid that makes possible this kind of person is no longer visible. The task of this inquiry is to make visible the grid assembled and its limits in contemporary reforms.

NUMBERS, PISA, AND REFORMING THE FUTURE SOCIETY BY MAKING PEOPLE IN THE PRESENT

PISA is part of a relatively new industry of international comparisons of educational institutions. The international comparisons of pre-tertiary schooling entail, for example, the Progress in International Reading Literacy Study (PIRLS) and Trends in International Mathematics and Science Study (TIMSS) that are used in approximately 60 countries (http://nces.ed.gov/surveys/international/pdf/brochure_USparticipation.pdf).[1] In addition there are a host of comparative measures that rank higher education. These include The ARWU list – often called the Shanghai list, The Times Higher Education list (THE-QS), and The Webmetrics, and The Professional Ranking of World Universities (Lindblad & Foss Lindblad, 2009).

PISA, among these, has a particular importance. The 2007 Executive Summary, for example, describes PISA as involving nations that include "90% of world economy. 400,000 students in 57 countries, 30 OECD and 27 partner countries,

national representative sample representing 20 million 15 year olds." PISA sponsorship by OECD and its comparison of the students' "practical knowledge", in the words of the program, is to measure school systems' contribution to the competitiveness of the nation in the new global economic demands. The significance of PISA, Grek (2009) suggests that other international organizations (IOs), the OECD has become part and parcel of the internationalizing and globalizing and thus converging policy processes that have been commented on by many scholars in relation to education... While it is primarily concerned with economic policy, education has taken on increasing importance within that mandate, as it has been reframed as central to national economic competitiveness within an economist human capital framework and linked to an emerging 'knowledge economy' (p. 24).

The question of this section is, how can the numbers of PISA be seen as "facts" and as a way of "telling the truth" about society, schooling, and children be historically understood? That is, my concern is not with the internal validity or reliability of the test items but with the conditions which make possible the style of thought embodied in PISA. These conditions are more about the making of the citizen and moral economy than about learning particular work skills or the disciplinary cultures in which science and mathematics are produced.

PISA's narratives about the present and future are premised on numbers as "facts" that tell the comparative truth about national schooling and the progressive/ erosion of societies. The importance of numbers is not only in PISA but part of contemporary societies. This is easy to demonstrate, ironically, by citing numbers. If we focus on the U.S. gross national product, measuring people and things absorbs 6% of the U. S. (Porter, 1995, p. 28). But at a more general layer, it is almost impossible to think about schooling without numbers: children's ages and school grades, the measuring of children's growth and development, achievement testing, league tables of schools, and identifying equity through statistical procedures about representation and success rates of populations.

To historicize this making of numbers as "facts", I turn to cultural and social histories. In an important book about numbers and social affairs, Theodore Porter (1995) begins by asking, "How are we to account for the prestige and power of quantitative methods in the modern world?"… "How is it that what was used for studying stars, molecules and cells would have attraction for human societies?" To consider these questions, Porter continues that only a small proportion of numbers or quantitative expressions have any pretence of describing laws of nature or "even of providing complete and accurate descriptions of the eternal world" (pp. viii-ix). Numbers, he argues, are parts of systems of communication whose technologies create distances from phenomena by appearing to summarize complex events and transactions.

The privileging of numbers as a way of telling the truth about social life and people can be expressed through various and historically recent qualities and characteristics in the construction of modern life.

First, quantification is a technology of social distance. The numbers of PISA provide a common universal language about equivalences. Census data about

populations, data about gross national products, and measurement scores about practical knowledge in science, for example, are such categories of equivalence. The number forms a space of governance through the standardization and technologies that transform cognitive schemes of statistics and scientific thinking into spaces of equivalences.

The seeming rigor and uniformity of numbers appear as transported across time and space so as to not require intimate knowledge and personal trust. The comparing inscribes a seeming naturalness to answers in different national settings. As placed in the perennial struggles of sciences and policies against subjectivity, numbers appear to exclude judgment. The mechanical objectivity of numbers appears to follow *a priori* rules that project fairness and impartiality, excluding judgment and mitigating subjectivity.

Second, the objectivity and the sense of equivalence in numbers have become part of the narratives of democracy. In the 18th century, prior to the French Revolution, the philosophers argued for the metric system to replace the vague and local systems of measurement by feet, hands, wheel barrows. An equal measurement system was deemed necessary for equality itself. By the 19th century, numbers defined a space for standardizing its subject and producing an object that seems merely technical, and its proper calculation to enable giving all an equal chance and representation.

Third, the claim of objectivity for numbers was itself instantiated historically in social processes. Any domain of quantified knowledge is artificial through creating uniformity among different qualities of things (Porter, 1995, p. 6). That uniformity gives social authority to particular norms and cultural narratives that are themselves embodied in social science and policy. Numbers embodied in educational discourses, for example, are instantiated by moral and political discourses. The debates about intelligence testing and eugenics have illuminated that the numbers of measurement in schooling never stand outside of its social spaces of production and realization. PISA, for example, is not merely about numbers and comparison about "practical knowledge". Practice is itself a theoretical notion that is system of reason that orders and classifies what is seen, talked about, and acted on. The practical knowledge measured in the formulations of PISA embodies distinctions and differentiations about, for example, children's capacity to solve and interpret problems, and "motivation to learn, their beliefs about themselves and their attitudes to what they are learning". These categories about problem solving and motivation, however, are not merely descriptions of what children do but theoretical qualities from which equivalences and differences are produced to guide the measurement of conduct. Numbers are not merely numbers.

In the above sense, numbers are "actors". The technologies of comparing through numbers are navigational tools that standardized a particular universe of capabilities to enable comparisons (Lindblad, 2008). If I return to PISA, the categories of equivalence – the practical knowledge measured across nations – create a new reterritorialization and scaling of the relation of individuality, the city, and state (Brenner, 1999; also see Stråth, 2002). In the EU, PISA re-envisions the heterogeneity of cultural and political plurality in its member states through a category of "European". The categories of equivalence seem to bring coherence

and consensus among differences for building a European space that is spoken about as competitive and cohesive (Grek, 2009; also see, Delanty, 1995). The relating of children's achievement to PISA becomes part of a unified space in which European education is to become a "world best" system. Grek, Lawn, Lingard, Ozga, Rinne, Segerholm & Simola (2009), for example, trace how the data production circulates through different European institutions such as OECD as an actor that crosses border positions. The new actor is made into a technology called "International Comparisons Programmes Manager" (p. 15).

If we think further historically about numbers, it becomes apparent that the appearance of numbers as facts is made through the making of those facts. This may sound as an odd way of thinking about numbers and what PISA does, almost to the point of an extreme relativism. But that is not what I am getting to. Rather it is to understand how abstractions are made into "things" that enter into daily life as principles governing reflection and action.

This double sense of the inscription of "facts" through making "facts" can be illustrated with the notion of "markets". Markets are a classification that circulates to explain and critique much contemporary policy and thus a useful example of this phenomenon in modern social science. The category of markets presupposes the notion of systems brought into social theory by Scottish Enlightenment historians and experimental moral philosophers. Smith's *Wealth of Nations* (1776), for example, wanted to probe the effects of the metaphor of system to see how the theoretical entities of philosophy (and moral economy) could actually work by measuring and quantifying things such as rents, profits, and wages as influenced by commodity prices (Poovey, 1998, p. 237).

The heart of Smith's moral economy was the "market system". Markets, however, was not something there to uncover its "reality" in order to appropriate and gauge human interest and/or its processes to bring progress. Markets were a method of thought, a grid of economic and sociological analysis, an imagination, and a method of governing. Numbers were applied to create a way to think about the system to which numbers were applied that "embodied [Smith's] *a priori* assumptions about what the market system *should be"* (Poovey, 1998, p. 216, italics in origin).

Numbers as magnitudes to compare differences was to express the "invisible hand" of wealth and society that connected the individual pursuit of profit and the growth of collective wealth; and to show the incompatibility between economic development and the governmental procedures (Foucault, 2004/2008, p. 321). Numbers did not exist prior to Smith to prove the abstraction of markets. Smith set up ways of measuring and calculating as if they did exist, to say something about wealth and governing (Poovey, 1998, pp. 240-1). The sciences of markets would "solve" the problem of studying the particulars observed so as to standardize phenomena in a manner that could be projected into the future. The historical schema focused on the intersection of subjectivity and sociality. It gave importance to domesticity, manners, women, and commercial society as "the most sophisticated incarnation of human sociality through which the human mind would be collectively revealed" (Poovey, 1998, p. 227).

The categories and their magnitudes provided by the numbers became an historical agent of 'human nature', a philosophical universal that could be named and quantified to determine the effects of the abstraction of markets (Poovey, 1998, p. 247). The abstraction of markets performed as a cultural thesis about certain kinds of people. Its "second order abstractions such as labor and happiness… was no longer a universal claim but a "non-rhetorical (nonsuasive) place for a kind of representation that described what *could be* as if this potential was simply waiting to materialize" (Poovey, 1998, p. 248).

My focus on markets and numbers is to draw attention to how theoretical inscriptions given as facts are made into facts. Viewing PISA in this context its collection and aggregation of numbers participate in a "clearing" or space where thought and action can occur (Rose, 1999, p. 212). Numbers standardize and relocate the local and the personal in abstract systems of knowledge that at the same time operate in the spaces of personal knowledge.

Further, the measurements provide constant performance indicators in a continual process of locating one's self in the world that are analogous to global positioning systems (Simons & Masschelein, 2008). PISA globally positions the child and nation through a style of thought that differentiates and divides through creating categories of equivalence among countries. The categories of equivalence (or sameness) function as an identity to represent difference. What now needs attention is how numbers do not act alone but act as they are inscribed in a grid of practices that give intelligibility to kinds of people. The "facts" enlisted through PISA's measurements of practical knowledge are not merely descriptive of something "practical". They are assembled historically in a manner that creates a cultural space that shapes and fashions modes of living.

PISA IN A GRID OF PRACTICES: THE ALCHEMY OF SCHOOL SUBJECTS

Numbers, I have argued, embody particular styles of thought that establish categories of equivalence that seem impartial, objective and democratic. But the numbers are not merely categories of equivalence. What constitutes the practical knowledge of PISA's testing of reading, mathematical and scientific literacy is bound to a particular system of reason that translates disciplinary knowledge (physics and mathematics) into school subjects. The translations are assumed as merely copies of the original, that is, the disciplinary fields of knowledge and cultures. OECD asserts, for example, that PISA measures the practical ability to apply skills in everyday life situations linked to economy and labor and not, in effect, about learning science and mathematics.

But when examined more closely, the descriptions of what children learn are classified through psychologies of the learning sciences. Central are concepts of childhood, the working of the mind and social communications to which "content" knowledge is made subservient. That psychology and pedagogy have purposes other than those concerned with the pedagogies of learning disciplines.[2] The categories of learning, for example, are not derived from thinking about the processes, cultures and their interactions that lead to the generation of disciplinary knowledge. The measurements about practical knowledge PISA are about the

conduct of daily life. To draw on PISA's descriptions, the "practical" knowledge are related to children's attitudes, the extent to which they are aware of the life opportunities that given competencies may open, and the learning opportunities and environments which their schools offer. These knowledges are placed in the categories of science learning but they are more than that and possibly not even that. The object of the interpretation of numbers is the psychological and sociological categories about the capabilities of the child, the school, and the family ordered and classified through the learning sciences. The outcome measures are placed in relation to factors about school contexts, instruction, students' access and use of computers, and parental perceptions of students and schools, and performances changes in reading and mathematics. The relating of students' performance and data on the student, family and institutional factors is to explain differences in performances.

The learning sciences are part of the grid in which PISA's numbers constitute school subjects. Other elements of that recipe or assemblage that form the commonsense of school subjects can be pursued through the notion of alchemy. Like the medieval alchemists who tried to change lead into gold through chemical processes, pedagogy is the process of moving "things" from one space (disciplines) to another (school subjects). Pedagogical "tools" move academic classifications, ordering practices and cultural machinery (e.g., notions of laboratories, technologies, academic departments, and professional structures) into the school curriculum (theories of learning, age and grade organizations of children, didactic practices, among others). The notion of alchemy directs attention to the transportation and translation "tools" of the school curriculum. Schools require alchemic practices as children are not physicists or mathematicians. The alchemy then is not the issue at hand. Translations are never merely copies of the original. They are acts of creation. If school subjects are creations and not copies of the disciplines that are their namesake, what is produced through curriculum models? This question is posed as the knowledge systems of school subjects form the commonsense of PISA's measurements.

First is to consider that the pedagogical translations inscribe rules and standards for recognition and enactment (participatory structures) that give school subjects their identities as objects to know. The pedagogical models also provide the conditions for the operation to know that knowledge, the latter talked about as instructional processes of teaching.

This leads to the second observation. What is classified and ordered as disciplinary knowledge and, how that knowledge is made knowable and acted on in pedagogy have little to do with the patterns of interaction and communication of the academic fields (Popkewitz, 2008). The translation tools of curriculum are cultural theses about who the child is and should be.

This seems a difficult claim but one that requires unthinking the "trust" given to PISA. That "trust" is that PISA in fact measures disciplinary knowledge through drawing from the pedagogical models that constitute school subjects. This validity of this trust is what is questioned through thinking of pedagogy as an alchemic process.

To explore this briefly, school subjects are ordered through psychological "eyes", whether we call that "eye" constructivist, social interactional, pragmatic, or behaviorist. When transporting discipline fields into curriculum, the different psychologies are not practices invented to think about the pedagogies to learn disciplinary cultures and their production of knowledge. The psychologies of pedagogy are related to making the child as the future citizen. The principles of the development and growth of the child form cultural theses about how the child is to live and should live as "a reasonable" person. This life is named as the lifelong learner in PISA and more generally in educational policy and reforms. It is a kind of person that embodies particular norms and values that link individuality to collective belonging and "homes". While I discuss the lifelong learner as a kind of person below, my purpose here is to that the numbers of PISA are never merely numbers. They are inscribed in a grid of practices that take-for-granted the pedagogical models that produce school subjects. The curriculum practices signified as "practical knowledge" in the categories of measurement inscribe cultural theses about how life is and should be lived as the lifelong learner. The classifications and distinctions of teaching science and mathematics are directed to this cultural task of making particular kinds of people.

The translations of teaching mathematics education are illustrative. The learning of disciplinary knowledge is subservient to social and cultural values about the citizen and is not a pedagogy to learn the disciplinary norms and values of mathematics. Mathematics standards reform research in the US, for example, is underwritten by constructivist pedagogies. These psychologies historically are designed as a technology of governing the rules and standards of conduct. The curriculum is directed to the processes and practices through which the child is to order and judge actions in everyday life through abstract mathematical sets of rules and standards. But the symbolic structures of mathematics in the school curriculum are more than learning formulae and mathematical ways to reason. Sutherland and Balacheff (1999), for example, assert that mathematics education is the '"modern" social answer to enabling children to become citizens – that is, "members of a society who have access to both a shared culture and who are empowered with intellectual and emotional tools to face problems within the workplace and everyday life" (Sutherland & Balacheff 1999, p. 2). The social answer is about the construction of the self. Brousseau (1997) argues that mathematics education is to develop in children the capacity to 'be able to' (Brousseau 1997, p. 12). The autonomy and agency assigned to the child as problem solver is assembled through social and cultural narratives.

The translations of disciplinary knowledge into school subjects thus have a double quality. First, it is to govern conduct through the insertion of particular rules and standards about thought and action. When science "literacy" is examined internationally, there is a dramatic shift to emphasize greater participation and increased personal relevance, and emotional accessibility in the science curriculum (McEneaney, 2003). That participation, however, links the child's "expertise" in solving problems to the iconic stature of professional knowledge and to national images of its subject/citizen. Children's participation and problem solving are to learn the majesty of the procedures, styles of argument, and symbolic system that

assert the truthfulness of the expertise of science. The conclusions of academic expertise are boundaries that enclose children's questioning and problem solving.

Second, the ordering practices that classify and constitute practical knowledge embody moral qualities about modes of living. If we take the term "motivation to learn" in PISA, for example, the notion of motivation inserts a particular way to "see", think, and act in designing the interior of the child's desire (Danziger, 1997). Early psychology did not provide explanations of everyday conduct. It was with the emergence of mass schooling that there was an interest in removing children's "fatigue" in learning through calculating and influencing the children's will, motives, interests, needs and desire. This treatment of inner "thought" brought about ways to classify experience itself as objects of administration.[3] Motivation became a key player in this administration; its deployment is part of the organization and ordering of conduct in work.

What is deemed as the practical knowledge of PISA, then, is not practical in any pure or natural way. As Tröhler argues in this book, that knowledge is not built on an empirical examination of students' practices and uses of the curriculum in daily life. Further and to return to the discussion of markets, its notions of practice are built through an abstraction whose ordering and classifying procedures construct its "facts" through the making of facts. The facts embedded in the statistical categories are notions of school subjects that are drawn from the alchemy that inserts particular psychologies in governing who the child is and should be. The grid that gives intelligibility to these "facts" serve as "a map" for structuring what is to constitute "experience" and thinking about what is practical and useful. The limits of PISA measures require exploring further the cultural theses about the child produced in the alchemy of school subjects assumed in the assessments.

PISA AS COMPARATIVE CULTURAL THESES: THE LIFELONG LEARNER IN "THE KNOWLEDGE SOCIETY" AND THE DANGEROUS POPULATIONS

My purpose in this discussion is to explore how PISA is possible as a way to talk, think, and act in the field of educational reform. To engage PISA in this manner it to consider the grid in which its numbers, magnitudes, and categories of equivalence are given intelligibility. The privileging of the particular pedagogical psychologies as the translation "tools" for school subjects give focus to a particular kind of person who has the requisite "practical knowledge", what I earlier gave reference to as the lifelong learner who is to live in "the Knowledge Society". The lifelong learner is a kind of person that, however, entails a double gesture. It generates principles about who the child is, should be, and the child who threatens the envisioned future. The double inscription of the capabilities of the lifelong learner and the child feared as dangerous to the future are part of the same phenomenon. The practices through which curriculum models are enacted, measured, and judged are processes of inclusion, exclusion, and abjection.

The Lifelong Learner: The Space of Freedom

PISA is signified as an inclusionary process whose measurements are "*relevant to lifelong learning"*, a phase about people who become the agents in the new global social, cultural and economic patterns called variously "The Knowledge Society" and "The Information Society". The indicators are designed as measures of the abilities of the citizen who can "participate in [society and in the labour market". The indicators of students' are signified as embodying the mode of life of the citizen who through demonstrating the science competencies "will enable them [as citizens] to participate actively in life situations related to science and technology" (OECD, 2007, p. 3). The *lifelong learning* is the determinant classification, like the cake earlier, that is given ontological status as who is and should be that competent citizen.

As said earlier, it would be nice if the future could be predicted and what is progressive, good, and virtuous ensured through these predictive strategies. But alias, the kind of person embodied in the lifelong learner is not merely a descriptive account of the future society and its inhabitants. Its classification and distinctions generate principles to structure experience and order what constitutes what is practical and useful in daily lives (see, e.g., Rose, 1999). The cultural thesis of the lifelong learner assessed in PISA, for example, is a particular life given to continual "learning". Yet as explored below, that mode of life is generated through liberal and cosmopolitan political notions of the citizen, moral qualities related to particular Protestant notions of salvation and morality, and cultural patterns that reduced to signify the new economies (Popkewitz, 2008). Ironically, the dispositional qualities of this kind of person have no direct relation to the economy, and to the practices of science and mathematics.

What is this cultural thesis of the lifelong learner? Summarizing different literatures related to policy and research in education, the lifelong learner is a particular cultural thesis about modes of life (see, e.g., Fejes & Nicoll, 2007; Lawn, 2003; Popkewitz, 2008). The lifelong learner embodies enlightenment qualities of reason and rationality (science) as a mode of life (re)visioned to express individuality as a life of never-ending processes of making choices, innovation, and collaboration. Individual agency is the self actualization and self motivation to a life of choice.

Individual agency, however, is not about freedom from social constraints and restraints. What constitutes choice is shaped and fashioned by pedagogical theories designed to calculate and administer the rules and standards for reflection and action. Life is to be designed as the continual processes of rationally planning and organizing daily events whose capabilities are historically linked to a particular northern European notion of the modern "mind" (see, e.g., Popkewitz, 2008; Wu, 2006) . Personal responsibility is the self-management of one's risks by continually maximizing the correct application of reason and rationality in a never ending process of innovation. The fragility of this life is, however, tamed through the procedures assigned to define action by learning "problem solving" and "communication skills", among others. The only thing not a choice being making choices.

Whatever the merits of this problem solving life and living as a "learner", they are not merely descriptive of some natural reasoning of the child that curriculum, research and testing recoups. The lifelong learner recalibrates the political aspirations and collective belonging through principles generated about community, participation, and collaboration. The lifelong learner is given agency through problem solving and collaborating in multiple communities – communities of learning, discourse communities. Choice in individual life is sanctioned and acts by working collaboratively.

Community and collaboration are narrated to tell the collective obligation of the generalized global community of humanity. That global community, however, is in fact locally produced. The notions of learning and knowing inscribed in PISA, for example, relate to particular cosmopolitan notions of the enlightened citizen that intersect with secularization of salvation themes of the Reformation and the formation of modern republicanism that occurs between the 18th and beginning of the 20th century. The contemporary commonsense principles about diversity, self-emancipation and social progress that are related to particular a historical time and space that is not universal.

This historicizing of PISA's criteria of knowledge provides a way of considering Simons & Masschelein (2008) argument about the emergence of the new individuality embodied in the lifelong learner. It entails the shift from earlier notions of emancipation to empowerment in which individual life becomes a continual learning process. Individuality is in learning as the capacity for appropriations that engage the uncertainties of the present. Virtue is managing effectively the limits and opportunities of the environment through steering one's performances in a continual feedback loop of self-assessment.

The numbers of PISA that assess students' knowledge and skills, then, are assembled and connected to a number of historical practices that become obscured in its naming of the "practical" knowledge children know. The numbers do not stand alone. They are embodied in a set of practices that generate a cultural thesis about who the child is and should be. This human kind is made through the data of numbers but is not only of PISA's making. The principles generated through the alchemy of school subjects are about rescuing the nation through making the child. The psychological distinctions that PISA uses to talk about the child's "motivation to learn", "beliefs about themselves and their attitudes to what they are learning", and solving problems that will "open life opportunities are practices about modes of living. The curricular competences are about the govern conduct.

Spaces of Exclusion and Abjection

If the notion of the lifelong learner is the cultural thesis about the spaces of freedom in the fiction of world of "the Knowledge Society", its cultural territories are double gestures in which difference, divisions and abjections are inscribed.[4] Let me explore this through a commonplace of school reforms in discussing equity. Equity is given expression in the term "all" – "all children will learn programs for all children", and "education for all". The Education for All Movement, for

example, is stated as "a global commitment to provide quality basic education for all children, youth and adults". The program is endorsed by UNESCO, UNDP, UNFPA, UNICEF and the World Bank to provide an "expanded vision of learning" that creates a universal primary education to "massively reduce illiteracy by the end of the decade" (http://www.unesco.org/en/efa-international-coordination/the-efa-movement/). The reduction of illiteracy is shaped and fashioned through the narratives and images, spoken and unspoken, of lifelong learning/lifelong learner and its "others" recognized as different but to be provided with "equitable access to learning programmes" that include through adult literacy, gender parity, and quality education. The commitment is to ensure that there is no child left behind as *all* children will be equal.

When the "all children" is examined, there is no universal and undifferentiated "all" but a particular continuum of value that differentiates and divides. The "all children" implies a unity from which identities of difference are generated. As quickly as reforms state that the purpose is for "all children to learn", however, the discourse shifts to the child who is different and divided from the space of "all children". The different child is to be rescued and saved from his or her unliveable spaces. The space of the all children is the space of a difference and abjection that cases the Other into unliveable spaces.

The space of belonging and differences entails a complex relation that is not one of a dualism or a binary. Often unspoken in contemporary school reforms, the qualities and capabilities inscribed in the category of "all" children are those of the lifelong learner. That is, the lifelong learner is, discursively, the "good" child of the present and future. The child who does not belong to the category of "all" is recognized for inclusion but that recognition, paradoxically, inscribes difference. The difference operates in the in-between space of that can be categorized as the urban child in the US and the UK, the gendered child, and more generally the child who is classified as poor, disadvantaged, and immigrant/ethnic. Policy and programs are to re-design that child who does not fit; yet the processes of rescue and redemption inscribe difference that makes it not possible for the child to ever be "of the average" or as "all" children. My placing of the lifelong learner and its Others as part of the same phenomenon is to recognize that the unity of "all" entails a double gesture that instantiates difference. That difference is through assigning identities that universalize particular kinds of people in the cultural spaces of "all children". If I use the American notion of the urban child, it embodies a cultural thesis and not a geographical place. American cities, for example, are spaces with great wealth and a cosmopolitan urbaneness that coexist with the spaces of poverty and racial segregation. Children who live in the high-rise apartments and brownstones of American cities appear as urbane, without classifications in school discourse and who do not live in the spaces of urban education and the urban child.

The divisions of the urban child, it should be apparent, are not about place but cultural capacities and capabilities. The cultural distinctions of urban child are used to differentiate children who live in suburbia and rural areas as well as in the "city". Discursively and practically, urban and rural children are categorized and classified by the same sets of distinctions and differentiations (Popkewitz, 1998).

The distinctions that give intelligibility to the urban-ness of the child are formed in a grid of psychological categories about the child's, for example, low expectations, lack of self-esteem and motivation, and learning through "hands-on" experiences rather than abstract knowledge. The psychological categories are linked with social categories about 'dysfunctional families, school dropouts, teenage delinquency, drug abuse, among other. The assembly and connections of these qualities and capabilities make a human kind different from the characteristics of the lifelong learner (Popkewitz, 1998).

If we now return to the comparisons inscribed in the categories of equivalence in PISA, they make "sense" in a system of comparative thought that has nothing to with any natural sense of practical knowledge. PISA taking the alchemy of school subjects as its commonsense is to insert the double gestures of its pedagogical principles: the hope of the cosmopolitan society that circulates in the notion of the Knowledge Society and fears of those qualities and characteristics of the child that threatens its present and/or future actualization. In 19th century thought, the inscription of differences was assigned to populations ordered in continuums of civilized/non-civilized. The ordering principles and distinctions about achievement, access, learning, among other categories, inscribe differences and divisions through languages of sciences in the policies of planning people. The differences are given expression in gestures of rescuing and redeeming those populations that are inscribed as different. The simultaneous process of producing the "other" in one's self is not of intentional but occurs under the banner of consensus about what is practical. The processes are instantiated in the very style of thought through which the distancing and immediacy are established.

CONCLUDING THOUGHTS

My focus on numbers is to make visible the system of reason through which OECD's PISA technologies and classifications are made intelligible. PISA is neither purely descriptive of some abstraction called "practical knowledge" nor can it be adequately understood outside of the grid of its ordering, classifying and differentiating system. Numbers as magnitudes and categories of equivalence are never merely numbers when inscribed in social life. The measurements of PISA do not act directly on people but act as part of a grid through which spaces are cleared for reflection and action.

Numbers are inscribed in a field of practices that, in the instance of PISA, entails the alchemy of school subjects that translates disciplinary knowledge into principles to govern conduct. PISA takes the commonsense of school subject and its pedagogical translation tools to make the categories of equivalence that constitute its comparative methods. The rules and standards of the "reason" of PISA constitute domains of people and render them stable in order to calculate, deliberate about, and act on.

The pedagogical translations, I argued, are gestures about modes of living. I used the notion of grid, analogous to the cake recipe, to explore how different principles of numbers, equivalences, and the alchemy of school subjects circulate

and overlap in making possible certain kinds of people. Among the grid, I argued, are numbers as "facts" shaped and fashioned by differences of unlike orders. The magnitudes about children's knowledge regularize and govern the (im)possibilities of relations among social and psychological components. The social and psychological capacities and characteristics are given as universal but are historically tied to particular times and spaces. Further, the cultural theses generated about equality and education for "all children" instantiate a style of thought that excludes and abjects in its impulses of inclusion.

The "practical knowledge" in PISA, then, is not practical in the sense of natural to the phenomena of working of everyday life. The practical knowledge measured to rank people and society in PISA entails cultural theses about modes of living and principles about a coherent, unitary, and uniform world which the psychometric sciences can apprehend and policy can administer

The strategy of this analysis has been to view PISA as an event whose conditions are made possible through particular assemblages, connections, and disconnections. The notion of an event is to consider the conditions that make possible the commonsense (PISA) as a system of reason. The issue at hand is the ways in which recognition, representation, and identity are produced in the sciences of education and the policies of change.[5] The limits of the "reason" of PISA, then, requires thinking about its rules and standards for ordering, classifying and dividing that is not "solved" or fixed through more subtle and efficient item construction.

One further aspect of contemporary policy analysis that needs to be problematized is the manner in which reforms are rhetorically positioned in relation to economics. This is evident in PISA's statement of purpose to create the child for the new knowledge economies. If what I argued above is appropriate, the economic rhetoric stands as part of a cultural practice that is not merely about "economy". The differentiation of economy as a determinant category separate from other spheres of social and cultural life is itself an invention of the 20th century and related to governing. Perhaps it is useful to reread Adam Smith, among others, who alerted us to the complex and subtle intertwining of the wealth of nations to moral and political philosophy, and to Foucault's discussion of economy. With different intentions, the sciences of wealth gave focus to issues of the economy as not merely about labor but in the management of life and the production of moral subjects and subjectivities (my contemporary take). To "see" economy as an ontological "thing" outside of its moral and cultural inscriptions, as stated in contemporary policy and its instantiations in PISA, loses site of the grid of historical practices that provide the conditions of labor. Marx recognized this well. It is a historical amnesia that creates memories by forgetting that Ford, for example, could only produce assembly line production of Fordism when there was the (re)vision of the subjectivities of the US coach makers that preceded that mode of work. The assembly line and the modes of working in "high tech" industries today are not merely about "work" but the intersection with social and cultural rules and standards through which the "high tech" work becomes possible as a mode of life and as a way by which one thinks and acts.

NOTES

[1] An additional one is planned for adult competences, called program for the International Assessment of Adult Competencies (PIAAC).

[2] I use pedagogy here to refer to the ways that people learn about the practices and processes of engaging, for example, in the disciplinary work of history, social science, and the sciences. The pedagogies of school subjects and what is called practical knowledge that provide the foundations to the measures of PISA have different pedagogical purposes.

[3] I recognize the "ontic" but am differentiating the things of the world from how they are responded to and are brought into discourses that give epistemological and ontological qualities to experience.

[4] See Kristeva (1982) and Butler (1993) for use of the term through psychoanalytic theory; and Shimakawa (2002) for a more sociological approach. My interest in the notion of abjection is through its systems of reason and a social epistemology discussed below.

[5] I discuss this in Popkewitz (2008) and as in relation to comparative studies of education in Popkewitz (2009). Also see Deleuze (1964/1994), Foucault (1968/1973) and Derrida (1997).

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