3. MOLD

Breathing well at the wastelands? Indoor climate change in schools and the daily lives of arctic children.

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Humans especially in the global West are spending most of their time indoors. Humans becoming an "indoor species" has provoked concerns regarding children's diminishing connection to nature. This chapter considers indoors a natural-cultural entanglement. How new standards for building emerged during the 20th century altering the indoor climate in schools and gave rise to concerns regarding comfort, achievement, and children's health is explored. It is asked, how different versions of a child, adult, technology, and microbe emerge from the heterogeneous assemblages of indoor air. In particular, arctic childhood is explored in connection with the recent phenomenon of "mold schools" grounded on talks with children and the author's memories. The everyday lives of these arctic children may materialize as illnesses and difficulties keeping up with others in studying but also as inventions of being and knowing differently with friends, adults, school building, its materials, and companion species.

Becoming an indoor species

One thing we critters—"the motley crowd of lively beings" (Haraway 2008, 330)—are continuously entangled with is air. Air is becoming an increasingly struggled privilege throughout the urbanizing world in the era when the destructive anthropogenic effects on the climate and other species have been recognized (Salthammer et al. 2016). While humans in the biggest cities are suffering from very bad outdoor air quality (e.g., smog), the quality of indoor air has become a significant environmental health concern especially in the global West during the past few decades.

Indoors has become a crucial condition for the contemporary urban lives of adults and children alike. A 1989 review of the human activity patterns in 12 countries estimated that humans spent only a small amount of time outdoors (1.7–7.9%), arguing that we are "an indoor species" (Ott 1989). This argument has been gaining strength in the 21st century. In 2001, it was reported that the average American spent 89% of their time indoors and 6% in an enclosed vehicle (Klepeis et al. 2001). In Finland, a study of the time consumption of 167 Helsinki residents aged 2–93 suggested that 81–92% of their time was spent indoors (Hussein, Paasonen & Kulmala 2012). In 2016, The Guardian reported that three quarters of 5- to 12-year-old British children spend less than an hour a day outdoors, while a fifth of the children did not play outside at all on an average day (Carrington 2016). This *move indoors* has provoked concern regarding children's connection to nature in the urbanizing world, and some commentators have argued that contemporary children are suffering from "Nature Deficit Disorder" (Louv 2008; Moss 2012).

However, as this chapter argues, the move indoors does not so much mean that "culture" has become more distant to "nature." Rather, indoors can be understood as another kind of association and networking of humans and nonhumans. Humans becoming an indoor species means that they are engaged in different relational activities and breathe different air compared to that outdoors: they become associated with a different set of "actants" (Latour 2005). I am not downplaying the concerns related to the altering of human–environment relations. Rather, I wish to take seriously the recent call to investigate "how different versions of child or adult emerge from the complex interplay, networking and orchestration of different natural, discursive, collective and hybrid materials" (Prout 2005, 79–80). Drawing on Latour, Haraway, and Deleuze, among others, Prout (2005) argues that childhood studies need to move from modernist dichotomizing to the

exploration of "nature-cultures." This is necessarily an interdisciplinary project calling into question the science wars between natural and social sciences. The objective of the so-called new wave of childhood studies, thus, is to craft ways for understanding childhood as biosocially hybrid and emerging within their human and non-human environments in complex and often messy ways (Malone 2015; Kraftl 2013; Prout 2005; Ryan 2012; Taylor & Pacini-Ketchabaw 2015). Drawing on Latour, Prout (2005, 43) suggests that this task requires taking up "the anthropological habit of speaking in the same breath about people, things, animals, environments, bodies, theories, beliefs, [and] spirits."

My investigation circles around one of the central childhood places: the school. I attempt to "crack open" (Deleuze & Guattari 1987; Murphy 2006) the assemblages within which indoor air materializes as privileged comfort and an issue of environmental health, and more. Schools are more than the walls, but the walls participate in constituting what the school and its humans are becoming. Buildings, as well as the air and bodies in them, emerge as natural, cultural, technological, economic, political, and historical "multiplicities" (Deleuze & Guattari 1987).

I will zoom on the recent conversations and actions regarding indoor air in buildings in general and schools in particular. I explore how new standards for building emerged during the 20th century altering the indoor climate in schools and gave rise to new sets of concerns regarding comfort, children's health, and achievement, among other things. The relationalities of building materials, ventilation machines, microbial agents, cleaning practices, and parental activism are investigated in order to make perceptible some conditions within which contemporary arctic childhoods are materializing in schools. In addition, my exploration also seeks to make the point that considerations of what it actually means to grow up in such conditions have been largely absent in these assemblings.

For this study, I talked with twelve children who studied in a school with mold problems. These talks were produced during two weeks of fieldwork in a locality where the parents had organized a school strike, among other actions, in order to speed up municipal decision making regarding the school that had mold problems. I explore how the phenomenon of indoor air problems in the era of energy-efficient building has been materializing in the everyday lives of particular children grounded especially on the small stories that materialized during our talks. I consider the talks "diffractions" (Barad 2007) of the material-discursive practices within which the children were growing up. The talks are materializations of what is becoming perceptible, talkable, and thinkable within particular historically situated arrangements. Being inspired by post-qualitative discourse where data is considered multiple and "transgressive" (St. Pierre 2011), I also draw on my memories. My memories and the children's stories diffracted with research papers allow us to consider ways in which school building can come to matter differently and the imperceptibilities these materializations bring.

Assembling indoor air with comfort and achievement

A common Finnish school rule requires all students go outdoors during the breaks between lessons. When I previously worked as an elementary school teacher, I often observed how the children tried to figure out ways to stay indoors during the breaks. This especially took place during cold weather. The students used to lock themselves in the restrooms, hide behind furniture, walk tremendously slowly in the hallways toward the door, and more. If the weather outside is too cold (e.g., below –25 degrees Celsius), some schools allow students to stay indoors during the breaks. I remember joyousness flowing during these occasions among the children.

When I was in the gymnasium (i.e., secondary school), students were provided a room where they could spend time during the breaks. Especially during the winter, staying indoors meant that we did not have to wear heavy clothing and suffer from the cold air. The privilege of staying indoors opened up a space for our endeavors that were not directly related to school tasks. However,

we were constantly reminded that fresh outdoor air was important for our learning and attentiveness. What was imperceptible in this assemblage was that during the breaks the building also breathed as the empty classrooms were being ventilated by the machines hidden from our gaze. Further, these machines as connected to the energy-efficient building were among the conditions that made our experience of privileged comfort possible.

Some 30 years before these occasions in one country gymnasium in Finland, the practices of building were undergoing a significant shift (Murphy 2006; Mölsä 2017). In 1973, the Organization of Arab Petroleum Exporting Countries proclaimed an oil embargo for the nations perceived as supporting Israel during the Yom Kippur War (Wikipedia: 1973 oil crisis). This embargo manifested the economic power of Saudi Arabia and materialized the dependency of the West on their largest oil exporter. The price of oil quadrupled from US$3 to US$12 per barrel. This energy crisis (along with the second oil shock in 1979) gave a boost to the intensification of the practices of energy efficiency in building, and super-insulation became the new imperative for good building in Finland and elsewhere (Baker 2012; Ionescu et al. 2015; Murphy 2006; Mölsä 2017). New artificial and chemically processed building materials flooded the markets, including plastics, paints, glues, synthetic carpets, and more (Murphy 2006). The use of these new materials was adapted quickly even though the knowledge of how they would function in non-laboratory settings was thin (Mölsä 2017). Tighter houses reduced heat losses and costs but resulted in low air exchange between the outdoors and indoors, emission of poisonous compounds to the indoor air from the materials, mold growth, and thus, problems with indoor air quality (Ionescu et al. 2015; Murphy 2006). Maintaining an adequate air refresh cycle in the era of air-tight building required a shift from gravitational ventilation to mechanical ventilation systems. However, Baker (2012), studying the architecture in U.S. schools, suggests that mechanical ventilation systems were not adapted only due to the energy crisis; in the 1960s, they were already perceived as providing greater reliability and ease of design. They were connected to the emerging notions of comfort and performance.

Murphy (2006) shows how standards for comfort (called the "comfort zone") were set at Yale and Harvard by the American Society for Heating and Ventilation Engineers in the 1920s and 1930s. White, able-bodied young men were placed in control rooms to occasionally lift light weights, and air with a certain temperature, humidity, and flow was pumped in. The "comfort zone" was determined through the comparison of the generated artificial climate and "comfortable and productive labor as indicated by such physiological measurements as those of pulse, weight loss, 'metabolism' (exhaled breath), and body temperature" (Murphy 2006, 25). These air-conditioning systems generated in laboratory conditions and the buildings into which the systems were inserted helped to produce certain standards of subjectivity. Identity, thus, structured the indoor air of the office buildings during the post-war period (Murphy 2006).

Thinking about air-conditioning and education, Ford (2015) explores how the struggles over the standards for educational air conditions started to emerge in the early 20th century among diverse stakeholders. Grounded on the laboratory experiments on young men in their boxer shorts, the regulatory standard regarding the circulation of air in a healthy indoor climate was settled to a universal standard (30 cubic feet of air per minute). This standard could be met only with mechanical ventilation. "Fresh air" and "natural climate" advocates sought to reduce the regulation to 10–15 cfm which could be met by opening a window, while mechanical ventilation engineers responded by questioning the "naturalness" of urban air (Ford 2015; see also Baker 2012, 18–19).

This conversation yielded several studies in the 1960s and 1970s (Ford 2015). For example, Peccolo's (1962) study suggested that air-conditioned classrooms provided conditions for the enhanced performance of students in certain reasoning and clerical tasks. Recently, a Finnish study (Toyinbo et al. 2016) reported that when the ventilation was in accordance with the Finnish government's residential health regulations—6 liters per second per person—students solved

mathematics tasks on average 4% better than in schools where the regulations were not met. The adequate ventilation rate could be met only with a mechanical system that was adjusted according to the group size and maintenance of which was taken care of (Toyinbo et al. 2016). Similarly, a Danish study suggested an increase in achievement in mechanically ventilated classrooms compared to gravitationally ventilated classrooms (Toftum et al. 2015). However, not only the circulation of air indoors has been connected to student achievement. Scholars have also sought to calculate the optimal room temperature for students' work performance. Others have cautioned that the optimal room temperature, however, is found to be climate and season specific (see Salthammer et al. 2016). In addition, to ensure the optimal indoor climate for effective performance, there have also been recommendations to equip classrooms with monitoring devices for carbon dioxide, temperature, and humidity levels (Salthammer et al. 2016). Although there is no space here for more critical exploration of these findings and the methodologies that produced them, these studies suggest that producing efficiently performing subjects in schools is not merely a matter of social issues (such as instruction or group dynamics) or psychological capabilities (such as "motivation") but also that of physiology and biology, and technology. The desire for determining the standardizable human-technology-environment relation for optimal performance is still flowing strong. In this figuration, children are all the same size, breathe the same amount of air in the same rhythm, and intra-act with air in the same way. What emerges is a homogenized yet biosocially hybrid cyborg child.

Mechanical ventilation has also influenced social organizing in schools beyond the achievement discourse. In the 1980s, when I was in elementary school, each pupil in turn had to stay indoors during the breaks. This pupil was referred to as the "organizer." This school was ventilated gravitationally and manually. Among the organizer's duties were cleaning the blackboard, arranging the desks and chairs for the following lesson, picking up stuff off the floor, and ventilating the classroom by opening the window. Opening the window made the air tangible; it made being in the classroom feel different. In most contemporary schools, the ventilation is arranged mechanically. The windows are not allowed to be opened—in some schools, the windows even cannot be opened—in order to assure that the ventilation machines function properly. The organizer-student has become history as the machines (and the companies maintaining them) are now expected to take care of the air-conditioning in the classrooms. The organizer-child with his or her window-opening powers has disappeared along with the blackboards.

Indoor air as nature-culture

The studies into the relations between air, achievement, and comfort help to tease out one image of a child as "biosocially hybrid" (Ryan 2012) that has emerged in conjunction with modern standards for energy-efficient building and related technologies. Yet, in venturing for the optimal conditions for performance, these studies operate with a generalized version of a child, a subject that is called into being through means. Significantly, the air remains a commodity. The air is materialized as humidity, temperature, breathing of humans, and ventilation, leaving out the many other actants participating in the phenomenon of indoor air.

In addition to nitrogen, oxygen, argon, carbon dioxide, water vapor, and small amounts of other gases, the air indoors circulates dust (pollen, hair, skin cells, textile and paper fibers, minerals, etc.), chemical compounds (odors, perfumes, vapors from building materials, etc.), and microbial critters, their spores, and metabolic waste, among other things. The "in" (culture) and "out" (nature) are also enmeshed through the ventilation systems that circulate the outdoor air through indoors. The indoor air may be circulated, heated and cooled, and humidified and dehumidified with a range of machines that bring in their connections to histories, politics, and economics (Ford 2015; Murphy 2006).

Machines that inhabit the indoor spaces may also include computers and their processors, photocopy machines and printers, video projectors, and other technologies that in their own way condition the indoor air as material "breathing" actants. In addition, "breathing" is connected to the compounds that glues and carpets, paints, wallboards, and cleaning products may release to the air causing health effects in humans (Murphy 2006). The number of humans in classrooms differ as do the furnishings and equipment, and the activities carried out in these environments are manifold (Salthammer et al. 2016). With clothes and backpacks, the children and staff may bring into the classroom traces from their pets, scents from washing liquids, microbial companions, and the like. The intimacy between the human body and the air is enmeshed in the broad networking of natural-cultural elements.

Assembling indoor air with environmental health

While air is something that binds humans together with each other as well as their environments at large, more detailed notice of the air is taken only after there is something wrong with it or when it becomes something that can be taken from us (Ford 2015; Latour 2006; Murphy 2006). Somewhere in the early 1990s, in my childhood, I came across a TV program that made a memorable difference. The interviewees were frustrated and sad because they had bought houses in which they were not able to live. The camera moved along the empty rooms, up and down the walls, across the ceiling. The commentator spoke with a voice that indicated seriousness. The grass grew long around these mysterious, gloomy, exciting buildings.

Then, some 10 years later, the kindergarten in which my mother worked had to move. I had visited the place several times. I remember the air in there having a certain still, damp, nose-tickling quality. Most of the artefacts were thrown away—only unopened, plastic-covered packages were saved for future purposes. My mother told me how some people went dumpster diving for furniture and other stuff despite the prohibition. For her, the move was a relief as during the years she had worked in this building she had become sensitive to the microbial companions inside the building and thus unable to work.

In general, moisture and mold, among other indoor air problems, have been considered *the fifth indoor air epidemic*–the former being asbestos, radon, formaldehyde, and cigarette smoke (Salkinoja-Salonen 2016). The Audit Committee estimated in 2013 that 172,000–259,200 people in Finland work in schools and kindergartens where significant dampness and mold problems have been diagnosed. Daily exposure to moisture and mold damage has been estimated to concern 62,000–94,000 elementary school students and 12,000–18,000 high school students (Audit Committee 2013). Overall, the estimated number of people exposed daily is upwards of 600,000, which totals one tenth of the population. Understandably, the costs of rebuilding and health care are significant, not to mention the incalculable emotional and social costs for those who have become severely ill (Audit Committee 2013).

The World Health Organization (WHO) has suggested that healthy indoor air is now a basic right, moisture and mold in buildings effectuate a considerable health risk in "both low-income and middle- and high-income countries, especially where people spend considerable amount of their time indoors" (WHO 2009, 1). Nature has never left the building. Instead, the questions of environmental health now also encompass the places that in one way were designed to shelter us from the environment itself (Ford 2015; Murphy 2006).

Various sensitivity-related illnesses resulting from toxic exposure have increased dramatically during the past few decades (Genuis 2010). Although there are controversies about the causality between molds and health effects, consensus prevails that certain mycotoxins are a risk to human health (Anyanwu 2009; Borràs-Santos et al. 2013; Mousavi et al. 2016; Salkinoja-Salonen 2016). Fungal volatile organic compounds (VOCs) are believed to cause headaches, lack of concentration, inattentiveness, and dizziness and trigger asthma, among other things. However,

responding to VOCs may vary across human bodies and are dependent on the duration and frequency of exposure (Mousavi et al. 2016). This poses further difficulties for determining the standard for indoor air quality applicable to all humans.

The current phenomenon of moisture and mold in schools is akin to the phenomenon of chemical exposure in office buildings. In addition to the questions of optimal performance, the new building materials and the building practices within which they found the markets gave birth to a set of new environmental health issues. For example, the diagnosis of sick building syndrome (SBS) emerged in the 1980s among mostly female office workers in the United States as a common nominator for the many different health symptoms occurring in the office buildings in part due to chemical compounds released into the air by new building materials (Murphy 2006). Setting the phenomenon in context, Murphy (2006, 3) argues that it was possible only in "conditions of relative privilege and luxury" that materialized as new and discrete office buildings expressing an "expectation of comfort and safety as conditions of daily life." Simultaneously, there was a growing awareness, made possible by the environmentalist and feminist movements of the time, that chemical pollutants might not exist merely in distant countries or remote neighborhoods. By the 1990s, SBS had become the largest occupational health issue in the United States among predominantly white female office workers materializing also as petitions, demonstrations, and other forms of political action (Murphy 2006).

In Finland, in addition to the intensive public debate materializing as newspaper articles, committee reports, and scientific studies, parents associations have participated in this phenomenon, most notably by organizing "school strikes." The school strikes have meant in practice that parents have collectively decided to homeschool their children for a given period of time. Through striking, the parents have voiced their concerns regarding the indoor air quality of their local elementary school building and the potential health threat to their children. In these schools, some pupils and staff have repeatedly experienced bodily effects, such as a runny nose, a rash, and respiratory illnesses, even asthma. During the 2010s, at least 17 school strikes, among other political actions, were organized across Finland. Most were due to indoor air problems in local schools. While parents associations previously functioned as teachers' apprentices, organizing field trips and fundraising, they now appear as health activist groups emphasizing "children's rights for healthy work environments."

The indoor air problems in kindergartens and schools have raised significant concerns as they not only expose people of certain professions (such as female office workers in the case of SBS) but also the whole next generation (Salkinoja-Salonen 2016). The parents whom I talked with and who organized the school strike had been learning about indoor air problems in connection with relatives, experts, newspapers, and TV, the internet and social media, municipal documents regarding school building since the 1970s, national policy documents, research papers, education (one parent was trained in building, for example), and their own and their children's bodies. One of the parents' main concerns was that children who had not yet developed health symptoms related to mold would nevertheless be exposed to it which could develop into more severe symptoms in the future. This was considered to affect the children's possibilities for thriving. In this assemblage, "children's health matters the most," as one of the parents said. It mattered how the children felt in schools but also who had the authority to make decisions regarding the children.

Living with toxic molds and their allies

During our talks, some children were perhaps introduced for the first time to the idea that there was a struggle in their locality. The school strike had earlier materialized to them as an extended holiday during which the air-conditioning was replaced. The parents and teachers talked at times about "protecting children's ears" from the issues that might make them feel uneasy. Not all children had been experiencing symptoms in their school. During my fieldwork and talks with parents, teachers,

and children, I noticed and became introduced to a quite complex dance regarding the ways in which children were and were not informed, talked with, and listened to. However, cracking this relational web open is not my task here. Suffice to say, children were entangled with the phenomenon of mold schools differently. The children had differing sources through which they constructed versions of the political struggle, mold, adults' caring, and their bodies in relation to the school building.

In this chapter, I concentrate on the occasions when the talks with children opened up spaces for telling and listening. When I asked about their everyday life at school during the past few months (i.e., when the mold issue had become intensive), some simply said that they were studying and being with friends. At times, these images broke down, and I was introduced to small stories about particular occasions at the school. One child, Laura, whose body had developed symptoms told me how the relations between body and place were starting to matter: "If I start to feel bad in school, if I get a headache […], I will see if I get any symptoms at home. If they stop, then it must be inside the school". Children who had experienced symptoms told how they had repeatedly had to leave the school in the middle of the day, how the symptoms would disappear after some time spent at home or outdoors, how the symptoms that originated at school negatively affected their social well-being (e.g., time spent with friends), as well as their ability to study and keep up with others. Sometimes, the children were subjected to special study arrangements: Some children were homeschooled in the subjects that were taught in the problematic parts of the school, and one did not attend school at all, for example. Indoor air and mold, thus, were materializing in the everyday lives of children as sometimes juxtaposing questions of studying, being with friends, and health all of which were important to them. At times, the air had a different feel to it. It was experienced as damp and causing anxiousness: Sometimes, the air was "difficult to breathe" (Sarah). One teacher told me how one such occasion had resulted in a group of children leaving the school in the middle of the day as they felt that their concerns were not listened to.

Not only the relations between children and adults in school were materializing differently when entangled with material-discursive mold. In addition, the school building itself and its materials became differently perceptible. The most significant problems were located in two school classrooms. These classrooms were shut down, and the children and some of the materials were relocated in a temporary hut in the schoolyard. One of the children, who was now studying in the temporary hut, told me about a situation that had emerged when educational materials had been brought from the moldy school building into the temporary one.

> Netta: When some cupboards were carried there from the moldy part of the school, I think that also there in the temporary building can be that mold, something, a little. Bacteria can spread from it, and then everything is touched by the mold after a while. […] They should have been, they said they should have been ozonized, they were merely disinfected a bit from the top, and it does not help. And then, you know, we have those xylitol drops we can take after meals. They were stored in one of the cupboards as well. So luckily, I have not taken them, and I act as if I forget them every time and then… I waited that the drop machines were changed, and more drops came, and now they have not been in that cupboard but instead in a shelf of our own teacher. And then I think Eve (teacher) was smart when she took her own shelves there and not from the [moldy] school building. And all the own flowers, and there is also an aquarium there in our classroom.

The story of the xylitol drops makes me think about the ways in which the mold school had been becoming perceptible and inspiring action. Mold had become perceptible as having a capability to touch, to spread on diverse surfaces, including furniture. Elsewhere, the children described how working with certain materials, such as fabrics, books, and notebooks, brought from the main

building were sometimes followed by health effects, such as nausea and headache, that would disappear after the children left the school. They were suspicious about touching these materials. Formerly materializing in relation to studying, this stuff was now rematerializing in relation to health. They became perceptible in another set of relations.

For example, xylitol drops are in the school because they participate in dental health education. They are taken after the meal in order to prevent acid attacks. The drops are considered health products, or medicine. They become perceived along the lines of school rules, or striations. However, xylitol drops may rematerialize as poison, when becoming perceived in relation to material-discursive mold. They become "deterritorialized" in order to "reterritorialize" along the lines of the mold school phenomenon, to use Deleuze and Guattari's (1987) conceptualization. Similarly, some children told how they had started to deliberatively avoid certain parts of the school that were associated with mold. In the story above, the teacher was not told about the differing relation with the xylitol drops. It might be because the teacher was still becoming perceived as belonging to the assemblage in which taking xylitol drops would be non-negotiable. Elsewhere, the child talked about how adults cared about the mold issue differently: Teachers cared more about schooling than mold especially if they had no symptoms. However, the story of the xylitol drops shows that teachers are, nevertheless, coming to matter in relation to the things they are connected with in the classroom, such as flowers and the aquarium. Perhaps these things as well escape from the rigid lines of school to produce in-between spaces. Not only mold matters in the materiality of a mold school.

When perceived in connection with "mold," the school building re-materialized for children: It became re-assembled; it started working differently. This should not be a surprise, given that the conversation in the locality was intensive, and the mold issue materialized repeatedly as health effects, researchers conducting indoor air tests, closing of classrooms, school strikes, articles in media, talks with parents and peers, doctor certificates that allowed some children to skip some classes, and the building of a new school next to the old one. The reassembling of the school building organized the movements and actions of children differently making one curious about mold, inducing doubt and feelings of threat, inviting a differing relation to materials, inspiring to develop politics, such as "as if forgetting," "waiting," and leaving the school in the middle of the day, inducing admiration (of the teacher's wiseness), and providing ease, among other things. These seem to be among the flows of energy moving within the phenomenon of mold schools among adults as well. The children were participating in the phenomenon of the mold school through what they did biosocially.

Playing in between threat and curiosity

While the romantic imaginaries on childhood tend to emphasize the restorative, healthy, and uplifting qualities of children's encounters with nature, the fact that children are growing up in an increasingly polluted world disturbs these fantasies (Duhn, Malone & Tesar 2017). Children's encounters with nature can also provoke fears, concerns, and uneasiness as has been the case with indoor air problems. However, there are many other affective agencies at play invoking curiosity, joy, and excitement, for example. For example, one child told me about a new game that had become possible in relation to material-discursive mold. Earlier, the child had told me she found mold disgusting and preferred to talk with her friends about "happier things" instead.

> Tuure: You said "disgusting." I would like to know, in which way it is disgusting. Is it the way it looks or what effects it has on humans, or what is the disgusting about it?
> Sofia: Well, at least the way it looks... There is one thing [that came into my mind]. One of my friends hunts it down in every classroom, looks where it might be, searches the ceiling, where it would be…

Tuure: Oh yeah. That kind of a hobby. Does s/he[1] keep a diary?
Sofia: Not that I know. S/he only spots it there.
Tuure: Has s/he found a lot?
Sofia: Well, how many classrooms s/he would have found? At least from three.
Tuure: So s/he [has classes] in the old school building then?
Sofia: No, s/he is also in the temporary building, but back then, we had classes there [in the old building]. Now we don't have them there anymore.
Tuure: Yeah, then s/he hunted.
Sofia: Yeah.
Tuure: Moldhunter.
Sofia: [laughing a bit] Yeah, when we went there to eat... then... earlier.

The building provides the milieu for the activities of the bodies occupying it. It brings people together, spawning wanted and unwanted activities in the classrooms, hallways, dining room, and outside yard. The building does not matter without the assemblages seizing it. It is possible to hunt or spot mold only when mold is assembled and rendered perceptible, but the activity of hunting or spotting also contributes to this rendering: It materializes the school as the mold school. In our talks, other children talked about similar activities as well: spotting green and black dots and cracking paint on the wall or ceiling. For these children, mold materialized as anomalies in the building that could be detected with eyesight. The building had symptoms as well. Mold becomes the intriguing other, which is attempted to be captured with the methods available for children. At the same time, the school building rematerialized as a venue for exciting, maybe also intimidating and abominable, investigation. In a similar fashion, some researchers depict toxic molds as beautiful and poisonous in the same sentence (Salkinoja-Salonen 2016, 13), and others argue that although a toxin threatens, it also beckons (Chen 2011).

Every day, when I take my son to his daycare, we pass by three empty educational institutions that were closed within the past few years due to indoor air problems. One day, the city provided my photographer friend the keys to one of these school buildings. After dropping off my son, I joined my friend who was taking photographs of the abandoned school. The school staff had left many materials behind as they had moved to another building. Abandoned books and papers were a mess on the floors. The air indoors felt heavy, but mold was nowhere to be seen. We hunted for mold on each floor. When we exited the school building, the cold outdoor air greeted us. I felt different. The body comes to know the difference through its relations.

Mold's touch, touching with mold

What was becoming perceptible to the children was that other living entities were dwelling inside their school. These critters were capable of a kind of touching. In order to know how molds are capable of touching, scientists called animals for help. The composition of indoor air is studied by exposing animal cells to the samples collected from the site. For instance, the toxicity of indoor air may be investigated by using boar sperm from a living donor by exposing the sperm cells to the samples in laboratory conditions that resemble the conditions of a human body. What is being investigated is whether the extracted samples from the indoor air disable or kill the cells (Salkinoja-Salonen 2016). Humans, pigs, and microbes make a strange collaboration, an "oddkin" (Haraway 2016).

1 Third-person personal pronouns are gender-neutral in Finnish.

At least since the 1990s, microbiology researchers have been identifying the microbial diversity and toxicity in indoor air. Many mold genera (e.g., *Aspergillus*, *Penicillium*, *Paecilomyces*, and *Chaetomium)* produce toxins in Finnish buildings in which users suffer from considerable health harm (Salkinoja-Salonen 2016). One of the mold genera, the genus *Aspergillus,* consists of a few hundred mold species found commonly in the air, soil, and decaying vegetation. *Aspergillus* is one of the airborne molds found in indoor environments, and some *Aspergillus* species are known to cause health problems in humans and animals. Not unlike other molds, *Aspergillus* species are versatile. For example, the spores (i.e., conidia) of one of the species that has been found to be a ubiquitous human pathogen, *Aspergillus fumigatus,* are able to disperse along even slight air currents due to their ability to repel water. Due to melatonin in their cell walls, they are also protected from ultraviolet irradiation. Although the primary ecological niche of the species is decaying organic matter, it can also survive in mammalian and avian respiratory tracts particularly due to its tolerance of temperatures (12–65 °C) and pH (2.1–8.8; Mousavi et al. 2016). *Aspergillus versicolor,* a common toxic mold found in Finnish buildings, grows in cold (4 °C) and mammalian body temperatures (37 °C) and tolerates long periods of dryness (Salkinoja-Salonen 2016).

Similar to other organisms, mold species have a metabolic system that makes possible its growth and reproduction, maintenance of its structure, and elimination of waste. These companion species breathe the air and exhale water vapor (Salkinoja-Salonen 2016) and not unlike humans, release their metabolic products into the surrounding climate. The concept, VOC, refers to organic chemicals that vaporize at ordinary room temperature due to their low boiling point. These chemicals may be anthropogenic (such as formaldehyde, which evaporates from paint) or naturally occurring, such as scents and odors that have importance in communication within and between plants and animals (Wikipedia: Volatile organic compound). Microorganisms produce volatile organic compounds (MVOCs) during their metabolism depending on the environmental conditions. The secondary metabolic products of fungi, commonly known as mycotoxins, have been found to cause health problems in humans through impairing certain functions in the immune system that would normally work to remove the fungal elements (Mousavi et al. 2016).

According to a Finnish research group (reported in Salkinoja-Salonen 2016), most of the toxic molds found in sick buildings emit toxins into the air as nanodrops. After being emitted into the air, these nanodrops either mix with the water vapor or land on a surface where they break down and start to germinate. Some of the toxic nanodrops may fragment when the indoor air is turbulent (i.e., mechanically ventilated) which allows them to better travel across the building. The research group also studied the filters in ventilation machines and found that the filters contained large amounts of spores, some rhizomatic structures, and other particles. When adequate moisture became available, potentially due to damp outdoor air, the species started to rapidly produce toxic drops (i.e., vesicles; Salkinoja-Salonen 2016, 82-85). Thus, machine ventilation may also contribute to mold growth by providing the species suitable conditions for living and by enhancing their circulation within the buildings. Molds not only travel indoors from outdoor air, but also new materials, such as wallboards, have been found to contain toxic molds (Andersen et al. 2017).

Humans have always been entangled with molds along with other microbes, not to mention only other lifeforms. As Tsing (2012) has noted, human nature shifts historically together with webs of interspecies dependence, being ultimately an “interspecies relationship.” According to a Finnish building and real estate periodical, mold was considered a “natural phenomenon related to old wooden buildings” before the 1970s (Mölsä 2017). The intensification of energy-efficient building practices, markets for new building materials, and ventilation machines reorganized the air in schools and was accompanied by the quest for optimal performance and comfort.

While buildings were coming super-insulated, more effective cleaning liquids became available and were supported by discourse on ultra-hygiene. In the story of the xylitol drops, the issue of mold stuff is related to that of proper cleaning. In other words, the question of efficient

killing matters. Compared to other habitats, schools provide a harsher environment for microbes in general. It has been argued that some cleaning practices may result in an increase in VOC concentrations in buildings, as well as an accumulation of mold growth (Salkinoja-Salonen 2016; Salthammer et al. 2016). For example, some toxic molds are resistant to disinfection chemicals and antibacterial liquids the use of which will provide these microbes an advantage by destroying their competitors in the school's microbiota (Salkinoja-Salonen 2016). An international comparison between 29 moisture-damaged and 27 control schools in Finland, Spain, and Holland showed that although the schools in Holland and Spain were significantly more "dirty" microbiologically, the students in Finnish schools suffered more from symptoms connected to indoor air problems. The researchers thus asked whether the schools in Finland have become too clean, "cleaned to death" (Salkinoja-Salonen 2016, 105). Unquestionably, schools must be cleaned regularly, but cleaning practices are significant not only to humans but also to the microbiota on which the well-being of children and school staff depends. Humans and microbes touch each other not only in the air but also through technologies, such as cleaning liquids.

Lively all the way up and down?

Many elements entangle in indoor climate change. There are the changes in the material-discursive building practices that have at least partly emerged in relation to assemblages of war and economy. There are the technological developments of building materials, cleaning products, and air-conditioning that seek to purify and liberate "social processes from the temporal and spatial constraints of 'nature'" (Ford 2015, 7) but end up producing new hybrids. There are the air-tight buildings connected to "breathing machines" contributing to our lives as cyborg indoor species. There are the privileged material-discursive practices of comfort and performance that are developing in relation to the universalizing, gendered, and generationalist quest for optimal performance. There are the moisture and the vibrant microbial life. There are the myriad chemical processes, the intra-actions of the building materials and air. There are the illnesses and symptoms and the increasing awareness of their relation to the durations and frequencies of exposure: times of microbes and humans entangled. There are the particular buildings in particular places that are or are not cared for in connection with economic-political processes such as savings. There are the pigs and laboratories. The school building becomes perceptible through its capturing in material-discursive practices.

Although it might be self-evident, this study suggests that children's lives are conditioned by many developments into which they were merely born, having nothing else to do with them. However, they are actively becoming children in the intersections of these natural-cultural elements. When diffracted with the discourse of children's citizenship, children appear among the unprivileged citizens of the arctic: School rebuilding projects have often been set at the bottom of the priority list of public expenses. Perhaps unsurprisingly, the everyday life of children has remained largely imperceptible in these networkings of indoor air problems. When children are present in the discourses of indoor air problems, they are generalized subjects, and the heterogeneous question of what it means to grow up within the phenomenon of indoor air remains imperceptible.

In addition to mapping the developments in the recent indoor climate change, in this chapter I have sought to show some of the ways in which indoor air may materialize for particular fleshy arctic children. It might be true that air becomes perceptible as something that can be taken from us (Ford 2015; Latour 2006; Murphy 2006). Air may become perceptible in relation to privilege and comfort. Being able to spend the whole day indoors in a t-shirt manifests in colder countries the promise of freedom from climate conditions. Sometimes, the air goes in and out of our bodies imperceptibly, but not indifferently.

In addition, other critters participate in our becoming as they practice the space. While critters practice, they also breathe. The way they breathe is connected to their practicing, as well as that of others'. Bodies keep on changing as they become practiced in this interrelated way in their historically situated material environment. Most often, the microbes practicing the school become perceptible as seasonal flus. These microbes are "passers-by." The phenomenon of mold schools is different in that here the microbes become perceptible as toxic inhabitants, unwanted co-dwellers. The walls, classrooms, and study materials may become perceived differently as they become reassembled with material-discursive mold. The xylitol drops may now have been touched by mold materializing in relation to the assemblage of environmental health instead of that of dental health. Affects invoking threat, fear, excitement, and curiosity flow through the practicing of the school deterritorializing and reterritorializing it. Although mold–human intra-actions had been producing headaches in humans and death in mold spores long before they were assembled together through technologies (such as boar sperm-laboratory-indoor air sampling), living with mold in schools also rematerialize the relations between humans. Children may evaluate how their adults deal with the issue, how and about what they care. Children are becoming arctic through what and with whom they breathe, how they practice their environment, and how it captures them.

The processes of urbanization, including that of us becoming an indoor species, have induced concerns regarding children's increased detachment from nature, as well as from other species (Duhn, Malone & Tesar 2017; Louv 2008; Moss 2012). However, the phenomenon of mold schools suggests that nature also resides inside buildings, and that materialization of this nature matters to children in differing ways. These matterings may be related to the circulating concerns regarding health and achievement but may also agence excitement, curiosity, frustration, and empowerment, among other things. In other words, the mundane also materializes for children as inventions of being and knowing differently with friends, adults, the school building, its materials, and companion species.

The learning regarding the body-place-matter that may take place in relation to molds may not be the kind that becomes recognized as valid in educational institutions where the discourse of concern and protection may be too overwhelming. To consider bodily symptoms and rematerializations of play in rotten schools as learning is to recognize the intra-activity of our becoming. While it becomes possible to ask, how the children come along with the microscopic critters, it also begs the question of how molds are experiencing their becoming different with humans. As non-human critters are often regarded as existing separate from humans, as things to be known *about*, the phenomenon of mold schools may help to distract these humanist fantasies. What if we understood the symptoms as knowing-with? The school building is and has always been alive all the way up and down. It is a "contact zone" once in which "'we' have met, we can never be 'the same' again" (Haraway 2008, 287). It is lively even when no humans are physically present as microbes "go to school" all the time whether there is a mold problem or not.

In juxtaposition with the materialization of indoor air as a matter of comfort, children within the phenomenon of mold schools have been becoming aware that the schools are alive all the way up and down: The human world is co-constituted with the "phantom" world. Still, the representation of microbes seems to be narrowed to the pathogenic and generalized toxic mold. Mold has become a curse word: "There is nothing good in mold," as argued by one of the children. This is, of course, understandable. Still, this materialization risks rendering imperceptible that human life is fully interrelated with the lives of the manifold microscopic critters, sometimes toxic, sometimes vital, depending on with which they are becoming. Paraphrasing Latour (1993, 35): "Society is not made up just of men, for everywhere microbes intervene and act." Or perhaps microbes do not act themselves, but the act instead is a symptom, something that is inspired by co-constitution of elements, something that is agenced by the situated encounter.

I finish with a rather risky analogy related to notion of care. Our endeavors for efficiency in building and in killing/cleaning have agenced the colonialization of schools by toxic

molds by diminishing the diversity of life indoors. Humans in more privileged countries have become indoor species, having less dirt under their fingernails than ever before. Caring as a posthuman notion would demand caring not only for human diversity but also of the diversity of life in general. It requires response-ability within the processes we humans take part in effectuating. In this sense, the phenomenon of indoor climate change may not be that different from climate change proper.

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