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Attack of the Cyborgs: *Economic Imperialism* and The *Human Deficit* in Educational Policy-Making & Research

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[T]he ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist. Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back. I am sure that the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas... [S]oon or late, it is ideas, not vested interests, which are dangerous for good or evil. (Keynes, 1957, p. 383-4)

The term 'economic imperialism': is generally attributed to an article of that title by Hoover Institution economist Edward Lazear (2000, p. 1), although it is a concept that has long been promoted by University of Chicago economist Gary Becker. The article itself is a celebratory piece that asserts both modern economics *bona fides* as the premiere social science analogous to the so-called hard sciences, such as physics and chemistry, as well as the generalized applicability of neoclassical economic theory and econometric methods to all manner of social phenomena. Lazear is surely being provocative in proclaiming the preeminence of economic orthodoxy, not to mention displaying a good deal of intellectual *hubris*, but it is equally clear that he does have a point. While the assertion that economics is the premiere social science is certainly questionable, it is difficult to understate the growing influence of neoclassical economic theory and methodology across the social sciences (Fine & Milonakis, 2009).

In educational research, the language and methodologies of neoclassical economics have come to dominate the way education scholars of all types discuss, understand, identify, and evaluate education phenomena (Allais, 2012; Devine, 2004). From value-added models built on standardized assessment scores to the human capital they are supposedly measuring to empirical comparisons of charter schools and traditional public schools, some of the most prominent research in the field of education is increasingly coming from economics. In education policy, the logic of neoclassical economic theory has come to dominate both the ends and means of public schooling (Ellison 2012a). The post- *Nation at Risk* (1983) landscape is one dominated by questions about the global economy and economic competition, and the proposed answers to these questions often seek to employ so-called market-based solutions, such as school choice and voucher programs. Looking at the current state of affairs in education, it is clear that Lazear does, indeed, have a point. Education has been in large measure colonized. However, the natives are beginning to grow restless under the heel of their new masters. In the wake of the global financial meltdown of 2007 and 2008, the validity of neoclassical economic theory and the rise of economic imperialism has been called into question both from within and outside economics, and this is a task that educational scholars need to take up as well.

This article will analyze the foundational concepts and axioms of neoclassical economic theory and their problematic application to educational policy-making and research. Readers well versed in contemporary economic literature will find the analysis that follows to be very generalized and operating at a rather high level of abstraction, and rightly so. The aim of this analysis is not to flesh out the intricacies and controversies that occupy the minds of practicing economists, but is, instead, to flesh out neoclassical economic theory as an intellectual framework that continues to dominate the discipline. It is, to paraphrase Keynes, the ideas of neoclassical theory that are of interest: ideas that inform political rhetoric, liberal ideologies, and governmental policies; ideas popularized by public intellectuals in popular media and the academy; and ideas capable of seizing the minds of the masses and establishing the foundation for broad consensus and political mandates.

The first section of the paper will discuss the general contours of neoclassical orthodoxyⁱ and the critique of so-called heterodox economists who are challenging the foundations of neoclassical theory.ⁱⁱ The next section will build on this analysis to interrogate the growing prominence of neoclassical economic theory and methods in educational policy-making in order to identify the absences, omissions, blind spots, silences, and invisibilities they engender. The results of this analysis suggest that neoclassical orthodoxy and educational policies formulated within its logic suffer from a *human deficit* that effectively excludes what is perhaps the greatest source of professional knowledge and expertise within the public education system, *teachers*ⁱⁱⁱ, while subjecting them to the machinations of an expanding apparatus of measurement, command, and control. The article concludes with a discussion on the role of educational research in re-humanizing policy debates by elevating the voices of teachers as professionals possessing expert knowledge to contribute to the formulation, implementation, and evaluation of policy.

The Cyborg Science

Modern economics seeks to develop formal, axiomatic understandings of economic and social phenomena that inform a largely deductive, positive research agenda. It is a social science characterized by a robust theoretical and methodological orthodoxy that is broadly applied to a wide range of tasks from assessing the risks associated with complex derivatives on Wall Street to assessing the quality of individual school teachers in Tennessee (Sanders & Horn, 1998). Of course, the economic wreckage created by the collapse of a massive credit bubble fueled by econometric modeling, cheered by neoclassical economists under the auspices of the *Great Moderation*, and enabled by the free-market policies associated with neoclassical economic theory reopened an old wound in the economics profession that has yet to heal.

Axioms of Neoclassical Orthodoxy

The social ontology of neoclassical economic theory belongs to an intellectual tradition dating back to the classical liberalism of Adam Smith, David Ricardo, and Jeremy Bentham that asserts the primacy of the individual. Within this tradition, societies are understood as being the sum of the individuals who inhabit them, individuals assumed to demonstrate specific characteristics that bear consideration. First and foremost, these individuals are *rational*, or at least mostly rational, *utility maximizers* seeking to maximize gain and minimize loss. They are individuals who are capable of using [R]eason in pursuit of the pleasure principle no matter the stated intentions of the individual actor. An agent may engage in an activity that appears to be altruistic or selfless, but the underlying motivation lies within his/her desire to be thought well of by the community or some other egoistic goal. It was Bentham's "principle of utility" (in Keen 2011, p. 40-41) that provided classical liberalism with an individualist philosophy that was convinced of its ability to objectively measure both pleasure and pain. Bentham's social theory inverted the determinative role of culture, socialization, and social institutions by seeking to understand the spontaneous emergence of macro-level social phenomena from individual behavior. Bentham not only placed the individual at the center of the social but also elevated the individual as the primary unit of analysis, an orientation that defines neoclassical orthodoxy. The agent of neoclassical economic theory, despite protestations to the contrary,^{iv} adheres to the classical *homo economicus*: The neoclassical agent is conceptualized as being rational, a utility maximizer, and a possessor of imperfect information.

In neoclassical orthodoxy, information is understood as being a commodity, a thing, that is possessed by individuals and that is exchanged through market activity (Mirowski, 2011, p. 499). Markets constitute the social matrix through which individuals exchange the information they possess in pursuit of utility maximization. One of the key thinkers in neoclassical orthodoxy, Frederick Hayek (1945),

argued that markets can be understood as being efficient (and therefore rational) information processors made up of egoistic individuals, each exchanging imperfect knowledge. Through price signaling, market participants exchange information about the relative value of scarce commodities, including information itself, in an organic process of knowledge exchange that ultimately produces the most efficient outcomes possible and maximizes social welfare, i. e., The Efficient Market Hypothesis. “This is Hayek's celebrated 'spontaneous order,' a reinterpretation of the 'invisible hand' hypothesis, which is used to explain and legitimise the market as the paradigm social institution” (Peters, 2011, p. 33). Neoclassical economic theory asserts that, when protected from interference such as government regulation or public services crowding out the private sector (a form of irrationality), market processes produce a spontaneous rationality of efficient outcomes from the seeming chaotic activity of atomized utility maximizers, each occupied with their own egoistic pursuits.

It is this unity of micro- and macro-level processes, or interchangeability, that largely defines the neoclassical paradigm. Markets are conceptualized as autonomous units isolated (or isolatable) from society that are inherently rational. Likewise, the individual agent of neoclassical theory is an autonomous unit isolated (or isolatable) from society that is rationalized through market activity. Unlike its classical predecessor that envisioned perfectly rational agents with perfect knowledge, neoclassical economic theory acknowledges that individuals use imperfect knowledge in their economic thinking, thus raising the specter of irrationality. However, the spontaneous rationality of market processes smuggles the rational back into the social construct of the utility maximizer. Individuals may employ imperfect information in their day-to-day activity, but spontaneous market forces ensure largely rational outcomes. It's a nifty trick, and one that turns out to provide a foundational assumption for neoclassical economic research.

The theoretical interchangeability of micro- and macro-level processes in neoclassical orthodoxy allows economists to mathematically model markets and entire economies using the abstraction of a *representative agent*. Or, to put it in more straightforward language, it provides economists with a mathematically convenient methodology “to portray the entire economy as playing out between the ears of a single person” (Mirowski, 2011, p. 503). Known as methodological individualism, Arnsperger and Varoufakis (2006) describe the thinking behind the representative agent this way:

[T]he socio-economic phenomenon under scrutiny is to be analysed by focusing on the individuals whose actions brought it about; understanding fully their ‘workings’ at the individual level; and, finally, synthesising the knowledge derived at the individual level in order to understand the complex social phenomenon at hand. In short, neoclassical theory follows the watchmaker’s method who, faced with a strange watch, studies its function by focusing on understanding, initially, the function of each of its cogs and wheels. To the neoclassical economist, the latter are the individual agents who are to be studied, like the watchmaker’s cogs and wheels, independently of the social whole their actions help bring about. (para. 8)

From the now dominant Dynamic Stochastic General Equilibrium models used to study macro-level processes to micro-level game theory, the entire edifice of neoclassical orthodoxy is built around methodological individualism and the interchangeability of micro- and macro-level economic processes.

It is these axiomatic understandings about the nature of social reality that constitute the foundation of neoclassical economic theory and methods. It is an orthodoxy that focuses on the mathematical modeling of markets and economies using representative agents. More importantly, as a positive social science, economics is a discipline that seeks to use these models to predict and manage the behavior of individuals, markets, and societies.

The Imperial Turn: Narrowing Methodology, Broadening Application

The rise to prominence of neoclassical economic theory coincided with the collapse of the Keynesian orthodoxy that preceded it, although it is important to note that the American iteration of Keynesianism had long been in the neoclassical camp under the tutelage of economist Paul Samuelson. Two transformations are relevant here. First, it was during the 1960's and 1970's that the economics profession began to purge the so-called methodologists (Mirowski, 2011, p. 474). Economic historians and theorists were essentially cut off from the discipline when the major journals, such as the *American Economic Review* and the *Quarterly Journal of Economics*, rejected work from those fields as unscientific and gave precedence to econometric modeling. Second, the stagflation and economic turbulence of the 1970's created a political opening to challenge the post-World War II consensus of Keynesianism, Fordism, and what might be called macro-level social engineering. Margaret Thatcher's channeling of Bentham in stating there is 'no such thing as society' and Ronald Reagan's famous declaration that 'government is the problem, not the solution' reflect the growing influence of neoliberal politics and the rejection of the macro-level analyses associated with that greatest bugbear of the new right: central planning.

By the end of the 1980's and into the 1990's, the rise of neoclassical orthodoxy was complete and with it came the imperial turn in economics. What is interesting here is that just as neoclassical economic theory had managed to narrow the range of tools available to economic research (i. e., mathematical modeling using representative agents) the range of social phenomena subjected to the gaze of neoclassical economics grew dramatically (Fine & Milonakis, 2009, p. 6-8). “[H]aving developed tools of analysis by the exclusion of much social reality, economics turned outwards to apply these 'universal' tools to the areas of society that it had excluded” (Allais, 2012, p. 262). From issues associated with health care to crime and gun control to schooling and education policy, neoclassical economics and economists have demonstrated little hesitancy in applying econometric modeling to all manner of social phenomena that transcend the traditional boundaries of the discipline. This assertion certainly raises questions about the boundaries of any one discipline in the social sciences. However, it is safe to say that over the past thirty years, neoclassical economic methodology has been widely applied to fields that lie beyond the traditional boundaries of the economics discipline and that it is widely accepted by those responsible for formulating and implementing social policy. It is for this reason that scholars and political actors of all stripes should take seriously the critique of neoclassical orthodoxy that is emerging from within the discipline itself.

Axioms Revisited

Amid the gloom of the Great Recession there was a good deal of enthusiasm in the world of heterodox economics that the destruction brought about by a financial bubble that was both aided and abetted by econometric models (as well as being largely missed by an economics profession confident in the success of the Great Moderation) would be the final nail in the coffin of a neoclassical orthodoxy that had long been the target of critique. From the financial actors who blew up their own institutions to the frenzy of speculative real estate markets, the neoclassical agent and its rationalizing efficient markets looked to be on the verge of being tossed to the trash heap of history. This turned out to be a case of unwarranted enthusiasm. Despite the destruction wrought by the Global Financial Crisis, neoclassical orthodoxy continues to dominate.

The rational agent of neoclassical orthodoxy has long been the subject of ridicule both from within and outside the economics profession. In orthodox economics, “the term 'rationality' bore a very narrow and curious interpretation as the maximization of a utility function^v subject to constraints by an otherwise cognitively thin and emotionally deprived 'agent'” (Mirowski, 2011, p. 487). Attempts to blow the breath of life back into this cognitively thin 'agent' have produced numerous contenders to neoclassical

theory, the most recent and quite popular being behavioral economics.

The roots of behavioral economics began with the failure of the neoclassical rational agent. In the 1950's, Leonard Savage set out to establish a set of axioms that describe rational behavior under the constraints of imperfect knowledge and uncertainty. However, when faced with a test in which Savage himself made an irrational decision *based on his own axioms*, he was forced to consider the prospect of abandoning the entire project (Heukelom, 2011, p. 21-22). Savage's solution to his quandary, and one followed by the behavioral economists who would follow him, was to establish a distinction between normative theory (his axioms) and empirical theory that supposedly explains how and under what circumstance individuals who want to behave 'rationally' fail to do so, with the explicit goal of correcting it.

Under the banner of *bounded rationality*, this bifurcation of neoclassical theory was popularized by noted economists Herbert Simon, Daniel Kahneman, and Amos Tversky and was able to carve out a thriving niche within the economics profession under the moniker of *behavioral*. Behavioral economics defines itself as a research project drawing from the field of psychology (mostly decision theory) that seeks to establish what is fully rational, decision-making in any given context as a normative theory of how individuals should behave and a descriptive theory of how individuals actually behave under contextual constraints. Thus, the emergence of behavioral economics is not only being viewed as presenting a challenge to neoclassical orthodoxy but also as a political project seeking to understand and correct human behavior so that it might be more fully rational. However, it is the positivity of behavioral methodology that should lead one to a rather obvious question: How does this really challenge the neoclassical model?

In the early 2000's, the concept of bounded rationality was adopted from Simon and together with the concept of full rationality was employed to rephrase Kahneman and Tversky's normative-descriptive distinction. Gradually, what before was understood as the normative decision now became the full rationality decision. Similarly, when the actual decision made by the individual deviated from the full rationality decision, it was now deemed boundedly rational instead of descriptive... [The behavioral economists] did not demand a complete revision of the traditional neoclassical mainstream, but offered it an honorable way out. There is nothing wrong with traditional neoclassical reasoning, they argued. It is just that it is only a theory of how people should behave, not of how they actually behave. There is nothing wrong with neoclassical economics, they argued, it merely needs to be amended. (Heukelom, 2011, p. 30)

The bifurcation of neoclassical theory might allow for more complexity in human behavior, but it would appear to leave the edifice of neoclassical orthodoxy intact, a reality best exemplified by the neoclassical foundations of perhaps the most celebrated piece of economic scholarship in the post-crisis era: George Akerlof and Robert Shiller's (2009) *Animal Spirits*.

In popular culture, *Animal Spirits* is frequently praised as being the go-to text for understanding financial crises like the one that rocked the world economy in 2007 and 2008. What is interesting is that Akerlof and Shiller try to explain financial crises not in macro-economic or criminogenic terms (Black, 2010) but instead as being the result of the cognitive biases of market participants. They explain it at the level of the individual. Introducing concepts such as envy, illusion, and confidence as a way to explain irrationality and market failure might appear on the surface to be a challenge to neoclassical orthodoxy, but this is not the case.

'Animal Spirits' boiled down to such timeworn neoclassical expedients as changing the utility function over time and calling it 'confidence' (while Chicago called it 'time-varying rates of discount'), appealing to sticky wages and prices while attributing them to

'money illusion' and concerns over fairness (which the neoliberals modeled as 'envy'), and suggestions that corruption would grow over the course of a long expansion (Chicago theorist Gary Becker theorized this as the 'rational choice approach to crime'). Far from some brave venturesome foray into the unexplored thickets of real psychology by open-minded economists unencumbered by entrenched dogmas, this was just more of the same old trick of tinkering with the 'normal' utility function to get out the results you had wanted beforehand – something falling well short of the trumpeted dramatic divergence from standard economic theory... The problem with behavioral economists going gaga over 'irrationality' was that they conflated that incredibly complex and tortured phenomenon with minor divergences from their own overly rigid construct of pure deterministic maximization of an independent invariant 'well-behaved' utility function... Beyond wishful thinking, why should one even think that the appropriate way to approach a macroeconomic crisis was through some arbitrary set of folk psychological mental categories? (Mirowski, 2011, p. 488-489)

Far from being the revolutionary challenge to neoclassical economics it is often presented as being, behavioral economics remains fully within the neoclassical model in both its social ontology and the methodological individualism of using representative agents to model entire markets:

Described as a new empirical enterprise to learn the true preferences of real people, the dominant method in behavioral economics can be better described as filtering observed action through otherwise neoclassical constrained optimization problems with new arguments and parameters in the utility function. (Berg & Gigerenzer, 2010, p. 162)

Another prime target for ridicule in the aftermath of the Great Recession was the efficient market hypothesis. Two consecutive speculative bubbles (the Dot-Com Bubble & the Housing Bubble) built upon quicksand seemed to clearly demonstrate that one of the core ideas of neoclassical theory is more fantasy than description of reality. Yet, despite protestations to the contrary, the efficient market hypothesis remains central to orthodox economics.

The efficient market hypothesis makes four assumptions about the nature of markets that bear consideration (Keen, 2011, p. 282):

- the collective expectations of market participants are accurate predictions of the future;
- prices fully reflect relevant information;
- price changes are the result of changes in relevant information;
- and therefore, prices 'follow a random' walk in that past information gives no information about future price movements

The assumptions associated with the efficient market hypothesis paint a rather rosy picture. The unfettered markets of the neoclassical model will trend toward an equilibrium between supply and demand as market participants unproblematically exchange relevant bits of information, the sum of their actions allowing for the efficient allocation of resources and the maximization of social welfare. The efficient market hypothesis is a model of market activity in which agents evaluate relevant information on the value of goods that are subject to random forces that are unknowable. It is the process of weighing relevant information and risk in light of uncertainty (randomness) *en masse* that leads economic actors to *discover* market valuation and therefore achieve efficiency.

The problem with this model is its conceptualization of isolated individuals only interested in unproblematic relevant information and, more importantly, who ignore the activities and sentiments of other market participants. It is difficult to reconcile this with actual market behavior, especially in

financial markets. In reality, economic agents appear to use heuristics that draw upon a plethora of sources, including, among others, the opinions of peers, perceptions of market trends, popular culture, and cable television. The neoclassical model lacks even a rudimentary feedback loop between larger social processes, such as market sentiment, and individual behavior. The reason for this is rather straightforward: Introducing such a feedback loop provides a picture of the market that looks nothing like efficient markets trending toward equilibrium. Keen (2011) explains from the perspective of financial markets:

Though investors do still keep an eye on individuals' investments and world conditions, and the world does throw in surprising events from time to time, in the main investors analyze the investment community itself. As a result, there is a feedback loop from current share valuations to investors' behavior via the impact that present valuations have on investor expectations. A rising market will tend to encourage investors to believe that the market will continue rising; a falling market will maintain the sentiment of the bears. Such a market can find itself a long way from equilibrium as self-reinforcing waves of sentiment sweep through investors. These waves can just as easily break — though long after any rational calculation might suggest that they should — when it becomes clear that the wave has carried valuations far past a level which is sustainable by corporate earnings. (p. 294)

What seems clear is that neoclassical economic theory is not a social theory that emerged from empirical observation. It is rather a deductive pursuit in which complex mathematical models are used to make social reality conform to economic folk wisdom that has hardly changed since the 19th century. Using the fiction of the representative agent, neoclassical models purport to represent the dynamics of entire markets as well as providing a model for organizing all of society. Yet, as many have noted, when you go beyond a single individual, already the product of a high degree of abstraction if not downright fiction, the models break down. At its core, what is missing from neoclassical economic theory are human beings, conceptually rich individuals embedded within complex webs of social relations, societal norms, and cultural practices. What's missing are people.

Meet the Cyborg

This human deficit in neoclassical orthodoxy is not a quirk or aberration. Drawing on the work of Donna Haraway (1990), Mirowski (2002) describes the form of economic thinking that emerged in the second half of the 20th century as a cyborg science. Born of the unholy collaboration of a bloated military awash in Cold War funding, think tank researchers (principally at the RAND corporation), and a new form of scientific manager, the mathematics of the nuclear age worked its way from the natural sciences to the social bringing with it the military ethos of command, control, communications, and information. The mathematical modeling used in the development of nuclear weapons, in time, provided the tools to assess the impact of those weapons on the Soviet military and economy. However, as the Cold War matured, those tools were increasingly employed in the social sciences (economics and psychology in particular) and corporate management to both model human behavior and manage complex institutions, a process that has set loose an ever expanding apparatus of quantitative metrics and mechanical incentive structures. Mirowski (2002) defines a cyborg science as:

[A] complex set of beliefs, of philosophical dispositions, mathematical preferences, pungent metaphors, research practices, and (let us not forget) paradigmatic things, all of which are then applied promiscuously to some more or less discrete preexistent subject matter or area. (p. 12)

From the philosophical dispositions and their accompanying metaphors (such as *the free market*' and *representative agent*) to the narrow range of research practices of mathematical modeling made

possible by increasingly sophisticated computer technology (no doubt the paradigmatic “thing” of the late 20th – early 21st centuries) to the imperialistic turn hailed by Lazear and Becker, this description certainly reflects the neoclassical orthodoxy described here, and it goes a long way toward explaining the noted absence of humans, or at least any that we would recognize as being human.

The humans are not necessarily absent. They have been mythologized, inhabiting a space between social reality and a technical apparatus of abstraction and measurement. They are cyborgs.

[T]he cyborg [is] a fiction mapping our social and bodily reality... [W]e are cyborgs. The cyborg is our ontology; it gives us our politics. The cyborg is a condensed image of both imagination and material reality, the two joined centers structuring any possibility of historical transformation. (Haraway, 1990, p. 191)

The contemporary economics profession still dominated by the neoclassical model in various forms is not simply some quizzical, backwater academic practice making social reality conform to its mathematical models or pet projects. Modern economics is considered by many in positions of power and the public at large to be the premiere social science purporting to offer scientific understandings of social reality and, more importantly, providing a model for organizing society and structuring social relations. Neoclassical orthodoxy is a mythology, a discourse that structures the social, that disciplines social relations and individual behavior. It is cyborg science. We have entered an era in which an individualist philosophy based on the principle of utility has unleashed a technical apparatus of measurement, modeling, and scientific micro-management. Economic Imperialism is perhaps just another term for disciplinarity (Foucault, 1995, p. 135-169).

The New Cyborg Science

Over the past 35 years, economic thinking has come to dominate education policy debates in the United States. It is not simply the goals of education that have been economized, but also specific policies and practices, such as school choice programs and accountability systems. It is increasingly the case that the ways in which we formulate policy, measure its effectiveness, and judge the quality of research are done so through the lens of economic thought still defined by neoclassical orthodoxy. What we see is that the human deficit in neoclassical orthodoxy characterizes contemporary trends in education policy with clear costs.

Between Fiction and Materiality

The clarion call of economic imperialism in education policy was the release of *A Nation at Risk* in 1983. The Thatcher – Reagan electoral victories in 1979 and 1980, respectively, brought with them the political and economic philosophies of Frederick Hayek and Milton Friedman's Chicago School to the forefront of political discourse on both sides of the Atlantic. The concepts of *economic liberty* and *market democracy* entered the public imaginary with the promise of a new way forward out of the economic shocks and stagnation of the 1970's and have now become cemented as commonsensical. The underlying idea is rather straightforward: Economic mismanagement and bureaucratic inefficiency (central planning in neoliberal vernacular) had brought about the worst of all possible outcomes, stagnant economic growth and inflation. The answer to this quandary was to loosen economic regulation and open the public sector to privatized competition. Doing so would not only spark economic growth but would also unleash a new era of individual liberty defined by the idea of choice. The thinking goes that through market processes, individuals are able to exercise individual choice in pursuit of utility maximization and achieve a more authentic form of freedom than a bureaucratic state full of self-interested politicians could possibly provide. Thus, the market rationality and efficiency of neoclassical economic theory was wedded to the individualism of an ascendant neoliberal politics that achieved hegemonic dominance with the emergence of the Third Way left in the 1990's. A political

convergence began to emerge at the turn of the 20th and 21st centuries across a number policy areas, including education (DeBray-Pelot & McGinn, 2009; DeBray, 2006).

In the United States, both of the major political parties now see quasi-market competition between traditional public schools and privately operated schools as being the panacea for addressing any and all educational issues. From voucher programs to the more recent emergence of charter schools, the dominant trend in education reform is to foster competition between traditional public and private schools for students and the funding attached to them. To ensure the proper functioning of the educational marketplace, the state mandates quantitative measures in the form of standardized assessments, value-added modeling of teacher effectiveness, and the publishing of the results in the form of teacher ratings and school report cards. Armed with objective information on school quality, consumers (parents and care-givers) are empowered to choose the school that will maximize their utility (quality education for their children) and, at the macro-level, will produce a spontaneous rationality of efficiency and quality that maximizes social welfare (Walberg & Bast, 2003, p. 221-224). In the educational marketplace, quality schools will thrive and innovate, poor schools will close, and consumers will experience greater individual liberty as they pursue the utility principle (See Chubb, 2003; Chubb & Moe, 1990; Bast & Walberg, 2004).

At the heart of the efficient educational marketplace model lies an incentive structure directly tied to the objective information supposedly driving market processes. The quasi-market forces of the educational marketplace are not solely defined by the processes of competition, consolidation, and bankruptcy that are typically associated with the market but are, instead, dependent upon the not so invisible hand of the small, strong neoliberal state (Apple, 2004; Clarke, 2004). Public policy mandates assessment and reporting mechanisms that inform public choice, but the ultimate decisions over the life and death of individual schools and the people who inhabit them are reserved for the state, not for consumers. By introducing value-added measures and econometric modeling into education, policy-makers have smuggled the myth of neoclassical orthodoxy into the language of education policy with promises of efficiency, rationality, and increased liberty. However, the introduction of neoclassical economic theory has also brought with it the high level of abstraction plaguing contemporary economics as well as a technical apparatus of measurement and disciplinarity.

The abstractions of neoclassical orthodoxy are nowhere more visible than the clear disparity between the predicted behavior of consumers in an educational marketplace and actual parental behavior. The model of the efficient educational marketplace envisions parents and care-givers who employ unproblematic pieces of information on school quality to choose the schools for their children that will maximize their utility function, i. e., quality education. Of course, the information made available to parents and care-givers (standardized assessment scores, value-added measures, and school rankings) are anything but unproblematic (Green, III, Baker, & Oluwole, 2012; Martinez-Garcia, LaPrairie & Slate, 2011; Rupp & Lesaux, 2006). However, even if we assume that the information made available provides an accurate reflection of school quality, the reality of the educational marketplace reveals that parents and care-givers employ complex decision-making processes that include factors such as student body characteristics (including class, race, and ethnicity), proximity of schools to residence and related transportation issues, issues associated with historical disparities in the equitable provision of educational opportunities, and programmatic features related to values and belief systems (Andersson, Malmberg, & Osth, 2012; Garcia, 2008; Pedroni, 2006; Schneider & Buckley, 2002). In contrast to orthodox economic thinking, consumers in the educational marketplace employ complex heuristics in choosing which school their children will attend in which so-called objective measures of school quality rank rather low when compared to other factors under consideration. Beneath the veneer of market rationality, the research literature on the educational marketplace offers little evidence that choice programs fulfill the expectations of neoclassical orthodoxy in terms of efficiency, achievement,

and innovation (CREDO, 2009; Ellison, 2012a; Lubienski, 2009). It would appear that in complex societies such as ours, individuals engage in complex behavior that is not well captured or understood by neoclassical economics. The high level of abstraction characteristic of neoclassical economic theory would appear to offer very little of value to education policy, yet it continues to exert a disproportionate influence over all manner of educational issues.

The conclusion that emerges from this sad state of affairs is rather troubling. The growing role of neoclassical economic orthodoxy in educational policy does not represent an empirical research project that seeks to understand complex societal processes related to education and schooling so as to inform political decision-making that maximizes social welfare. Instead, it would appear that economic imperialism is a political project that seeks to “rationalize” social institutions and human behavior so that they conform to the abstractions of neoclassical economic theory. The accountability policies of the not so invisible hand of the neoliberal state are not simple policy tools that supplement market forces (Ellison, 2012b). Rather, they constitute a technical apparatus of measurement, evaluation, and control that works to structure decision-making at all levels of schooling, from the content and methods teachers employ to instruct their students to the ways in which we debate education issues in the public sphere. The incentive structures created from the problematic application of neoclassical economic theory to educational issues disciplines individual behavior, and it is this positivity that is most concerning.

Defining rationality as essentially 'thinking like an economist,' economic imperialism appears to be little more than a political project to make everyone behave like a neoclassical economist. The result is that educational actors are now positioned between the fiction of neoclassical economic theory and the messy materialities of a complex and dynamic society. They are cyborgs, “condensed image[s] of both imagination and material reality (Haraway, 1990, p. 191).”

Meet the New Cyborg

It is no surprise that the success of economic imperialism in educational policy-making has introduced into popular culture the idea that labor (teachers) is the most important variable in student achievement. However, it is important to consider what this means in the technical language of neoclassical orthodoxy. In the neoclassical paradigm, teachers are first and foremost conceptualized as being workers who deposit content into student minds over a defined period of time, a process that can be precisely measured. The amount of content deposited is measured using student scores on standardized assessments, and the value that each teacher adds to overall classroom achievement is measured with econometric modeling.

Neoclassical orthodoxy also envisions teachers as being information processors who respond to mechanical incentive structures. Teachers employ unproblematic pieces of information (student scores on standardized assessments) to increase the quality of teaching and, therefore, increasing the value being added to their classrooms. Standardized assessments are assumed to provide accurate perspectives on student achievement that are actionable in that they provide data for teachers to make pedagogical decisions based on student need. At the same time, these information processors are utility maximizers who respond to a so-called objective incentive structure tied to student test scores and the value-added models assessing the quality of their teaching. Teachers are incentivized by a carrot-and-stick approach to teacher evaluation in which the carrot represents continued employment and possibly performance pay and the stick represents termination. What is important here is that neoclassical economic theory conceptualizes teachers as being mechanized workers who can be incentivized to increase the quality of production without consideration of situational context and without the need for additional supports or expenditures. This leads to a series of erasures and abstractions that frame and largely define contemporary public debates over education policy.

The complexity of teaching is erased from educational discourse, leaving instead a reductive understanding of teaching as a form of mechanical production. The problematics of using standardized assessments as a proxy for student achievement are erased in the name of “scientific” measurement and corporate management. The cultural and societal milieu in which teachers work, not to mention the multitude of forces and variables outside of schooling that impact student achievement, is erased from public discourse, leaving teachers in the unenviable position of being isolated individuals solely responsible for student learning and system performance. Administrators, policy-makers, and society at large are therefore absolved of responsibility.

The practical effect of neoclassical economic imperialism is the introduction of a technical apparatus largely divorced from the day-to-day practice of teaching in actually existing classrooms. Despite the rhetoric of Lazear and Becker, economic imperialism has not introduced a rational system based on empirical observation and scientific discovery. Instead, it has transformed education and (along with it) educational research into a cyborg science structuring the profession of teaching and eroding the professional autonomy of teachers. The use of value-added models as evaluation tools elevates the significance of standardized assessments, which predictably leads to strategic decision-making by teachers: Unit and daily lesson plans are developed around tested material, and the high stakes attached to test scores inevitably lead to strategic decisions on how and to whom precious time and resources are allocated, not to mention decisions on grade advancement and special education status (Heilig & Darling-Hammond, 2008). This is not a bug; it is a feature.

Economic imperialism constitutes a necessary piece of the larger neoliberal puzzle that has introduced a corporate approach to education policy that robs teachers of their professional autonomy to make decisions in their classrooms based on the needs of their students. It has introduced utilitarian decision-making based on the arbitrary metrics of a cyborg science blessed with imperialistic tendencies, a politics of not only de-professionalization but also one of de-humanization. Economic imperialism writes teachers **out** of policy discussions as experts in their field with professional knowledge to contribute to public debate while writing them **in** to the discourse of education policy as objects of measurement and discipline within a technical apparatus of observation and mechanical incentive structures. Now conventionally understood as being the most important variable in student achievement, teachers (the real, living, breathing humans we would recognize as such) have been uniquely positioned as mythologized objects of analysis subject to the normative gaze of measurement and discipline who have been, paradoxically, written out of the narrative of educational policy and reform. Teachers are the new cyborgs.

Conclusion: Humanizing Teachers as Resource for Policy-Making

It is clear that orthodox economic thinking has achieved a prominent place in education policy. From the ends to the means of schooling, education policy is increasingly formulated within the logic of a neoclassical orthodoxy that is also clearly problematic. The catastrophe of a financial collapse linked to neoclassical orthodoxy and econometric modeling and the heterodox critique that followed in its wake has presented a challenge to orthodox economic theory, the outcome of which remains to be seen, although the future doesn't look bright. In education policy, the uncomfortable fact that the highest performing nations on international assessments of student achievement, such as Canada, Finland, Japan, Singapore and South Korea, are not pursuing market-based policies (OECD, 2010) appears to be having little impact on slowing the spread of what Pasi Sahlberg has termed the Global Education Reform Movement or GERM (Sahlberg, 2006).^{vi} Interestingly, especially in light of the previous discussion, the highest performing nations are ones in which teachers play a central role in defining the day-to-day operation of schools and in driving educational change at the class- and school-levels.

Singapore is an excellent example of a consistently high-performing nation that recognizes the institutional knowledge present in its education system and seeks to utilize this knowledge base in order to produce high levels of achievement and foster innovation. Leadership is drawn from the teacher corps, and teachers are encouraged to organize at the school level into professional learning communities (PLC) in which teachers work collaboratively to hone their practice, develop new pedagogical and curricular approaches, and exchange ideas throughout the school and larger system (Hairon, 2008). Finland expends a great deal of energy in recruiting and training teachers as professional educators and researchers. The Finnish system provides teachers with professional autonomy to conduct collaborative research and experimentation in their classrooms as means of ensuring high levels of achievement and as an engine of educational innovation in response to changes in student characteristics and needs (Sahlberg, 2007).

This is the price we pay for the imperial conquest of American education by the cyborg science of contemporary economics: American teachers remain an untapped resource of expertise and knowledge. The loss of trust in our teachers has been long in the making (Thayer-Bacon & Ellison, 2011). It is a loss that creates a practical barrier to meaningful reform by silencing those who have the most intimate knowledge and experience with the educational problems and issues we face as a nation. Economic imperialism has written teachers out of the narrative of education policy and reform, and there is a clear need to write them back in as sources of knowledge and expertise. Doing so will require a fundamental shift in how educational researchers think about their work.

There is a rich body of qualitative research that works to re-humanize teachers, and educational actors more generally, as complex beings moving within webs of social relations and societal structures (Au, 2007). Much of this research does an excellent job of fleshing out how individual actors interpret, understand, and react to specific policies or trends. However, what is largely missing from contemporary education scholarship is qualitative work that consciously seeks to elevate the voices of teachers in the formulation of education policy and reform. What specific educational problems and issues do teachers face in their classrooms? How do they define and understand those problems? What possible solutions do they offer to resolve them? How might they be scaled-up?

I would argue that educational researchers must work to re-humanize teachers as professionals with important perspectives to offer policy-makers. In order to elevate teachers' voices, researchers must work to reposition them from being mythologized objects of analysis and control to experts possessing key insights into the education problems facing our schools and the know-how to offer solutions to the practical issues they face in their day-to-day practice. This could be accomplished by adapting the focus-group interview model to create policy work groups of experienced teachers. Researchers can use policy work groups to create spaces for teachers to work collaboratively in defining the nature and characteristics of the problems they face in their practice and in establishing their relation to larger macro-level processes and issues. Work groups can formulate specific proposals to address the issues they have defined at the class- and school-levels and to consider the possibility of their being used on a broader basis. Aggregating the results from multiple policy work group interviews using thematic analyses that identify common ideas and proposals emerging from the concrete practices of professional educators can be used to formulate macro-level policy proposals and reform agendas. To be sure, I am not advocating some crude, privileged, epistemic positionality for teachers. What I am advocating is the development of research agendas that seek to elevate the voices of teachers now silenced by the disciplinary abstractions of the neoclassical orthodoxy informing current trends in education policy and research. I am advocating for deep social research that does justice to the complexity of the educational issues we face and seeks to build policy from the ground up. There is a human deficit in education policy that needs to be addressed by educational research.

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i Neoclassical orthodoxy refers to the dominant methodological approach to contemporary economics that is broadly shared across the various specializations within the discipline. While there is a good deal of diversity in the discipline, macro- and micro-economics, game theory, neuro-economics, New Keynesian, and even the so-called fresh water-salt water divide in the U.S., there remains a broad set of theoretical and methodological assumptions that are broadly shared and constitute a recognizable orthodoxy.

ii The examples used in this analysis will be drawn primarily from financial markets but hold true for other markets as well.

iii My focus in this article will be on the absence of teachers' voices in education policy formation, but it holds equally true for other relevant actors, such as students and parents.

iv As we shall see, recent claims that new sub-fields in economics are challenging neoclassical assumptions should be taken with no small pinch of salt.

v A statistical measure of the satisfaction an individual gains in the consumption of a commodity or good.

vi Australia and New Zealand are two high performing nations that are now embracing the neoliberal agenda and have adopted the logic of neoclassical economic thinking into policy. It will interesting to watch these two high performing nations to see if they are able to maintain their high scores.