CHAPTER 20

Pneumatic

Education, Air, and the Common

Derek R. Ford

Recently, educational literature has taken an interest in the notion of the 'common,' how this notion relates to, and what it might mean for, educational theory and praxis. This work is based largely, but not exclusively, on Italian autonomist Marxism, most notably Michael Hardt and Antonio Negri. This literature is specifically concerned with how the common can be mobilized against neoliberalism, or the increasing dominance of private property. It has also been explored and taken up as an alternative to public property, and the private-public dialectic that in many ways defines modern political theories, pedagogies, and movements. In this article, I work toward a conceptualization of the *pneumatic common*, arguing that the air is a central feature of and paradigm for the common that educational theory would do well to take into consideration.

One does sometimes find passing, latent remarks about air conditions in educational literature, primarily relating to the temperature and quality of the air. This is particularly true in history of education literature. For example, Kate Rousmainere (1997) writes about 'the stale, airless tomb of the modern urban classroom' (p. 81), while Jonathon Zimmerman (2009) documents the problems with heating one-room schoolhouses: 'Students sitting near the stove were often too warm, falling off to sleep—and off their benches—as temperatures rose. But those at the periphery were too cold, donning mittens and struggling to turn the pages of their textbooks' (p. 24). Yet the air hasn't thus far been given *theoretical* or *pedagogical* consideration in education. By conceptualizing the pneumatic common, I want to ask what and how we can learn in, with, and from the air. I do this through a historical and theoretical reading of the air, the air's conditions, and its conditionings. Air is an immersive substance; it envelopes us. It is common, for no one exists without it. And it is an integral part of the continual re/production of the common. Yet this pneumatic common is cut across by hierarchy, identity, and difference. It is caught up in and constituted by history and political economy. Thus, we all live and relate—or do our best to—differentially in the pneumatic common. In this article I begin with a survey and analysis of recent literature on the educational common. Having set this stage, I then move the educational common to the pneumatic by turning to the air. This section entails making the air

 | DOI: 10.1163/9789004400467_020

conditions explicit. While this is in itself an educational move, in the last part of the chapter I return to the educational common to ask how and what we can learn in, with, and from the air.

The Educational Common

The common is most often approached as both a condition and an ideal. In other words, it is a terrain and goal of struggle. As an ontological condition the common breaks through the barriers of modernity and, in particular, modern industrial capitalist production and its attendant forms of organization. Hardt and Negri (2009) make the distinction between modern capitalist production and the production of the common by turning to recent changes that have taken place in the organic composition of capital. For Marx (1867/1967), the organic composition of capital is the relationship between variable capital (labor-power) and constant capital (means of production, raw and auxiliary materials, and so on). Constant capital, for Marx (1885/1978) can further be distinguished between fixed capital (elements involved in the production of constant capital that do not enter into commodity circulation and remain behind after turnover) and circulating capital (elements of constant capital that are used up in production). Variable capital, through working on and transforming constant capital, produces surplus-value. In this schema, which is so central to industrial capitalism, constant capital is external to variable capital; there is a clear delineation between the means of production and labor-power. In post-Fordist, immaterial capitalism, these boundaries break down (see Ford, 2013). Hardt and Negri (2004), approaching post-Fordism through the distinction between the material and immaterial, mark this distinction concisely:

> Material production—the production, for example, of cars, televisions, clothing, and food—creates the *means of social life*…Immaterial production, by contrast, including the production of ideas, images, knowledges, communication, cooperation, and affective relations, tends to create not the means of social life but *social life itself*. (p. 146)

The character of the organic composition of capital changes with this transition. Most notably, labor-power gains (some) autonomy from the confines of physical constant capital as work is increasingly dispersed throughout society. While industrial, material production is concerned with the physicality of the commodity, immaterial production is concerned with 'the informational and cultural content of the commodity' (Lazzarato, 1996, p. 133). Of course, physical

commodities are still produced, but increasingly their value is determined by the informational and cultural content contained within and through them. Thus, 'today's labor force has incorporated certain elements of fixed capital (in other words, it carries with it certain means of production, in the brain)…*the means of production has become internal to the singularities engaged in the organization of labor*' (Negri, 2008, p. 66). As the social becomes the site of immanent production, it too gains autonomy from capitalist control. The common is thus a surplus, an excess: '*The common is the sum of everything that the labor-force* (*V*) *produces independently of C* (*constant, total capital*) *and* against *it*' (p. 67).

There are two forms of the common. First, there is the common as it has been thought in modern political economy, those supposedly natural things such as the air, the water, and the land. Second, the common also represents 'the languages we create, the social practices we establish, the modes of sociality that define our relationships, and so forth' (Hardt & Negri, 2009, p. 139). Alexander Means (2013) writes that in this second instance 'the common is… understood as an infinite non-representational force of communicative and cultural production' (p. 50). For the purposes of explicating the pneumatic common, it is crucial to emphasize that these two forms of the common are interlocking; social practices are key elements in the production of air and water just as much as air and water are key to the production of social practices.

Educational work on the common has been developed primarily through the thinking of critical and radical educational theorists and pedagogues, and it has been more or less developed on the basis of Italian Marxism. I here turn to articles by Noah De Lissovoy (2011), Tyson Lewis (2012), and Alexander Means (2013) to continue to explore the common and to illustrate the growing body of educational work around and on it, although what follows is certainly not an exhaustive representation.

Noah De Lissovoy (2011) turns to the common to gain a deeper understanding of the state and possibilities of curriculum theory and pedagogy in an increasingly globalized world. For De Lissovoy, recent processes of globalization have radically changed the ways in which people, societies, cultures, economies, and politics are implicated in and interdependent on each other. This historical process has been accompanied by an intensification of ecological destruction, the exploitation of labor, and the crises of the political and social systems upon which these processes rest. The relation of these dual, intersecting trends has implications for how we approach, understand, and respond to contemporary crises:

> While no one can yet specify exactly what it will take to overcome these challenges, any adequate effort will eventually have to start from the

> premise of our belongingness, globally, to each other—the myriad and unrecognized ways we are in relation, and are produced out of these relations, and the myriad ways in which, in the context of continuing globalization, we will come to be even more so. (p. 1119)

This global community of interdependent actors, whose very being depends (in unequal ways) upon known and unknown others, in known and unknown ways, is how De Lissovoy introduces the common. And his *pedagogy in common* is the educational organization of that which works to organize the common in a democratic way.

The common marks the crises of the traditional boundaries and borders of modernity as a result of globalization. De Lissovoy delineates four notions of the common that emerge from these crises: transnational, communicative, postcolonial, and ecological. The transnational common refers to the new scales and locations of political power and the breaking away of political power from the confines of nation states and the emerging dominance of 'supranational' and 'transnational' frameworks. The communicative common results from the new technologies and networks of communication, and the subsumption of value production within regimes of communication and information, or what is referred to as immaterial production. The postcolonial common is the insurrection of the South into the global political-economic order and left politics. Lastly, the ecological common comes forth as the generalization of the awareness of ecological precarity and crisis. In these delineations, De Lissovoy is concerned with how oppositional identities, alliances, and politics can be articulated and mobilized, and the pedagogy in common that is built upon this conceptual framework is likewise concerned with how education can help teachers and students understand and politically transform the emerging common condition.

In articulating this pedagogy in common, a broad range of critical educational scholars and pedagogies are called upon. Part of this pedagogy concerns what content is taught. Forming oppositional political alliances that are adequate to the supranational common, for example, entails 'an understanding of the logic of capitalist accumulation, especially in its neoliberal manifestation' (p. 1126). The most substantial part of this pedagogy, however, is about the nature of pedagogical relationships. It is here where 'education becomes a staging ground, or experimental space, for larger democratic projects' (p. 1126). Thus, a pedagogy in common is not about inaugurating students into a particular social order. It rather is meant 'to provoke them to the discovery of the knowledge and society of the (global) future,' which entails a rupture with the idea of curriculum as continuity as described by Dewey and the birth of 'a

radically *discontinuous* and flexible learning, one that can propose unprecedented modes of thought and practice' (p. 1127). And, as the local and global are understood in shifting, interrelated terms, content and pedagogy are oriented toward investigating local particularities as expressions of the global common.

Tyson Lewis (2012) mobilizes the common to envision an education and pedagogy that resists both privatization and calls for public regulation, thereby breaking out of the dialectic of the private and the public. The exopedagogy that Lewis articulates in response thus stands in opposition to the 'many strands of critical, progressive, and transformative pedagogies that bind revolution to public schools and citizenship education to cosmopolitanism and human rights education' (p. 846). The problem with these schools of educational thought and praxis is that they each, in different ways, sacrifice and capture the common within regulatory-distributory mechanisms and logics. In order to honor the common, for Lewis, educational theory has to attend to the immanent self-production and communication of singularities, and the excess, or surplus—the uncapturable sociality—which constitutes the common. The common resists capture because it is '*extraneous*,' i.e., it is 'generated from the creative plentitude of collective labor that cannot be restrained or fully incorporated into capitalist production' (p. 849). Of course, there are attempts to capture this surplus, and this is precisely what capitalist production and accumulation relies on today. It is also—and this point is crucial for Lewis—the strategy of public property. Yet this strategy is always necessarily a failure, for the surplus of the common can't be corralled through state institutions. The contradiction with attempts to subject the common to public or private control is that in both cases the common loses its productivity, for the common is productive precisely insofar as it is shared and open.

To formulate a 'true exopedagogy' Lewis turns to Ivan Illich, primarily because he 'largely rejected the hope for transformative action within the current educational system, which he saw as corrupted and counter-educational' (p. 856). An exopedagogy resists the neoliberal privatization of education without and against recourse to 'reclaiming' some innocent notion of public education. In fact, for Illich, education is deinstitutionalized and moved out of the school. Lewis sees this move as a profanation, a returning of education to common, free use. The teacher is a 'pirate—one who de-appropriates the commonwealth in the name of the creative and productive powers of the multitude' (p. 846). Reading this in relation to De Lissovoy, we could state that this profanation of exopedagogy is an opening up of what it means to *be* and to *be together*, an immanent process of generation and production, which will work toward De Lissovoy's pedagogy in common.[1]

Whereas Lewis and De Lissovoy cultivate the common to think through pedagogical theories, orientations, and practices—Means (2013) calls on the common in relation to educational crisis and the 'creative economy.' The 'creative economy' literature signifies a transition with 'a complicated genealogy with ideas associated with the "knowledge economy" and the "information revolution"' (p. 48). Ultimately, this body of work is united around 'efforts to describe and imagine an informational phase of capitalist development characterized by more fluid and decentralized organizational forms, techno-scientific knowledge, and the spread of information technologies and postmodern regimes of work, finance and culture across the globe' (p. 48). Means claims—correctly, in my opinion—that the grammar of the common—and, more generally, the framework of Italian autonomist Marxism—better articulates these social, economic, and political changes. More precisely, Means demonstrates how the common forms the basis of production in the creative economy. The central contradiction to which he attends is that, while today value is increasingly produced through the expropriation of the common, 'educational management and policy place restrictions and limitations of creativity, and hence on capital's own drive to immaterial value' (p. 56). In other words, calls for creativity in various levels of educational policy stand in contrast with educational privatizations and standardizations, not to mention the dominance of (some forms of) science, technology, engineering, and mathematics education at the expense of the humanities. Capital, for its part, falls on the latter side of this contradiction, as it is unwilling to tolerate the risk of allowing the forms of organization, communication, support, and equity that are necessary for sustaining and enriching the common. Thus, at the level of educational policy Means brings into sharp focus the inability of capitalism to contain the common. Within this argument, however, we can also read a caution that educational calls for the integration of elements like creativity and flexibility need always to be held in acute tension with capitalism's strategies of capture. The common in itself does not signal the imminent collapse of capitalist exploitation and oppression, and we would do well not to romanticize the common in this way. It is here, I believe, where De Lissovoy's insistence on the mobilization of oppositional identities is crucial.

In the next section, I move this exploration of the educational common into the pneumatic zone by turning to recent theoretical, historical, and sociological work on air and air conditions. Through this process I make explicit the way that the air contains not only gases, but also history, political economy, and forms of life; in short, the way that the air represents and plays a constitutive role in the common. The air has something to teach us, and I hope to convey some of this through a conceptualization of the pneumatic common.

Making Air Conditions Explicit

Air is an entirely immersive substance; it envelopes us even as it constantly eludes us. So what, exactly, is air? In a chemistry textbook one will likely find that it is a gaseous mixture of oxygen and nitrogen. Yet it is quite unlikely—if not impossible—that, as you breathe reading this, the air that travels through your mouth or nose to your lungs via your trachea and bronchial tubes will conform to this definition. As I write this, for example, in my recently renovated office, vapors from the fresh paint, new carpet, recently settled glue holding the carpet to the floor, the refuse in the trash bin, perfumes and colognes drifting through the hallways, miniscule specks of shed flesh, and the likely various types of mites—as well as their excrement—mix together into the air that makes its way into my body and circulates in my blood through my respiratory system. And I have not yet taken account of the machines that alternatively heat and cool, humidify and dehumidify this air, nor the ventilation system through which it travels to my office on the third floor, nor the immediate and far outside from which the air in my building is initially sucked. The air has a history, a politics, an economy; in short, the air has *conditions*. It therefore cannot be assumed or taken for granted; we have to consider its conditions. In this section I turn to recent theorizations and studies of the air in order to, in the words of Peter Sloterdijk, make the air explicit.

For Sloterdijk (2009), the 20th century began on a specific date and place: in the evening of April 22, 1915 in Ypres Salient, Belgium. This is the moment in space and time when a German gas regiment used chlorine gas to attack French-Canadian soldiers, the first gas attack in history. According to Sloterdijk, military technologies and tactics had advanced to the point where war had to be taken to the atmospheric level. No longer would the bodies of soldiers be targeted for destruction, their environment itself would be turned into an enveloping weapon:

> The attack on humans in gas warfare is about integrating the most fundamental strata of the biological conditions for life into the attack: the breather, by continuing his elementary habitus…becomes at once a victim and an unwilling accomplice in his own annihilation. (pp. 22–23)

As Bruno Latour (2006) has written on this scene, 'Air has entered the list of what could be withdrawn from us' (p. 105). This wasn't the first time that air had been withheld from someone, but the scale, intent, and context of the gas attack can certainly be understood as marking a qualitative rupture in the withholding of air. In Sloterdijk's terminology, from this moment the air

becomes *explicit*. Again, turning to Latour: 'This is Sloterdijk's explicitness: You are on life support, it's fragile, it's technical, it's public, it's political, it could break down—it is breaking down—it's being fixed, you are not too confident of those who fix it' (p. 106).

The explicitness of the air, in Sloterdijk's version of history, starts from its being withheld by the German gas attack, and it continues throughout war by such technologies as the gas mask, which 'involved a first step towards the principle of air conditioning, whose basic idea constists in disconnecting a defined volume of space from the surrounding air' (Sloterdijk, 2009, p. 20). These developments continue in peacetime (to the extent that peace and war can be distinguished in the 20th century). In other words, when World War I ends in 1918 the military research on the air is transferred into 'civilian' uses such as household and agricultural pest control. The fumigation materials, techniques, and technologies that rid our schools—and the agricultural fields that provide what organic matter is left in school lunches—of cockroaches and other vermin are tangled in a history of (inter)imperialist war.

Yet there are other aspects of the explicitness of air that had been taking place largely across the Atlantic Ocean during and before this time that are jettisoned in Sloterdijk's extreme atmoterrorist presentation. These developments help problematize the coming-explicitness of air in Sloterdijk's account, revealing that this conception insists upon a prior instance in which the air was not political, not imposed on by the human, not tied up in hierarchical regimes. Indeed, Sloterdijk concedes to such a radical break, writing that it was 'the atmoterrorist procedures of gas warfare' that provided the climate for when 'the active manipulation of breathing air first became a cultural matter' (p. 47). It may be that Sloterdijk's radical, doomsday portrayal of the human conditioning of the air is not intended as a historical account, but rather as an 'evocative' account, one that, as his work tends to do, 'leads to irritation…in the positive sense of being moved, having to respond' (Schinkel & Noordegraaf-Eelens, 2011, p. 8). If this is the case, then the provocation eclipses a fuller understanding of air conditions, and the relationship between human activity and the air. For isn't the simplest act of, say, making a fire, an alteration of the air? And is that not a 'cultural' activity? Is not the very raising of an interior—say, a one-room schoolhouse—an augmentation and therefore a conditioning of the air? It is to the developments in the late 19th and early 20th century that are taking place in the United States regarding air conditioning that I now turn in order to provide additional historical, economic, political, and theoretical context to air conditions. These developments, I believe, help us to see the conditioning of the air as part of more common (i.e., everyday) social, material practices.

As Raymond Arsenault (1984) notes, tracing a history of air conditioning is difficult because it is, 'like most forms of technology, developed in piecemeal fashion' (p. 599). Arsenault locates the origins of modern air conditioning with John Gorrie who, in the 1830s, experimented with mechanical cooling. A version of Gorrie's cooling system was used to cool the air of US President James A. Garfield's recovery room after he was shot in 1891. The system entailed soaking cloth sheets in ice water and hanging them outside of a room. The outside air passed through the sheets and was cooled through this process. As Gail Cooper (1998) reminds us, however, 'For the early engineers who pioneered its development, air conditioning meant control of humidity levels' (p. 7). It was the 'systematic control of humidity levels, which came to distinguish air conditioning' (p. 9). Of course, humidity and temperature levels are necessarily connected, as cold and hot air can each hold different amounts of moisture.

Modern air conditioning technologies (and ideologies) have their roots not in human comfort but in factories, where air conditioning was mobilized in order to maintain the consistency of raw materials as they were transformed through the production process. It wasn't until the early 1920s that air conditioning left the factory and entered public places of consumption and recreation. Fluctuating humidity levels caused raw materials, such as paper and cotton, to expand and contract during production, which resulted in loss of materials and wasted production time (Cooper, 1998; Schultz, 2012). By mechanically controlling the humidity—and with that the temperature—the size and consistency of raw materials could be standardized. Thus, air conditioning was used in a variety of production processes, from munitions to chewing gum, and from film to tobacco. This thrust toward standardization, toward liberating social processes from the temporal and spatial constraints of 'nature,' is a common thread throughout not only air conditioning proper, but the conditioning of air more generally. Again, even the raising of a one-room schoolhouse works to free the air from wind, rain, and other 'natural' elements. The logic and rhetoric of standardization—perhaps represented best by the Carrier Corporation slogan, 'Make every day a good day,' coined by Esten Bolling, Carrier's 'publicity engineer' (Schultz, 2012, p. 34)—would blend with conceptions of 'comfort' as air conditioning was brought into the public (and educational) sphere.

Beginning in the 1920s air conditioning broke through the confines of the factory and began to be—slowly and unevenly—dispersed throughout US society. The first venues to deploy the technology were movie theaters and department stores.[2] This both coincided with and helped produce the mass subjectivity of what Adorno and Horkheimer (1987/2002) referred to as the 'culture industry.'[3] One of the prominent roles that air conditioning technology

played during this moment was an ideological one: the promotion of ideas of cleanliness and purity. As Marsha Ackerman (2002) writes in relation to department stores: 'Like showcases that protected goods from weather, dirt, and the manipulations of the unworthy, air-conditioning—especially in the [department store bargain] basement—shielded elite customers from the bodily exhalations of the unwashed' (p. 55). The odors and germs associated with bodies that were not white or upper-class were supposedly neutralized by the silent hum of the air conditioner. To be sure, air conditioning systems prevented the dispersion and settling of dust, but more importantly they helped present spaces of consumption and recreation as standardized and, therefore, safe.

One of the next major steps in the US dispersion of air conditioning technology and ideology was in the post-World War II era, when air conditioning found its way into the home, office and, increasingly, the school. More than 6.5 million houses would be air conditioned by 1960 (Ackerman, 2002, p. 109), and that number would continue to rise with the increasing affordability of both stand-alone and whole-system units. This signaled a return to the 'private' realm of the home. Many colleges and schools began to be designed for and built with air conditioning systems beginning in the early 1950s. One of the first elementary schools that was designed for and built with air conditioning in the US was Belaire Elementary School in Texas, in 1955 (Ogata, 2008, p. 578). Air conditioned schools were not limited to the South; by 1959, schools as far north as New York State were being built with *year-round* or *total* air conditioning.[4] The air conditioning systems that were being placed in schools and office buildings, and the ideals of comfort and cool that they contained, however, were not neutral. Instead, the air that circulated in modern classrooms had certain identity conditions.

Modern notions of comfort were hashed out in elite universities during the 1920s-1930s, and were later embedded within technologies and generalized throughout built-environments, particularly in cities. Michelle Murphy (2006) writes about research studies into 'the comfort zone' that took place at Yale and Harvard by members of the American Society for Heating and Ventilation Engineers. White men (in boxers) were placed into boxes, and air—with a certain temperature, humidity, and flow—was pumped in. The comfort zone was generated through the comparison of inputs and outputs: 'The artificial climate made within the environmental chamber was the input. The output was comfortable and productive labor as indicated by such physiological measurements as those of pulse, weight loss, "metabolism" (exhaled breath), and body temperature' (Murphy, 2006, p. 25). The measurements produced during these experiments were then elevated to universal status. These systems and

the buildings into which they were installed helped produce certain standards of subjectivity: 'Particular bodies elevated to universals and the mechanically built environment articulated each other, called each other into a particular form' (p. 26). One of the absolutely crucial ideas that Murphy helps develop is the way that identity structures the air; in fact, oppression is quite literally *in* the air.

As air conditioning spreads across the national—and international—terrain throughout the 20th century, popular and political attitudes begin to change.[5] A case in point is the shifting coverage of *Consumer Reports*, which first addressed room air conditioning units in their July 1953 publication. Ackerman (2002) documents this shift in *Cool Comfort*, writing that initially this allegedly impartial coverage 'took for granted that just about every American would want an air-conditioner. The only questions were how much it would cost and how well it would work' (p. 158). Twenty years later, however, air conditioning was portrayed as wasteful and harmful. Moreover, it appeared as though the notion of the *inside* as a sealed space was becoming challenged, as *Consumer Reports* wrote in 1973: 'So a multitude of appliances providing "air-conditioned comfort" for home or office might make a significant contribution to overall discomfort by heating up the outdoors' (quoted in Ackerman, 2002, p. 159). Air conditioning was not only conditioning the air *inside*; it was conditioning the air *outside* as well.

Learning in, with and from the Pneumatic Common

Air is a condition of the common, and the biopolitical work of which the common is a product. Yet the air itself has conditions, and thinking through (some of) these conditions can help us better theorize the common, how this common relates to, and the implications it has for, education. While making the air conditions explicit is itself a work of education, in this concluding section I want to return to the educational common to ask what new insights can be generated. How can we learn from the air? How is it that we all learn in the air?

Most linearly, air conditions comprise part of the ecological common about which De Lissovoy (2011) writes. The ecological common is 'the common *par excellence*: the material body of the totality—the earth itself' and, further, the ecological common 'names an analysis of *the dynamics of the whole*, not just of nature by itself' (p. 1123). De Lissovoy thus helps us appreciate the importance—both analytical and ontological—of the air and its role in the production and reproduction of the common. While De Lissovoy writes about water and food scarcity, we might also think about air scarcity, or the scarcity of a

certain type or quality of air. Approaching the air conditions of education in this way, it is clear also that air does not exist apart from other social processes. In other words, it is *not* to say that air conditioning technologies corrupt the otherwise natural common air. As Marx and Engels (1847/1970) remind us in the epigraph to this article, the 'spirit' is always already 'burdened' with 'agitated layers of air' (pp. 50–51). Likewise, even the activity of enclosing a certain portion of space is a conditioning of the air. Ecological approaches to the pneumatic common do not bend backward to prehistory, but instead accept the hybridization of nature and society that constitutes the present.

The pneumatic common is also ripe for De Lissovoy's pedagogy in common. For example, De Lissovoy notes that 'the senses of the global common…suggest site-specific investigations of local *educational* terrains in relationship to global contexts' (p. 1128). Although he gives an example of investigating testing and accountability regimes, educators and students might turn their attention to the air. The air and the systems that condition and carry it can be investigated as not only compositions of gases, dust, odors, and particulates, but also as sites of history, identity, and representations. This, in turn, can militate against 'the veil of reification that captures relations between humans and their surroundings' (p. 1124).

When imagining how we might respond to the myriad tensions of the air we are quickly confronted with some of the limitations of the private-public dialectic with which Lewis (2012) is concerned. Indeed, when Hardt and Negri (2004) make brief mention of the air, they point to the limitations of the public—or at least the public as organized through the state. 'There is no way,' they write, 'for one country to stop the air pollution, water pollution, or radioactive fallout produced in another from drifting across its borders' (p. 282). The air does not respect national or private boundaries. It is possible in some ways, but quite difficult, to finally own the air; the air is, in this sense, *profane*. Studying and learning from the air, then, is not about campaigning to increase state-regulated pollution taxes, caps, or other mechanisms of distribution. From the air we can learn that other forms of organization are possible, and in and with the air we can experiment with those forms. Again, however, we must note that the air has its conditions, and these conditions are consistently subject to struggle by a variety of actors and acrss a variety of scales. For example, there are currently major private and public actors who are in many ways determining the air's global conditions. As one such example, consider the recent study on patterns of air pollution injustice and inequality in the US (Clark, Millet, & Marshall, 2014). This study found (or confirmed) that different socioeconomic groups are exposed to different levels of nitrogen dioxide, an atmospheric toxin generated from the combustion process in vehicles and power plants. Factors

such as race, class, age, and education level all affect the degree to which one is exposed to polluted air. This inequality is likely tied to the spatial expressions of racism and capitalism—as pollution levels were found to be highest in urban areas—and it will certainly affect the schoolhouse's air conditions. In the face of such injustices, we might not want to abandon all of the tools of modernity. Rather, we might imagine taking them up in new ways as we pursue alternative forms of democracy.

The air's conditions also help guard against a romanticization of the common as it exists. As De Lissovoy (2011) reminds us, 'the common is a name both for an actually emergent experience of interconnectedness *and* for a utopian political project' (p. 1125, emphasis added). The 'actually existing common' is polluted, hierarchically structured, and oppressive. It will not be enough for pirates to wrest it free from capitalist expropriation and public mechanisms of regulation. Consider the modern air conditioning systems that are so central to the workplaces of the creative economy that Means (2013) addresses. Indeed, it is difficult to imagine 'creative,' 'cognitive,' or 'knowledge' workers apart from air conditioned spaces—not to mention the integral role that air conditioning plays in the maintenance of computers, server farms, and other information and storage systems. These systems have created vast infrastructures that are burrowed in buildings, schools, and across the built-environment of the creative economy. Beginning in the early 20th century, for example, struggles over the standards for educational air conditions began to take place between and amongst public school officials and educators, physicians, physiologists, philanthropists, and mechanical ventilation and air conditioning engineers The debate initially centered on whether mechanically ventilated or 'natural' and 'fresh' air were most conducive to the learning process. In the beginning, the struggle pivoted on public regulatory standards regarding the appropriate circulation of cubic feet of air per minute (cfm). Typically, 30 cfm per person 'constituted a legal definition of the healthy indoor climate' (Cooper, 1998, p. 59). In order to obtain this level of circulation, however, mechanical ventilation was necessary. Soon after regulatory legislation to this effect was passed, opposition began to mount from those who advocated 'fresh air' and a 'natural climate.' This group sought to reduce circulation regulations to 10 cfm per person, which could be achieved by opening a window. Air quality was also a factor in these struggles, with the 'fresh air crusaders' drawing a tenuous distinction between 'natural' and 'mechanical' air, and mechanical ventilation engineers challenging the supposed naturalness of urban air. The introduction of year-round air conditioning systems introduced another phase in the generation of normative air conditions relative to schools. Several studies took place into the ideal 'thermal environment' for education. There was, for example, a highly

influential and widely-cited study at the University of Iowa investigating the relationship between the temperature, humidity, and circulation of the air and learning (Peccolo, 1962). The study found that the children in air-conditioned classrooms performed better on reasoning tasks—such as completing math problems and mazes and determining word relationships—and clerical tasks (p. 29). In both of these phases, normative air conditions were generated using particular bodies, locations, and educational ideals. And the built expressions of these normative prescriptions have acted on student bodies, subjectivities, and social groups in particular and differing ways. By studying the formulation, prescription, and enactment of normative educational air conditions, I posit, the complexity of the educational common can be revealed and engaged.

Singularity and the pneumatic common exist together. The air envelopes us and binds us together; it is a necessary condition for being and relating. And yet it is difficult to grasp. It is often only when something is 'wrong' with the air that we take notice. The technologies of controlling the air's quality, temperature, humidity, and flow conspire in an effort to make the air unnoticeable. But these technologies themselves act in unforeseen ways on air, lives, bodies, and social relations. The purpose of this article has been to begin the process of making the air explicit in educational theory, philosophy, and practice; to help us 'see' the ways that the air acts on and with us, and vice versa. The air can teach us, but only if we study with it, and learn from it.

Notes

1 Lewis (2012) marks the distinction between his notion of exopedagogy and De Lissovoy's 'common education' in a footnote: 'If common education emphasizes pedagogy as a *product* of the productive nature of the commonwealth, I would argue that exopedagogy emphasizes pedagogy as an *action* of exodus that organizes study for the extension and intensification of the common' (p. 859f3).

2 Air conditioning technology is what led to the social phenomenon of the 'summer blockbuster,' as the theater provided a place for people—primarily but not only white—in cities to escape the summer heat.

3 Horkheimer and Adorno (1987/2002) mention the air conditions of the theatre in passing: 'The unemployed of the great centers find freshness in summer and warmth in winter in these places of regulated temperature' (p. 111).

4 Engineers and architects argued that it was cheaper to build a school with air conditioning, largely because the school could be more compact, as it wouldn't have to be designed 'to catch a breeze in every classroom' (Jacobs, 1961, p. 115). Air conditioning is technically the control of the air's temperature, humidity, quality, and circulation.

Thus, a heating system is an air-conditioning system. A *year-round* or *total* air-conditioning system, by contrast, also includes the ability to cool the air in the warmer months.

5 To be sure, it was not as though popular and political opinion had consistently and progressively favored air conditioning until this point. For more on this, see Ackerman (2002).

References

Ackerman, M. (2002). *Cool comfort: America's romance with air-conditioning*. Washington, DC: Smithsonian Books.

Arsenault, R. (1984). The end of the long hot summer: The air conditioner and southern culture. *The Journal of Southern History, 50*(4), 597–628.

Clark, L. P., Millet, D. B., & Marshall, J. D. (2014). National patterns in environmental injustice and inequality: Outdoor NO_2 air pollution in the United States. *PLoS ONE, 9*(4), 1–8.

Cooper, G. (1998). *Air conditioning America: Engineers and the controlled environment, 1900–1960.* Baltimore, MD & London: Johns Hopkins University Press.

De Lissovoy, N. (2011). Pedagogy in common: Democratic education in the global era. *Educational Philosophy and Theory, 43*(10), 1119–1134.

Ford, D. R. (2013). Butler goes to work: A political economy of the subject. *Borderlands E-Journal, 12*(1), 1–19.

Hardt, M., & Negri, A. (2004). *Multitude: War and democracy in the age of empire*. New York, NY: Penguin Books.

Horkheimer, M., & Adorno, T. (1987/2002). *Dialectic of enlightenment: Philosophical fragments* (E. Jephcott, Trans.). Stanford, CA: Stanford University Press.

Jacobs, J. (1961, May). Trial by cooling. *Architectural Forum,* 115–118.

Latour, B. (2006). Air. In C. A. Jones (Ed.), *Sensorium: Embodied experience, technology, and contemporary art.* Cambridge, MA: MIT Press.

Lazzarato, M. (1996). Immaterial labor. In P. Virno & M. Hardt (Eds.), *Radical thought in Italy: A potential politics* (P. Colilli & E. Emory, Trans.). Minneapolis, MN & London: University of Minnesota Press.

Lewis, T. E. (2012). Exopedagogy: On pirates, shorelines, and the educational commonwealth. *Educational Philosophy and Theory, 44*(8), 845–861.

Marx, K. (1867/1967). *Capital: A critique of political economy* (Vol. 1, S. Moore & E. Aveling, Trans.). New York, NY: International Publishers.

Marx, K. (1885/1978). *Capital: A critique of political economy* (Vol. 2, D. Fernbach, Trans.). London: Penguin Books.

Marx, K., & Engels, F. (1847/1970). *The German ideology*. New York, NY: International Publishers.

Means, A. (2013). Creativity and the biopolitical commons in secondary and higher education. *Policy Futures in Education, 11*(1), 47–58.

Murphy, M. (2006). *Sick building syndrome and the problem of uncertainty: Environmental politics, technoscience, and women workers*. Durham, NC & London: Duke University Press.

Negri, A. (2008). *The porcelain workshop: For a new grammar of politics* (N. Wedell, Trans.). Los Angeles, CA: Semiotext(e).

Ogata, A. F. (2008). Building for learning in postwar American elementary schools. *Journal of the Society of Architectural Historians, 67*(4), 562–591.

Peccolo, C. (1962). *The effect of thermal environment on learning: A pilot study* (PhD dissertation digest). Iowa City, IA: Iowa University. Retrieved May 14, 2014, from http://files.eric.ed.gov/fulltext/ED016356.pdf

Rousmainere, K. (1997). *City teachers: Teaching and school reform in historical perspective*. New York, NY & London: Teachers College Press.

Schinkel, W., & Noordegraaf-Eelens, L. (2011). Peter Sloterdijk's sphereological acrobatics: An exercise in introduction. In W. Schinkel & L. Noordegraaf-Eelens (Eds.), *In media res: Peter Sloterdijk's spherological poetics of being*. Amsterdam: Amsterdam University Press.

Schultz, E. (2012). *Weathermakers to the world: The story of a company, the standard of an industry*. Farmington, CT: Carrier Corp.

Sloterdijk, P. (2009). *Terror from the air* (A. Patton & S. Corcoran, Trans.). Los Angeles, CA: Semiotext(e).

Zimmerman, J. (2009). *Small wonder: The little red schoolhouse in history and memory*. New Haven, CT & London: Yale University Press.