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How Did the Young Children Encounter the Japanese Urban Landscape?: A Study on Emergent Pedagogy for Sustainability Transformation

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Abstract: This research evaluates how children's new subjectivities emerge through exploring urban landscapes in the river basin in Tokyo. Research has stressed the importance of children as active agents, while posthuman perspectives include all elements of human–nature entangled world as potential agents. This analysis indicates how an assemblage of human and non-human agents contributes to enacting children as critical agents for sustainability issues. The theoretical framework for this study is the theory of landscape, including traditional Japanese discourses and the assemblage theory inspired by Félix Guattari's ecosophy. One of the authors conducted nine-month ethnographic research at a Japanese nursery in 2018, accompanying a five-year-old class whose curiosity drove the expedition at the river basin all the way to the Tokyo Bay. The authors applied the method of multiple interpretations of the documentation, including photos and children's drawings. This exploration and subsequent events during the journey transformed the children's fragmented interpretation of the environment into an interconnected one and translated it into tangible action. This study illustrated that stimulating children's subjectivity toward the landscape and fostering their positive but critical relationship with it through emergent first-hand exploration provided them with potential grounds to be resilient by ethically and ecologically responding to changes in vulnerable environments and potential commons in the community and to take actions for sustainable lifestyles at present and in the future.

Keywords: assemblage theory; early childhood education for sustainability; ecosophy; emergent pedagogy; Félix Guattari; landscapes; neoliberalism; resilience; subjectivity

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1. Introduction

1.1. Young Children in Globalized Neoliberal Landscapes

At present, more than half the world's population resides in urban areas, and by 2050, two-thirds of the world population is projected to be living in urban areas [1]. This rapid urban expansion results in irreversible impacts on and fragmentation of ecological cycles in the local communities as well as in the global biosphere [2] (p. 1). This is one aspect of neoliberal globalization occurring globally, where a metropolis functions as a node of material and energy flows, political and cultural networks connecting metropolises worldwide. In the process of urbanization, spatial relationships have been rearranged in line with neoliberalism, where everything, even nature, and humanity, can be commodified for local or global markets, creating causes of environmental degradation and social inequalities [3–5]. In urbanized landscapes, most land is converted to housings, high-rise condominiums, office buildings, manufacturing factories, and artificial pavements as commodities.

What is at stake is the vulnerability of urban communities; urbanization often results in relatively higher flood risks, loss of biodiversity, greenhouse gas emissions, air, and water pollution, heat island and so on [2,6]. In particular, children are exposed to the highest risk among others as they live longer and are relatively susceptible to environmental

damages. Furthermore, children in metropolitan areas with fewer green areas are deprived of "direct sensory experience of the natural world and opportunities to encounter healthy and abundant ecosystems" [7] (p. 15). Otherwise, this could be an opportunity for them to learn how sound ecosystems are necessary for sustaining the lives of humans and non-humans on the planet and to reflect on our lifestyle from the perspective of sustainability transformation. Nevertheless, these anthropogenic landscape changes call for individuals and communities to gain resilience to cope with construction for a sustainable world in the uncertain future. Now that the number of urban dwellers is growing globally, it is in urban spaces that we need to find opportunities for new ways of living on this planet [8] (p. 140).

To effect a shift from the present unsustainable paradigm to an ethical and ecological paradigm for a sustainable world, early childhood educators and researchers must explore different worldviews and frameworks than conventional ones to prepare to narrate alternative futures with young children [9,10]. Sato [11] (p. 13) stated that learning for sustainability is a holistic educational approach that includes matters such as "thoughts and philosophies, values and ethics, emotion and actions, and a way of living." This means that education for sustainability concerns the subjectivities of young children and educators. Therefore, this study focused on the emergence of subjectivities toward their surrounding human/nature-entangled urban environments as a practice of early childhood education for sustainability (ECEfS). In particular, the materials that documented young children's exploration around the river basin areas in the Tokyo metropolitan areas were analyzed from the perspectives in line with a French psychoanalyst, Félix Guattari, who tried to reorient the globally prevailing neoliberal paradigm to what he called "an ethico-aesthetic paradigm" [12].

1.2. Japanese Context: Ethical and Ecological Crises in the Landscapes

In order to frame this study in the local context as well as the theoretical framework explained later, here we describe what changes happened in the Japanese landscapes along with Guattari's geographical concepts and their impacts on the ethical and ecological issues. In the pre-industrialized Japan up to the Meiji Era (1868–1912), the landscapes in Japan were characterized with "里山 *satoyama*," where "里 *sato*" is a village and "山 *yama*" is a mountain. *Satoyama* can be defined as a village near mountain foot areas, a traditional local foundation, on which the people made their living, such as producing charcoals and cultivating rice paddies. In *satoyama*, regular human interventions to nature contributed to fostering local biodiversity by maintaining sound ecosystems [13] (p. 21). Furthermore, *satoyama* is connected to "里海 *satoumi*," where "海 *umi*" means an ocean. *Satoyama* and *satoumi* together form a bioregional system where *satoyama* enriched *satoumi* by dispensing minerals and nutrients from the mountains through a mesh of river watersheds in the basin, and such landscapes functioned as living organisms, in which human lives and nature were entangled in a sustainable manner. Borrowing from Guattari's words, these landscapes were "the original existential territories" [14] (p. 97), which is something the Japanese are used to be familiar with.

However, in the 1960's, the landscapes started to be "deterritorialized," [14] (p. 101) that is, growing out of familiar surroundings to new and different forms. This occurred because of the rapid modernization and penetration of global capitalism. The forestry and fishery industries were surpassed by the heavy industries and, later, by the service industries; *satoyama* and *satoumi* were swept by urban development [15] (p. 40). Landscapes with the integrity of *satoyama* and *satoumi* as living organisms were fragmented and disassembled into small pieces of space as modernization required de-contextualized and standardized spaces "where everything is interchangeable" [14] (p. 97) for mass production under the pressure of global market competition. A distinguished example was the vast landfill projects around the coastal areas in Japan: conversion of beaches on the shorelines that used to be the "commons" accessible for all citizens and other living things into enclosed industrial structures to produce "commodities" [16]. These areas were incorporated into global networks, which is what Guattari called "Integrated World

Capitalism (IWC)" [17] (p. 21). This study focused on one of such bay areas in Tokyo, a megapolis with more than 13 million inhabitants [18].

Augustin Berque, a French cultural geographer, critically saw this situation in Japan as "a Japanese paradox". He posed the question, "How come a country where, all through its history and even today, the people have never ceased to praise the beauty of nature and show extraordinary sensitivity to slightest variations in *Fūdo* (milieu) become the most polluted country on the planet in the 1960's?" ([19] (p. 203), translated by Mitsuhashi). Responding to his question, Berque pointed out that the Japanese had rarely encountered the landscape in a critically reflective manner because harmony with their surroundings used to be a traditional norm in Japan. For the Japanese, it is not so significant to determine whether the surrounding is a natural environment or social environment because " 自然 *shizen*" (nature) in Japanese has originally meant "自ずから然り *onozukara-shikari*" (the way it becomes naturally), not particularly the physical environment. This implies that if modernization and urbanization occurred, which is conceived as a "natural" course of the matter, individuals are subject to its "natural" course to maintain harmony. This is one of the illustrations of totalitarian traits of the Japanese social and political culture; subjecting oneself to wholeness had been jeopardizing the opportunities of noticing the difference and heterogeneity in the people's subjectivities toward their surrounding environments. Consequently, Berque argues that this relationship between people and landscapes has been one of the causes of citizens' amenable incorporation into the national plan for economic development [19] (p. 210). If Berque's analysis is true, it can be said that this inherent complication of nature/culture and individual/social issues in Japan, combined with the imperatives of economic development under the growing pressures of global capitalism, have resulted in the disassembly and fragmentation of landscape integrity. This study addressed the question of how we, the Japanese, could ever emancipate ourselves from this paradox through "the most miniscule level" [17] (p. 45), that is, early childhood education (ECE). This study might apply to other Asian megapolises such as Singapore, Shanghai, Hong Kong, and other non-Western cities that have been experiencing rapid urbanization and partly share similar cultural and political traits.

1.3. Relation to Previous Research

Recently, ECE researchers have actively studied the issues of sustainability internationally as well as in Japan. In these discussions, children's agency has been a central concern, and especially their participation as citizens is emphasized [20–22]. Conversely, conceptual frameworks associated with posthuman perspectives to de-center human agency have been discussed in relation to the discourses of the more-than-human world [23–25], suggesting all elements of human–nature entangled world as potential agents. While this study still rests on the assumption that children's agency is a central concern in ECE practices, it highlights that how children's agency is enacted in an assemblage of human/non-human agencies is not adequately addressed in the context of ECEfS.

Moreover, it has been discussed that children acting as agents always engage in meaning-making in relation to others and a particular context [26,27]. To determine how children's agency could be activated through their meaning-making in their surrounding environments, this study assumes that applications of landscape approach [28] in ECEfS could introduce new possibilities to know how children are being inspired to make meaning of their surrounding environment and how their agency is enacted by other agencies, including humans and non-humans, in an assemblage such as components consisting of the landscapes. Thus far, landscape approaches for ECE have rarely been studied as an outdoor environment-based approach, and relatively small-scale environments such as gardens and local forests are a common focus in outdoor experience for young children [29,30]. While these studies have offered insightful perspectives on how young children make meaning in outdoor environments, the landscapes, including rivers and mountains as well as their complex interconnectedness as ecosystems in the community, are often described as

backdrops. This study discusses the landscape itself and how they have been experienced and interpreted by young children during exploration in the landscapes of a river basin.

1.4. The Objective of the Study

Based on the abovementioned discussions, the overall objective of the study is to address children's subjectivities as an innovative approach for ECEfS. To achieve this objective, this study specifically aims to analyze the emergence of young children's subjectivities by exploring the landscape of the river basin from the perspective of Guattari's philosophy called "ecosophy" [17]. As a guide in the analytical process, the following three research questions were set:

1. How did the children, the teachers, and the researcher respond to the landscape, and what subjectivities emerged through exploration?
2. What were the distinctive components of landscape to affect their emergent subjectivities of the children, the teachers, and the researcher?
3. How are their emergent subjectivities relevant to ecological sustainability?

As for the structure of the paper, we firstly elaborate the theoretical framework; a Japanese theory of landscapes called "*Fūdo*" as well as Guattari's "ecosophy." Secondly, we explain the materials and methods used. Then, we describe three vignettes to illustrate how young children's subjectivities emerge from explorative walking. Finally, to conclude this study, the implications for ECEfS are discussed.

2. The Theoretical Framework

2.1. Theory of Landscape in the Japanese Context

In Japan, the discourse of "landscape" has been associated with the Japanese concept called " 風土 *Fūdo*," meaning "風 *Fū*" (way) and " 土 *do*" (earth). *Fūdo* is a wider concept than a landscape that features the human–nature relationship. Thus, the discussion of *Fūdo* has been a theme related to the dichotomy of subject/object or culture/nature in Japan as discussed below [31] (p. 21). *Fūdo* would be translated to "milieu," rather than "climate" or "environment" as physical environment [19]. A Japanese philosopher, Tetsuro Watsuji's work was influential in the discourse of *Fūdo*" in Japan. Watsuji stated: "phenomena of *Fūdo* are a way for human beings to find ourselves [32] (p. 18)" in natural environments. In other words, all the human activities from housing, clothing, eating, arts, and religions were generated from how human beings interpret "間柄 *aidagara*" (relationship) between self and natural environments. In this sense, it is natural to infer that it was *satoyama* and *satoumi* that played an influential role in forming *Fūdo* in the pre-industrial Japan. However, as *satoyama* and *satoumi* were swept by industrialization and modernization under the cause of "progress," the perspective of *Fūdo* has been disappearing in their culture. It is clear here that the connotation of *Fūdo* that Watsuji posed is a critique of the Western dichotomic worldviews; humans are separate from nature and destined to control it with advanced technologies.

However, Berque, who studied the Japanese landscape as a cultural geographer, reevaluated Watsuji's concept of *Fūdo* and stepped further to address the aforementioned Japanese paradox. He critically discussed that the Watsuji's concept of *Fūdo* has a deterministic environmental aspect and does not properly evaluate the interpretative phenomenological aspect of human subjectivities in a natural environment. He then states that when we think of *Fūdo*, one should pay attention to a unique dimension that the meaning of *Fūdo* bears. That is, "the dimension of practices that generate milieu over time and ceaselessly arrange/rearrange the milieu" [19] (p. 149). He continues as follows.

> *I qualify this dimension as "trajective" drawing inspiration from authors such as Jean Piaget and Gilbert Durand. Milieu must be thought of as a "trajectivité," that is to say as a "reciprocal genesis" (Piaget) between the components it is composed of, and as a "reversible path" (Durand) from one to another. It is from this perpetual "trajet," from this ceaseless criss-cross where various practices with traits of ecological, technical,*

> *esthetic, noetic, political, etc. concurrently are interwoven, from which a certain milieu is generated*. ([19] (pp. 149–150), translated by Mitsuhashi)

When Berque stresses that *Fūdo* is "natural and cultural, collective and individual and subjective and objective at the same time" [19] (p. 149), we could infer an assumption that if we attempt to resist the standardized landscape controlled and exploited by the force of global capitalism, we should explore a way to notice the singularity of human subjectivities generated through active "trajectivité" as a starting point for reconfiguration of the landscape.

2.2. Félix Guattari's Ecosophy: "Emergent Subjectivity" in the Urban Landscape

From the perspective of *Fūdo* and its relevance to human subjectivities, it is quite useful to draw on a French psychoanalyst, Félix Guattari's philosophical approach called "ecosophy": a coined word, which combined "ecology" and "philosophy" [17] as his philosophical approach shares common values with *Fūdo*. Guattari developed a unique approach to analyzing the affectiveness between human subjectivities and its surrounding environment. Inspired by his own clinical experiences, Guattari attached the particular significance to assemblages that produce individual/collective subjectivities, and he emphasized we should intentionally arrange collective assemblage of enunciations that stimulate our subjectivities to what he called "an ethico-aesthetic paradigm" [12]. For Guattari, subjectivity is something pre-personal, polyphonic, and singular, as the process of subjectification emerges from heterogeneous assemblages including thoughts and ideas of others, including human and non-human and, hence, irreducible to an individual [17] (p. 25). Therefore, for Guattari, individual subjectivity is affected by various collective subjectivities, but, at the same time, the way it is affected is complex and potentially singular. For him, a collective subjectivity is a heterogeneous assemblage of individual subjectivities, where singular subjectivities form a polyphony of collective subjectivity. With this perspective in mind, the authors used subjectivity in both individual and collective senses unless it was particularly distinguished in this study.

Later in his life, Guattari elaborated on the idea of an ecosophy. For him, ecosophy means integration of environmental, social, and mental ecology to effect transformation for an ethico-esthetic paradigm [17] (p. 19). Facing the global environmental crisis, he saw the root of this crisis as reductionism and standardization of collective subjectivity produced by networkings of global capitalism [17] (p. 20). He stated, due to global capitalism, "(subjectivity) loses the taste for difference, the unpredictable, and for the singular event" [14] (p. 98), and he saw this symptom noticeably in the metropolitan urban areas. Ecosophy was Guattari's attempt to reorient "collective subjectivities controlled by capitalism" [14] (p. 102) toward "other modes of valorization (solidarity value, aesthetic value, ecological value . . .)" [14] (p. 103). In particular, in urban planning, this reorientation not only concerns specialists but also "a mobilization of all the components of the 'subjective City" [14] (p. 113). In the following statement, we can see how he valued the inclusion of children's perspectives in reconfiguring urban landscape planning.

> *The wild nomadism of contemporary deterritorialization requires a " transversalist" apprehension of an emergent subjectivity, an apprehension that successfully articulates points of singularity (for example, a particular configuration of the terrain or of the environment, of specific existential dimensions, how children or the physically handicapped or mentally ill see space), virtual functional transformations (for example, pedagogical innovations), all affirming a style, an inspiration, that will recognize, at first glance, the individual or collective creator's signature*. ([14] (p. 113))

Inspired by Guattari's ecosophy, this study used the following two concepts as elements of the theoretical framework; one is "emergent subjectivities" and the second is "assemblage of landscape." Firstly, when Guattari argued ecosophy, he often used the term "emergent subjectivity," which provides a useful perspective to analyze relationships between mental ecology and urban landscapes. Guattari suggested that we catch the

singularity and heterogeneity in human subjectivities, whether individual or collective, as "indices of a potential labour of subjectification" [17] (p. 34). However, Guattari did not argue that the process of subjectification occurs naturally or spontaneously. Rather, he suggested that we create "the conditions of emergence" [14] (p. 99). In particular, he suggests creating an assemblage to mobilize an autopoietic process for subjectification that can respond to a particular circumstance [33] (p. 130).

Secondly, Guattari uses the term "assemblage" (translated from the French word, *agencement*), which serves another important analytical tool in this study. By assemblage, he indicates all the heterogenic components including geographical, physical, biological, ecological, semiotical, existential, and imaginal elements, which compose a "milieu" in which the subject also participates. In this study, the authors apply Guattari's concept of assemblage in the landscape, but with a perspective of what an American anthropologist, Anna Tsing, called "landscape-based assemblages' [34] (p. 158). From this perspective, Tsing looked at assemblage as "multispecies world-making projects" [34] (p. 22) where different species with different rhythms and scales interplay based on the ecosystems at work in the landscapes and, hence, "entanglements that might be mobilized in common cause"; that is, "latent commons" [34] (p. 135). In short, the assemblage in this study refers to heterogeneous and polyphonic gatherings of living and non-living things in landscapes. Furthermore, landscapes are one way of expressing assemblages made of heterogeneous components gathered with or without purposes or intentions and functioning what Tsing called "greater than the sum of their parts" [34] (p. 23). This perspective implies that an unexpected encounter of different assemblages in the landscape could potentially become "happenings" [34] (p. 23) to detect "latent commons" embedded in the landscape, and this experience affords us perspectives of micro-politics, to question global capitalism, which Guattari frequently argued [14].

Guattari believed that assemblages consisting of cities characterized by material and non-material networks are "producers of individual and collective processes of subjectivation by means of collective apparatuses (education, health, social control, and culture . . .) and mass media" [14] (p. 105), and he saw the potential to mobilize the assemblage for educational purposes as one such apparatus [33] (p. 131).

This Guattari's argument on the urban transformation is exactly the cross point where the concept of *Fūdo* and Guattari's ecosophy encounter. As mentioned above, the discourse of *Fūdo* problematizes the human and nature dichotomy and emphasizes the perspective of relationship between human and natural environment. This assumption of *Fūdo* shares a common perspective to Guattari's ecosophy; humans' existential subjectivities emerge from interaction with their environment. Guattari, furthermore, proposed to invent collective apparatus to stimulate and "singularize" subjectivities of urban dwellers through profound analytical experience in an attempt to deterritorialized fixed landscapes dominated by the world capitalism to become more ethical and esthetical forms [14]. This transformative aspect of Guattari's ecosophy could be one way to address Berque's critique of environmental determinism of Watsuji's *Fūdo*, and this is the reason this study applied his ecosophy as a theoretical framework.

2.3. The Hypothesis

Based on Guattari's ecosophical approach to producing subjectivity, this study hypothesizes that the real landscape of the Tokyo metropolitan area could serve as an assemblage to invoke emergent subjectivity in the children, the teachers, and even the involved researcher. As mentioned before in the discussion of *Fūdo*, we argued that the landscape is "trajective" [19], it is ceaselessly regenerating a different milieu upon every immediate experience of a subject's walking into the landscape, encountering with each detailed component of the landscape assemblage, becoming one part of the landscape assemblage oneself, and critically reflecting the emerging subjectivities toward the landscape. This study is an attempt to make analytical cartography of the children, the teachers, and the researcher on how new subjectivities emerged, and try to identify a singularity in their

subjectivities that can potentially become an embryo of future transformation in urban spaces for an ethical and ecological paradigm.

3. Materials and Methods

3.1. The Project

For this study, one of the authors, Mitsuhashi, conducted ethnographic research on a project engaged by a 5-year-old class of 16 children (3 girls and 13 boys) at a nursery in one of the cities in a suburban area of Tokyo. The children of the class used to play outdoors often, but by the time when the researcher, Mitsuhashi, joined the class, the outdoor play was unfolded as an open-ended explorative project. As for the timeframe and geographical information, the project started in May 2018 and ended in March 2019, and the location was around the basin of River A (approximately 20 km in total length) and its main river, River B. River B runs through the Tokyo metropolitan area and drains in Tokyo Bay. In the project, the group of children explored the basin from the origin of River A to the estuary of River B at Tokyo Bay (Figure 1).

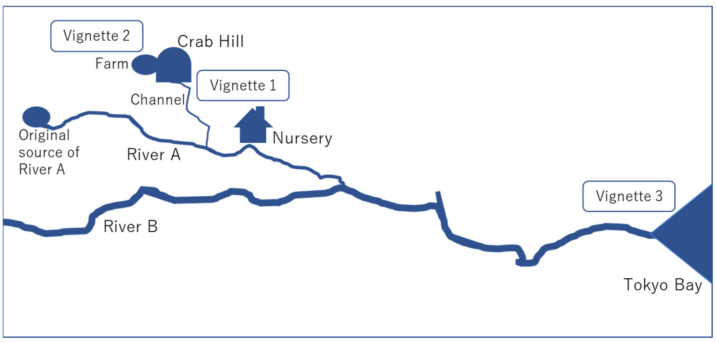

Figure 1. The water-basin landscape in the project where the children explored.

The expedition of the children was accompanied by 2 teachers in charge of the class, one assistant teacher, the headteacher of the nursery, Keiko, the chief manager who was a supervisor of the nurseries under the same cooperation and had experience as a nursery teacher, and Mitsuhashi as the researcher. The trajectory of the project was co-constructed by the children, the teachers, and the researcher as one expeditionary team; the children took a leading role in making decisions on what they would explore about in the project, but concurrently consulted and negotiated with the teachers or the researcher on the next steps. Furthermore, the group of the teachers set a meeting for reflections with the children after each activity to share their feelings and further inquiries and express their interpretations of what they saw and experienced during exploration verbally as well as through drawings. Based on these reflections, the teachers and the researcher had occasional discussions to analyze their curiosity and desires to keep them as momentum for the continuous explorative activities.

As for ethical considerations, a consent form with information was provided to the representative of the nursery, and all parents on behalf of children signed it. Pseudonyms were used to replace all names of participants. Participants were allowed to withdraw from the study at any time. Furthermore, a consent form with the information for publication was signed by the representative of the farm that was cited in one of the following vignettes.

3.2. Data Collection and Analysis

For this project, children with the teachers and the researcher conducted landscape expeditions or others relevant to the project almost once a week. In total, 30 activities were conducted by the end of the project. The researcher, Mitsuhashi, accompanied and observed them. As the volunteer assisting staff/researcher, she sometimes joined the teachers and assisted with the children's learning, while most of the time, she observed what the children were paying attention to in the landscape explorations. Moreover, she

occasionally advised the teachers on how to enrich children's exploration, such as offering ecological talks to the children based on her knowledge as an environmental instructor or making possible suggestions for further outings.

During the research, the following types of data were collected: (1) ethnographic fieldnotes; (2) records of digital data; (3) pedagogical documentations; (4) children's drawings; (5) interviews; (6) personal communication; and (7) life history. Thus, the collected data were analyzed based on "reflexive methodology" [35]. The reflexive methodology assumes empirical data or "facts" in qualitative research are never independent from the researcher's interpretations as they are laden with theories [35] (pp. 4–8). By taking this assumption positively and adopting the perspective of abduction, this methodology considers empirical data as a source of inspiration for a new way of viewing relationships in an event. It suggests systematic reflection on several different levels helps researchers explore different meanings and interpretations to lead to "a quality that makes empirical research of value" [35] (p. 11). Therefore, researchers who carry out reflexive methodology go through the process of multiple interpretations, repeatedly going back and forth between empirical data and different theories to finally reach an alternative way of interpreting an event in the data.

For the purpose of this study, the qualitative analysis was conducted at the following levels; Level (1) data extraction for analysis, Level (2) analysis and multiple interpretations, and Level (3) identification of affective components, and Level (4) final interpretation. In order to ensure the comprehensiveness of the analysis in the multiple interpretations, this study employed multiple triangulation [36] (p. 310) that allow different types of data interplay in the process of interpretations. Table 1 shows the types of data, its specifications and its usage for the multiple triangulation in the analytical process. The actual analytical process was as follows.

Table 1. Types of data used for the multiple triangulation in the analytical process.

Types of Data	Specifications	Main Usage in the Analytical Process
(1) Ethnographic fieldnotes	Observed and written by the researcher	Level 1
(2) Records of digital data	Videotapes, digital photo, IC recorders	Level 1
(3) Pedagogical documentations	Compiled by the teachers	Level 1
(4) Children's drawings	Of the individual children, the groups of children	Level 1, 2, 3
(5) Interviews	Formal interviews with the teachers and the parents, informal interviews with the children and the teachers	Level 1, 2, 3
(6) Personal communication	Email exchanges, informal conversation with the children, the teachers, and the chief manager	Level 1, 2, 3, 4
(7) Life history	Of the individual child, the groups of children, and the teachers informed through personal communications and informal conversations Of the researcher through her self-reflection	Level 1, 2, 3, 4

Note: As the multiple interpretations were proceeded while the author went back and forth between the levels of the analytical process several times, the different types of data were referred to ensure the comprehensiveness of the analysis.

Level (1) Data extraction for analysis: The collected data (Table 1) were reviewed, and several data that seemed to construct one distinguished event were selected. Based on the reason that education for sustainability values pluralistic viewpoints and transformative aspects of educational activities, several events showing distinctive singularity or transformation of the children's subjectivities were selected. After going back and forth several times between this level (Level 1) and the next level (Level 2), finally, 3 events were selected to be reconstructed as written vignettes. (See Figure 1, indicating the locations around which each vignette took place).

Level (2) Analysis and multiple interpretations: In each vignette, the distinctive subjectivities that emerged from the children's encounters with the landscape were analyzed. While going back and forth between empirical data (Level 1) and several referential theories, namely, landscape montage technique, deep ecology, and eco-feminism, different interpretations of the event in the vignettes were considered, as well as the author's (Mitsuhashi) own assumptions and perspectives were critically examined. At this level, the research question 1 was experimentally addressed. One of the preliminary results at this level was presented by the author, Mitsuhashi, in the poster presentation at OMEP Asia Pacific Regional Conference 2019 held in Kyoto, Japan, under the title of "Transformation of children through a project activity for ESD in Japan" in which the interpretation was made mainly within the framework of eco-feminism. After further multiple interpretations were carried out, relevant theories in line with the discourse of *Fūdo* and Guattari's ecosophy were chosen as the theoretical framework to produce the final interpretation.

Level (3): Identification of affective components: The human and non-human components of the assemblage in the landscape, which were active in generating singular and transformative subjectivities in each vignette, were critically examined and discerned. At this level, the research question 2 was experimentally addressed.

Level (4) Final interpretation: With the assistance of the theoretical framework and repeatedly going back and forth between Level 1, 2, and 3, the author worked on finding alternative ways of interpreting the empirical data and finalizing the interpretation. In this process, the author problematized the dominant discourses concerning urbanization and found ambivalence and contradictions in the existing social constructions, including ideology, anthropocentrism, power structure, and social reproductions. In this process, the responses to the research questions 1 and 2 were finalized, and the research question 3 was addressed. At the final process, the analysis to the three vignettes were reviewed and revised in accordance with the final interpretation.

In the following section, a first-person narrative using "I" or "we" was adopted to describe 3 vignettes and each analysis. In reflexive methodology, describing "well-chosen situation" in researchers' explicit and subjective languages was, if partly used, considered as one of the effective ways for them to be "reflective about how the researcher and research products interplay" [35] (p. 325). Especially in the project of this study, the researcher was one of the participants in the learning community as a volunteer assisting staff/researcher and, therefore, not separated from the events that happened during the research period. Thus, a first-person narrative was adopted, where "I" means Mitsuhashi, one of the authors, who conducted the ethnographic research, and "we" means all participants in the exploratory project; the group of children, the teachers, and the researcher.

4. Results

The results of the qualitative analysis were summarized in Table 2. In this section, each vignette and analysis are respectively discussed in more contextualized manners.

4.1. Vignette 1: Reassembling the Landscape

Before the project started, the children visited River A almost every day. At the beginning of the project, the teachers asked them to draw pictures of River A to understand what the children had experienced at the river. Figure 2 presents an example of Mari's, a six-year-old girl in the class, first drawing. The next week, when the children and the teachers went to Crab Hill, where they usually played, we searched for a water spring at the foot of Crab Hill and identified a small spring in a bush. Therefore, we decided to go back to the nursery by walking along a small and old channel originating from the spring and reached River A at the end of the channel. Thus, we came to know that the water spring at Crab Hill was connected to River A. Furthermore, while walking along the channel, we saw the channel supplying water to a few rice paddies among the residential areas. We saw a signboard describing that this area was an old *satoyama* during the pre-industrial times. While walking, the channel goes underground several times. Thus, the children

often listened to the sound of the running water by listening through the paved ground. When we walked back to the nursery, the children drew pictures during the reflection time. Figure 3 presents an example of Mari's second drawing. Thus, they started to wonder how the beginning and the end of River A looked like. Therefore, we took trips to the source of River A and the point where River A joins River B. Later, they drew a map of the areas that we explored. Figure 4 presents one example of a picture a group, including Mari, drew.

Table 2. Summary of the results for each research question in the three vignettes.

Distinctive Events	Responsiveness to the Landscape and Emergent Subjectivities (Research Question 1)	Affective Components of Landscape Assemblage (Research Question 2)	Relevance to Ecological Sustainability (Research Question 3)
Vignette 1: Reassembling the landscape	• The children's images were transformed from the fragmented environment to the connected landscape. • The children were responding to the valuable and meaningful components of the landscape in their subjectivities.	Streams, plants and animals in the rivers, Crab Hill, channel, soil, water springs, rice paddies, a sign board, sounds of underdrains, buildings, satoyama, spot-billed ducks, bridges, water goddess, nursery garden, etc.	• Understandings of the water cycles could inform children of the importance of saving water and preserving habitats for other animals. • Children's meaning-making to a specific place could foster connectedness to and, hence, care for it as something to be protected.
Vignette 2: Responding to the Earth	• The children and the teachers were excited with unexpected meeting with freshwater crabs. • The children and the teachers felt urged to install water tanks at the nursery to save the habitats for freshwater crabs in their community.	The name of Crab Hill, farm, staff of the farm, water springs, pebbles, soils and stratum, freshwater crabs, an old wish of the chief manager, staff of the nursery, rainwater, water pipes, sandpit, biotope, children's idea and imagination, etc.	• Encountering diverse species in a community could lead to practical actions for sustainability to protect the environments of the community as a common habitat.
Vignette 3: Standing at the starting point again	• The chief manager and the researcher started to wonder how Anthropocene affects children's subjectivities. • The children were trying to make their own meanings in the landscapes, and some started to seek their own singular ways to respond to the landscape.	An abandoned boat, motor bridges, airplanes, airport, runways, salty breeze, seagulls, egrets, trees, ripples, observatory, chemical plants, petrochemical complexes, landfills, gray sea water, memories/images of a beach, haze, lost horizon, etc.	• Critical and heterogenous responses to a landscape could enrich "response diversity" though which a community build its resilience against environmental crises in the time of uncertainty. This could lead to new thoughts to envisage the potential becoming of the landscape for a more sustainable world.

Note: In the analytical process, three vignettes were finally constructed and for each vignette, the three research questions were addressed respectively.

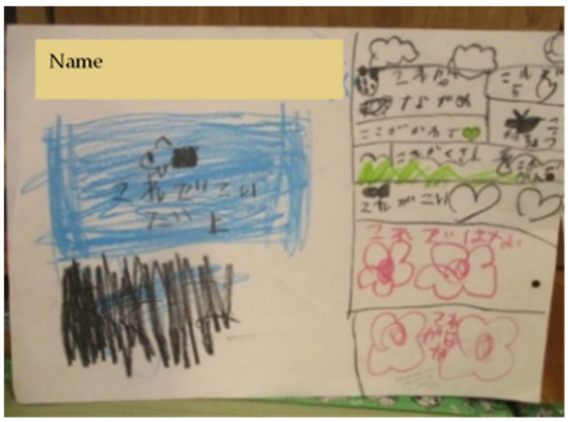

Figure 2. Mari's first picture of River A. She drew each component familiar to the surroundings around the river but separately from the river in the squares and did not construct the landscape.

Figure 3. Mari's picture after walking from the water spring at Crab Hill to River A. She constructed a landscape consisting of Crab Hill, the water spring, the channel, and River A, as well as herself and spot-billed ducks.

Figure 4. A picture drawn by a group of three children, including Mari, after they took trips to the source of River A and the point where River A joins River B.

Analysis

In this vignette, these three pictures indicate that the children's subjectivities were inspired by their encounters with the landscape in the watershed. Figures 2 and 3 are drawn by Mari alone, and Figure 4 is drawn by three children, including Mari. Figure 2 is a picture drawn by Mari before we found the connection between Crab Hill and River A. In this picture, an assemblage in the landscape, namely, flowers, butterflies, bugs, and grasses, was depicted in a catalog-way, with no indication of the relationships between these components in the space. The river was cut at both edges, and only a black carp was depicted in the river. Another boy who drew the river of cut edges alike said, 'I do not know what there is over there'. Apart from Mari and this boy, two more children drew the river with cut edges. This implies that some children at that point were not aware of the origin of the river and where it drained.

Factually, this is when the teachers and I noticed that most of the parts of the river were not visible because of urban construction around or over it, such as underdrains or buildings. Mari's picture (Figure 2) implies that the children in this community are exposed to fragmented landscapes, where we cannot see the whole picture of the landscape. However, as Mari walked along a small channel from the water spring at the foot of Crab Hill to River A and later took a trip to the end of River A, she filled the space with her meanings and values, making place of connections through lived experience, just as Yi-Fu Tuan, a Chinese-American geographer, suggested, "What begins as undifferentiated space becomes place as we get to know it better and endow it with value" [37] (p. 6). After walking, Mari drew relationships between Crab Hill, the channel, and River A, and reassembled these components to construct a landscape using her imagination (Figure 3). There is no existing

point to view this landscape in reality. However, the fragmented sceneries she saw while walking were connected in her reflective imagination and reassembled a landscape.

Furthermore, after the visit to the point where River A joined River B, she configured the whole picture of River A (Figure 4) with the other two children; they decided to draw a map. In this map, the children disproportionately emphasized what had a significant influence in their drawings, indicating the singularities in their subjectivities: they made meaning of certain relationships embedded in the assemblage consisting of the landscape. For example, although in reality the width of River B, a mainstream, is significantly wider than that of River A, a side stream, River B (the upper river) was drawn with the same width as River A (the lower river with two bridges). This indicates that they have more significance to River A, to which children have a closer relationship than River B in their everyday life. Furthermore, they depicted the details of the nursery garden, such as playground equipment and a biotope pond (lower right on the drawing). This indicates the different intensity in their subjectivities, which emerged from the meanings and values they made concerning certain components of the landscape. Another example is the fact that they drew a shrine of 水神 *suijin* [water goddess] (see a small gate drawn at the bottom of the circle, which is a pond of origin on the upper right hand.). *Suijin* is a traditional Japanese god/goddess that people prayed to for rainfall or water-disaster prevention in pre-industrial times [38]. This means they had a deep impression of encountering *suijin*, creating a singular meaning in the relationships with the landscapes. In other words, in children's subjectivities, relationships between each component embedded virtually in the landscape assemblage emerged, and their perceptions of the landscapes were transformed.

From the vignette, it can be said that components of urban landscapes such as water cycle systems, habitats for other living things, and other geographical features were severely fragmented and lost their integrity, and the connections to each other were disrupted and not visible. However, the children could reassemble the fragmented natural environment into a whole landscape as they explored the landscape. The urban space can become a meaningful and valuable place through lived experience when the children fill it with meanings, values, and relationships [37]. The exploration helped visualizing each component of the assembly in the landscape and thus connecting each component and the children themselves in their reflective imagination. In this sense, exploring landscapes can be an approach for young children to connect themselves to different natural cycles or diverse species, which are not necessarily visible in urbanized areas in everyday life. Understandings of the water cycles could inform children of the importance of saving water and preserving habitats for other animals as well as children's meaning-making to a specific place could foster connectedness to and, hence, care for it as something to be protected. In retrospect, it could be interpreted that this children's newly emergent subjectivities, that is, construction of images of water cycles and the sense of connectedness to the place had provided one part of the potential ground for the tangible action described later in the vignette 2.

4.2. Vignette 2: Responding to the Earth

One day in June, we were planning to visit another water spring located on the farm near Crab Hill. When we walked through Crab Hill, we discussed why Crab Hill was named thus even though we had not seen any crabs in the area. Some of the children knew that there were freshwater crabs here in the past, and that was the origin of the name of the hill. Thus, we wondered why we did not see any more crabs. With excitement and high expectations, children hurried to the farm to expect to encounter crabs there. When we reached the farm, we, fortunately, met one of the staff on the farm. He, together with us, searched for living crabs in the spring water and we finally identified them. One boy said, "the crabs were fleeing here from Crab Hill!" The children touched the crabs and observed them, but with joy and excitement. Meanwhile, the staff told us, pointing at the cliff beside the water springs, a story about the soil at the farm; it took 100,000 years to form the stratum, which restored the rainwater and created a habitable space with cold and

clean water for crabs in springs. Furthermore, we learned that the housing development and pavements of the land surface over the hill made it difficult for the rainfall water to penetrate the soil to make the spring water abundant a few decades ago.

A few days later, we discussed this issue in a reflection time at the nursery and how difficult it is for rainwater to penetrate the soil today in the community. Thus, we decided to trace where the rainwater fell on the roof of the nursery. After tracing the water pipes around the nursery building, we found that the water collected on the roof was partly drained to the sewer through water pipes instead of being drained to the ground. The children thus discussed how they could make use of rainwater at the nursery. Many ideas were brought up. Finally, the children reached the idea of putting out the buckets in the garden to collect and restore rainwater and use it for the purposes they discussed.

Hearing these ideas, Keiko, the chief manager, was reminded of her experience that she had once wished to install a rainwater tank several years ago but gave up, as they did not have enough space in the garden at that time. As she encountered the crabs at the farm and thus heard the children's ideas to store rainwater, she suddenly became keen to place the tanks in the garden and proposed this to the director of the nursery. This time, the decision was made to put the tanks in the garden. Finally, in November, two types of water tanks were installed: one near a sandpit thus that children could use it for play and the other nearby biotope to water the pond (Figure 5). After installing the water tanks, the children started to look forward to the rainfall. One morning on a rainy day in February, they were excited and said, "We can have water in the tanks! We can play!," "Rivers are happy to have rain!," and "So, are other animals and forests!".

Figure 5. The nursery installed two water tanks to store rainwater in the garden.

Analysis

For this vignette, an encounter of different assemblages in one landscape stimulated the emergence of subjectivities and unintentionally generated a singular happening. On this day, the expedition was stimulated by a peculiar agency, the name of "Crab Hill." The children's curiosity and desire to know more became increasingly intense as they walked into the farm and thus unexpectedly encountered the freshwater crabs with some help from one of the staff at the farm. Freshwater crabs can only live in clean water, which means the name "Crab Hill" reminded us that there used to be abundant in natural water springs in the community. However, the water springs barely survived housing and motorway development. This is a typical case of "deterritorialization" in Japan, where the landscape consisting of *satoyama* and *satoumi* was disassembled into "interchangeable spaces" [14] (p. 97) for other "productive" usage.

The children walked into the assemblage of the landscapes where crabs were still living, and thus one small happening was created. It was like what Uexküll [39] (p. 43) stated, " ... new connections are created. A new world arises in each bubble." The assemblage of the lifeworld in which crabs are taking part was clean and cold spring water, layers of soil formed in one hundred thousand years to supply the water, forests to support the layers of soil, stones, and pebbles to serve as habitats, small insects, and water plants to feed, and microbes to decompose the dead bodies or their excrement. We stepped into their world and inserted our hands to touch the crabs in cold water. This encounter in the landscape was the beginning of the happening.

Factually, there are two more different assemblages crisscrossed in the happening: one is a group of the staff working on the farm, and they made us pay attention to the historical changes of the spring waters and the roles of layers of soil for the spring water, and the second is the staff at the nursery who decided for the installation inspired by the revival of the old wish that the chief manager once had. These encounters between different assemblages in the landscape invoked the discussion to reuse rainwater in the nursery. Exploration in the landscape connects each assemblage, which leads to the installation of water tanks at the nursery.

In pre-industrial Japan, the water cycle connecting *satoyama* and *satoumi* is used to sustain the lives of diverse species in the region. However, as "stories of progress" [34] (p. 282), anthropocentric linear worldviews, and modernization became dominant, humans started to forget our lives were embedded in the landscape and disconnect waters from the earth to control it for human use only. This resulted in forcing a number of species to become extinct by covering the earth with asphalt and concrete and drying up several water springs in the landscape. An encounter with freshwater crabs was a happening where the children and the teachers reacted to the forgotten earth, resulting in the installation of water tanks. This was their way of expressing ethical responsiveness to the earth as an elemental of the landscape.

Guattari proposed the production of subjectivities to form a new echoic-aesthetic paradigm by creating a collective assemblage of enunciation. By actualizing walking into the landscape in line with the children's curiosity and desire to know more, a collective response to the earth, that is, the installation of the water tanks was enacted through encounters with meaningful components crisscrossed at the landscapes; the name of Crab Hill, the freshwater crabs, water springs, the staff of the farm and the nursery, the stratum, an old wish of water tanks, rainwater, sandpit, biotope and children's idea and imagination among other unnoticed elements. These collectively stimulated the emergence of subjectivities between the children, the teachers, and their milieus. This vignette shows encountering diverse species in a community could lead to practical actions for sustainability to protect the environments of the community as a common habitat.

4.3. Vignette 3: Standing at the Starting Point Again

As the project unfolded, the children started to desire to see the end of River B. Therefore, in February, before the children graduated from the nursery in March, we took trains and walked to the mouth of River B in the Tokyo Bay area. Once we got off the train, we first saw an abandoned boat drifting on the water surface of River B. Thus, we saw a sign explaining that small boats were the only way to get across to the other side of the river. As we walked down to the river, we saw motor bridges over the river. Furthermore, as we approached the bay area, we saw several airplanes touching down and taking off at the airport in the bay. When we walked down for more than 10 km, the children sensed the salty scent from the river water, and some noticed the seagulls flying in the sky and ripples running over the water surface. Finally, we arrived at the official point of the river mouth. However, the ocean view was blocked by a small house of water observatory. The teacher took the children's hands one by one and indicated the view from a small space beside the observatory (Figure 6). The view from this point was chemical plants, petrochemical complexes on the landfills, and extended runways of the airport built in the sea. We could not see the horizon over these constructions.

The following is the conversation I had on the way back to the nursery.

M.M. (researcher): (While walking side by side a teacher and Keiko). What was your impression at the river mouth today?

Teacher: Well . . . there were too many constructions, and we could not see much nature there.

M.M.: Well, the view was blocked by buildings.

Teacher: Children came all the way here, but there was not much nature. I expected to see a view like an ocean.

Keiko (chief manager): It seems like we came here to see the reality. That is a reality.

(Later, while walking on the way back to the station, I asked one girl, Sakura, about her impression.)

Sakura: It was a bit different from what I had imagined. I thought there was a beach extending a bit more, and I could step down on it. I thought we could pick up shells.

M.M.: I see it was not like that.

Sakura: Before graduating from the nursery, perhaps if we say that we wish to see the point where River B joins the ocean again, they might take us there.

Headteacher: Then, we should have stepped down on the place (sand) where a man stood.

M.M.: Aha, there is a little sand there. Is that your image (of a beach)?

Sakura: Not really.

Headteacher: Image of a beach... It was a river just beside and that was the point they (River B and the ocean) joined.

M.M.: (I asked Sakura again). So, do you think there must be a beach around there?

Sakura: I feel that there is one on the opposite side of the path we were walking on. But I guess that we could not see it, as there were buildings.

M.M.: So, you mean we could not see it today, but if we walked over there, perhaps we could see it?

Sakura: . . . where I usually go is the ocean of S Prefecture. (Thus, the conversation stopped as we arrived at the station. While walking, I was talking to Keiko.)

Keiko: This proved, I suppose, that we were not on the *Jungle Cruise*. (She meant one of the popular attractions at Tokyo Disneyland.)

M.M.: If *Jungle Cruise*, there are lots of fun tricks along a river and a funny ranger guiding you to its happy ending . . . well . . . perhaps, is this a starting point?

Immediately after arriving at the nursery in the early evening, the children started to draw pictures reflecting the journey to the river mouth. On the back of each picture, the teachers wrote down what the children said they drew and further questions that emerged from the expedition. Figure 7 is a drawing by Kento, a boy. He stated, "When we arrived at the ocean, I was surprised that River B is much wider than River A. But I thought it would be much wider over there. I want to know if there is ever the end of the ocean. We did not know whether the haze was either smoke from the factories or vapor from the ocean. So, I want to come back to make sure, it is okay if it is from a different point." Figure 8 was drawn by Sakura, who told me that she could not encounter a beach as she had imagined. In the picture, she said, "Around River B joins the ocean. The way of the waves was like. Buildings over there. A tree. What I wonder about is the depth of the ocean. Is it shallow or deep at the juncture of River B and the ocean? Does it get suddenly shallow? Suddenly deep?" Figure 9 is a drawing by Yuki, a boy. "I saw there are also little egrets and gray herons in River B. The width of River B is wider, even at the point of two kilometers from the river mouth. It is different from River A. I want to see many more living things around this ocean (birds). When I visit a mountain and rivers, I want to pick up the litter. I will take care of living things (trees and flowers)."

Figure 6. The children viewed the landscape of Tokyo Bay at the river mouth. On the horizon, lied airport runways and chemical and petroleum complexes.

Figure 7. Kento's drawing at the river mouth; he drew himself looking at the view, wondering whether the haze is smoke from the factory or a natural vapor from the ocean.

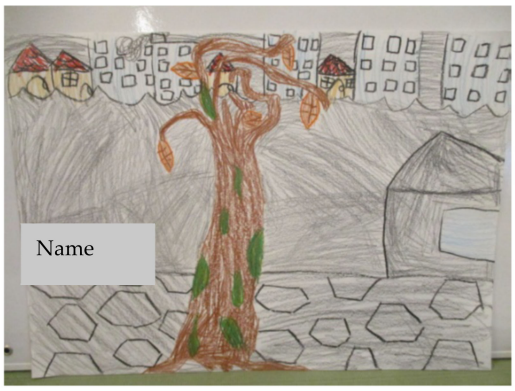

Figure 8. Sakura's drawing at the river mouth. Among the artificial constructions, a tree is stretching its branches out in the air.

Figure 9. Yuki's drawing at the river mouth. He identified little egrets living in the ocean as well.

Three days later, I received an e-mail from Keiko, stating the following.

> "I agree with your comment that this is a starting point. In their lives, in which they cannot live only in a 'nature-oriented' way anymore, how are they going to live? How would they form their values? I am interested in it."

Analysis

From the conversation at the river mouth, I could see some peculiar subjectivities emerging from the assemblages of the landscape. The landscape was chosen as one of the best landscapes in the basin of River B in the 1980's. The landscape we saw on the way to the mouth of River B was surely one projection of "stories of progress" [34]; transition from a crossing boat to airplanes. However, from the conversation I had on the way back, it became apparent that Sakura, the teacher, and Keiko felt differently. This could be the point to bifurcate to singular subjectivity.

Here, I wanted to reflect on what Keiko and I meant by "a starting point." I stated, "This is a starting point," as I did not feel this was the end of our journey. As Keiko stated, it was certainly not like *Jungle Cruise* where a happy ending is programmed. While I was walking into the landscape at the bay, one thought emerged in my subjectivity that it was a new beginning of another journey; it was more troubling and complicated. In retrospect, I meant that from an ecological point of view, humans could not live without connections to nature, even if we were living in a highly urbanized space. The landscape at the river mouth was a rich *satoumi* a few decades ago. However, today, the assemblage of the landscape was transformed to the one overwhelmed by human interventions such as airplanes taking off and landing relentlessly, runways to cover the horizon of the ocean, and petrochemical complexes, which all represented modernity and "stories of progress" [34] (p. 282). This is what Guattari called "deterritorialized landscapes" embedded in a network of world capitalism. How could we emancipate ourselves from the fixed ground of the landscape controlled by integrated world capitalism? How could we envisage alternative views from what it appears today? I suddenly felt this was just the beginning of our journey to narrate other stories for the future of this landscape, but I was not sure what they were yet. Somehow, we must let it start again.

When Keiko agreed with me, she implied that children were not living in a world of nature/human binary worldviews anymore, and we, educators of young children, should start to explore a new way of living, exploring, and making our world. Through the expedition, she realized that the children in front of her were not anymore "children in pure nature" as described in the textbooks of early childhood education and care we, the teachers, Keiko and the researcher used to be familiar with. She posed a question on how young children value and make meaning of the world in this human–nature entangled world. This is her emergent subjectivity, reflecting how an early childhood educator could face the children in the Anthropocene.

All three pictures by Kento, Sakura, and Yuki illustrate that young children are trying to make meaning of what they encounter and actively respond to the landscapes. From Kento's picture (Figure 7), I can see the subtle movements in his subjectivity, trying to make meaning of the view that he was just encountering. Is there an end of the ocean? What is the haze made of? Is it smoke from a factory or is it a natural vapor coming out of the ocean surface? His desire to return here illustrates that he is trying to search for the meaning of the landscape. Sakura's drawings (Figure 8) presented an encounter in the landscape assemblage. Instead of encountering a beach she imagined, she encountered a tree. The tree was drawn in front of the gray waves of the river water with the buildings on the other side. The tree freely stretched out branches in the sky, giving a lively impression of the picture. This singularity of her subjectivity could be interpreted as her way of expressing a response to the earth. This is a curiosity for living life, even in the artificially modified landscape. Tsing called those who still hold curiosity for the lives of small things such as wildflowers without names even in the world of neoliberal utilitarianism, "company" [34] (p. 282). Tsing [34] (p. 282) implies that such people have been partly contributing to

sustaining "latent commons", the foundation for the lives of multiple species, even in disturbed landscapes.

Yuki is another such company. He drew one little egret at the center of his picture (Figure 9). He was surprised to see that the birds he usually sees in River A were also living all the way down in River B. This discovery invokes a new subjectivity that even the landscapes look different whether it is a mountain, a river, and an ocean; they were all connected throughout the watershed. This resonates with the sequences shown in vignette 1 where Mari reassembled the landscape of River A. His comment "I want to see many more birds living around this ocean" implies that he felt that there are more species virtually living in the assemblage in the landscape. His emerging "responsiveness to the earth" was the wish to pick up litter on the ground of a mountain and a river and take care of living things unforeseen but virtually existing in the ocean.

The study implies that this pedagogy could be an indirect but radical approach to foster the resilience of urban communities. Brian Walker, a scientist in ecological sustainability and resilience, highlighted "response diversity," meaning "different ways for doing the same things, with different capacities to respond to different kinds of disturbance," as one of the important attributes that enhance resilience in socio-ecological systems [40] (p. 1). Critical and heterogenous responses to a landscape through firsthand experience could lead to new thoughts to envisage the potential becoming of the landscape for a more sustainable world. From this perspective, heterogeneity in subjectivities, whether it is in adults, young children, individual, or collective are also critical elements that contribute to resilience in a community as it could open up multiple aspects of the issue at question.

5. Discussion and Conclusions

The overall objective of the study was to address children's subjectivities as an innovative approach for ECEfS. The research questions to guide the analytical process were:

1. How did the children, the teachers, and the researcher respond to the landscape, and what subjectivities emerged through exploration?
2. What were the distinctive components of landscape to affect their emergent subjectivities of the children, the teachers, and the researcher?
3. How are their emergent subjectivities relevant to ecological sustainability?

Before discussing the overall objective, this section starts with addressing the three research questions. As for the research question 1, the three vignettes illustrated the children, the teachers, and the researcher were actively responding to the landscape all through the explorative walking. The children's drawings and the conversations showed the singular and even transformative subjectivities emerging while the children were ceaselessly trying to make their own meanings, relationships, and values to the certain place and components in the landscape they encountered.

Regarding the research question 2, this study revealed that a complex set of various components of the landscape assemblage were affecting the emergent subjectivities of the children, the teachers, and the researcher. They are both human and non-human components interplaying together, such as freshwater crabs, the name of the place, and even old wish and personal imaginations. Instead of identifying single or a few decisive components, this study discerned assemblages of human/non-human entangled components and discussed how these heterogeneous agencies together enacted the children's agencies and unexpectedly produced singular events for social transformation.

Regarding the research question 3, this study illustrated that the emergent subjectivities through exploration in the landscape have the potential to address ecological sustainability issues in both shorter and longer-term. In this nine-month project, there were actually more water-related environmental actions taken by the children's initiatives besides the installation of the water tanks. These include raising public donations for water-disaster in the western part of Japan and setting a non-swimming day to save water once a week. Children's discovering natural cycles and diverse species in a community and making their own meanings and values to landscapes could lead to critical reflections on

their lifestyle and foster ecological literacy for them to take ecologically informed decisions in everyday life now and potentially even in urban planning activities in the future. It will stimulate a diverse response that enhances the resilience of the community in the longer run.

Based on the results gained through the research questions, we now discuss the overall objective of the study. By addressing children's emergent subjectivities, it could be concluded that this study illustrated an innovative approach for ECEfS. Conventionally, environmental actions tend to be conducted by managerial initiatives where children participate in predetermined environmental plans and goals. However, this study showed an alternative approach where the children and the teachers collectively take initiatives inspired by their emergent subjectivities through their learning experience. In this approach, the children and the teacher were involved in environmental projects as co-constructors. Borrowing the words from Dahlberg and Moss [41], we call this approach "emergent pedagogy for sustainability transformation," which takes "the perspective of emergence and potentiality" deriving from "a complex set of assemblages" [41] (p. xxi) in pursuit of transformation for an ethical and ecological paradigm. It could lead children and even teachers to deeper understandings of why they should address today's environmental crises as it was enacted based on their existential desires. This is not to deny the conventional way but to add another innovative approach for ECEfS.

Finally, we now here discuss some practical implications by introducing the concept of "transversalities" as a holistic, harmonious and inclusive educational approach. Transversality is the term that Guattari used to insist the values of crossing various borders whether it is physical, psychological, or structural in pursuit of new thoughts for an ethical and esthetic paradigm [42]. Especially for the practical purpose of ECEfS, the authors particularly suggest three different transversalities could be useful: geographical transversality, social transversality, and relational transversality. As of geographical transversality, this study showed there are abundant opportunities of ECEfS beyond the walls of nurseries. The teachers at the nursery in this study enjoyed taking public transportations to explore the basin. Thus, educators could sometimes step out of their comfortable territories to venture to nomadic explorations, following children's curiosity and desire to know more about the community. As for social transversality, educators could notice that what matters inside their nursery matters outside in the society at the same time. For example, water runs through the community and comes to the nursery through water taps or rainwater pipes and goes out to the community again, thus as electricity, garbage, and other resources. The educators could pay attention to the lifecycles of all the resources used in their nursery and problematize its unsustainability in our lifestyle and find out solutions through exploration beyond the walls of the nursery. As of relational transversality, this study revealed complex blends of heterogeneous components in the surrounding environments were ceaselessly affecting humans' subjectivities. Relational transversality matters both the human-environment and children-adult relationship. The teachers in this study employed diverse strategies to listen to the children's subtle changes in their subjectivities, such as having meetings and drawing pictures after each outing for reflection, and holding art exhibitions to share their learnings with the parents. The environmental actions to put the water tanks was one of the unexpected events that happened in this listening process. This implies educators could be sensitive to even trivial components surrounding children as the potential to unfold an environmental action and listen to their responsiveness carefully to take opportunities for sustainability transformation. Educators could be open and even enjoy being affected by children for sustainability transformation.

Being inspired by the discourse of *Fūdo* and applying Guattari's ecosophy in the context of ECEfS, this study was a trial to interpret a nursery as an apparatus to produce subjectivities toward a more ethical, ecological, and polyphonic world. This study illustrated that stimulating children's subjectivity towards the landscape and fostering their positive but still critical relationship with it through emergent firsthand exploration provided them with potential grounds to be resilient by ethically and ecologically responding

to the changes in vulnerable environments in the Anthropocene and potential commons for other lives in the community and to take actions for sustainable lifestyles at present and in the future.

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References

1. United Nations. World Urbanization Prospects: The 2018 Revision. 2019. Available online: https://population.un.org/wup/Publications/Files/WUP2018-Report.pdf (accessed on 14 May 2021).
2. Seto, K.C.; Fragkias, M.; Güneralp, B.; Reilly, M.K. A meta-analysis of global urban land expansion. *PLoS ONE* **2011**, *6*, e23777. Available online: https://sustainabledevelopment.un.org/content/documents/2539journal.pone.0023777.pdf (accessed on 14 May 2021). [CrossRef] [PubMed]
3. Brenner, N.; Theodore, N. Cities and the geographies of "actually existing neoliberalism". In *Antipode*; Blackwell Publishers: Oxford, UK, 2002; pp. 349–379.
4. Harvey, D. *A Brief History of Neoliberalism*; Oxford University Press: Oxford, UK, 2005.
5. Rossi, U. *Cities in Global Capitalism*; Polity Press: Cambridge, UK, 2017.
6. Huang, K.; Li, X.; Liu, X.; Seto, K.C. Projecting global urban land expansion and heat island intensification through 2050. *Environ. Res. Lett.* **2019**, *14*, 114037. [CrossRef]
7. Committee on the Rights of the Child. Report of the 2016 Day of General Discussion: Children's Rights and the Environment. 2017. Available online: https://www.ohchr.org/Documents/HRBodies/CRC/Discussions/2016/DGDoutcomereport-May2017.pdf (accessed on 14 May 2021).
8. UNEP. Strategic investments towards resource efficient cities. In *Sustainable Consumption and Production: A Handbook for Policymakers*; UNEP: Geneva, Switzerland, 2015; pp. 139–157. Available online: https://www.unep.org/resources/report/sustainable-consumption-and-production-handbook-policymakers (accessed on 14 May 2021).
9. Inoue, M. Fostering an ecological worldview in children: Rethinking children and nature in early childhood education from a Japanese perspective. In *Research Handbook on Childhoodnature: Assemblages of Childhood and Nature Research*; Cutter-Mackenzie-Knowles, A., Malone, K., Hacking, E.B., Eds.; Springer: London, UK, 2018; pp. 1–31. [CrossRef]
10. Davis, J. Examining early childhood education through the lens of education for sustainability: Revisioning rights. In *Research in Early Childhood Education for Sustainability: International Perspectives and Provocations*; Davis, J., Elliott, S., Eds.; Routledge: New York, NY, USA, 2014; pp. 21–37.
11. Sato, M. Jizokukanouseino kyouiku no igi to tenbou [The significance of education on sustainability and its prospects]. In *Jizokukanouseino Kyouiku [Education on Sustainability]*; Sato, M., Kiso, I., Tada, T., Suwa, T., Eds.; Kyouikushuppan: Tokyo, Japan, 2015; pp. 1–15. (In Japanese)
12. Guattari, F. *Chaosmosis: An Ethico-Aesthetic Paradigm*; Bains, P.; Pefanis, J., Translators; Power Publications: Sydney, Australia, 2006; Originally Published as Chaosmose, 1992.
13. Takeuchi, K. The nature of satoyama landscapes. In *Satoyama: The Traditional Rural landscape of Japan*; Takeuchi, K., Brown, R.D., Washitani, I., Tsunekawa, A., Yokohari, M., Eds.; Springer: Tokyo, Japan, 2003; pp. 9–40.

14. Guattari, F. Ecosophical practices and the restoration of the "subjective City". In *Machinic Eros: Writings on Japan*; Genosko, G., Hetrick, J., Eds.; Univocal Publishing: Minneapolis, MN, USA, 2015; pp. 97–115.
15. Nakamura, T.; Kitazawa, T. Satoyama Satoumi to Toshi No Seitaikei [Satoyama Satoumi and Urban Ecology]. The Final Report on Chiba's Satoyama Satoumi Sub-Global Assessment (pp. 35–41). 2011. Available online: https://www.bdcchiba.jp/publication/bulletin/bulletin04/rcbc4-07ch2-02.pdf (accessed on 14 May 2021). (In Japanese)
16. Takasaki, H.; Takakuwa, M. *Nagisa to Nihonjin: Irihamaken No Haikei [Beaches and the Japanese: Rights to Access to Beaches]*; NHK Books: Tokyo, Japan, 1976. (In Japanese)
17. Guattari, F. *The Three Ecologies*; Pindar, I.; Sutton, P., Translators; Continuum: London, UK, 2008; Originally Published as Les Trois Écologies, 1989.
18. Tokyo Metropolitan Government. Available online: https://www.toukei.metro.tokyo.lg.jp/index.htm (accessed on 14 May 2021).
19. Berque, A. *Le Sauvage et L'artifice: Les Japonais Devant la Nature. Gallimard, 1986. Fūdo No Nippon: Shizen to Bunka no Tsutai. [Japan of Fūdo: Trajectivité between Nature and Culture]*; Shinoda, K., Translator; Chikumashobo: Tokyo, Japan, 1988.
20. Davis, J.; Engdahl, I.; Otieno, L.; Pramling-Samuelsson, I.; Siraj-Blatchford, J. *The Gothenburg Recommendations on Education for Sustainable Development*; Swedish International Centre for Education for Sustainable Development; Chalmers University; The University of Gothenburg: Gothenburg, Sweden, 2008.
21. Ärlemalm-Hagsér, E.; Pramling-Samuelsson, I. Early childhood education and care for sustainability: Historical context and current challenges. In *Early Childhood Education and Care for Sustainability: International Perspectives*; Huggins, V., Evans, D., Eds.; Routledge: New York, NY, USA, 2018; pp. 13–27.
22. Hagiwara, M. *Sekaino ESD to Nyuyoujikikarano Sankaku [World's ESD and Participation from Early Childhood]*; Kitaohji Shobo: Kyoto, Japan, 2020. (In Japanese)
23. Weldemariam, K. Challenging and expanding the notion of sustainability within early childhood education: Perspectives from post-humanism and/or new materialism. In *Ethical Literacies and Education for Sustainable Development*; Franck, O., Osbeck, C., Eds.; Palgrave Macmillan: Cham, Switzerland, 2017; pp. 105–126.
24. Malone, K.; Truong, S. Sustainability, education, and Anthropocentric precarity. In *Reimagining Sustainability in Precarious Times*; Malone, K., Truong, S., Gray, T., Eds.; Springer: Singapore, 2017; pp. 3–16.
25. Sadownik, A.R.; Gabi, J. (Re)imagining entangled sustainability: A human and nonhuman theorisation of belonging to safeguard sustainability's holism. *Sustainability* **2021**, *13*, 4714. [CrossRef]
26. Rinaldi, C. *Dialogue with Reggio Emilia: Listening, Researching and Learning*; Routledge: New York, NY, USA, 2006.
27. Dahlberg, G.; Moss, P.; Pence, A. *Beyond Quality in Early Childhood Education and Care: Languages of Evaluation*; Routledge: New York, NY, USA, 2013.
28. Brandt, C.B. Landscapes as context for learning. In *International Handbook of Research on Environmental Education*; Stevenson, R.B., Brody, M., Dillon, J., Wals, A.E.J., Eds.; Routledge: New York, NY, USA, 2013; pp. 275–283.
29. Änggård, E. Making use of "Nature" in an outdoor preschool: Classroom, home, and fairyland. *Child. Youth Environ.* **2010**, *20*, 4–25.
30. Morgan, A.; Waite, S. Nestling into the world: The importance of place and mutuality in the early years. In *Early Childhood Education and Care for Sustainability: International Perspectives*; Huggins, V., Evans, D., Eds.; Routledge: New York, NY, USA, 2018; pp. 51–66.
31. Berque, A. Thinking the ambient: On the possibility of shizengaku (natural science). In *Japanese Environmental Philosophy*; Callicott, J.B., McRae, J., Eds.; Oxford University Press: New York, NY, USA, 2017; pp. 13–28.
32. Watsuji, T. *Fūdo [Milieu]*; Iwanami Shoten: Tokyo, Japan, 1979. (In Japanese)
33. Guattari, F. *Seishinbyouin to Shakaino Hazamade [Between Psychiatric Hospital and Society]*; Sugimura, M., Translator; Suiseisha: Tokyo, Japan, 2012; Originally Published as, De Leros Ā La Borde, 2012. (In Japanese)
34. Tsing, A. *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*; Princeton University Press: Princeton, NJ, USA, 2015.
35. Alvesson, M.; Sköldberg, K. *Reflexive Methodology: New Vistas for Qualitative Research*; Sage: London, UK, 2018.
36. Denzin, N.K. *The Research Act: A Theoretical Introduction to Sociological Methods*; Transaction Publishers: Piscataway, NJ, USA, 2009.
37. Tuan, Y. *Space and Place: The Perspective of Experience*; The University of Minnesota Press: Minneapolis, MN, USA, 1977.
38. Hirafuji, K. *Nihonno Kamisamato Tanoshiku Ikiru [Living Joyfully with Japanese Gods]*; Toho Shuppan: Tokyo, Japan, 2016. (In Japanese)
39. Uexküll, J.V. *A Foray into the Worlds of Animals and Humans: With a Theory of Meaning*; O'Neil, J.D., Translator; The University of Minnesota Press: Minneapolis, MN, USA, 1934.
40. Walker, B. Resilience: What it *is* and is *not*. *Ecol. Soc.* **2020**, *25*, 11. [CrossRef]
41. Dahlberg, G.; Moss, P. Foreword. In *Movement and Experiment in Young Children's Learning: Deleuze and Guattari in Early Childhood Education*; Olsson, L.M., Ed.; Routledge: New York, NY, USA, 2009; pp. xiii–xxviii.
42. Guattari, G. *Psychoanalysis and Transversality*; Hodges, A., Translator; The MIT Press: Cambridge, MA, USA, 2003; Originally Published as Psychanalyse et Transversalité, 1972.