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Learning from Regional Sustainable Development in The Netherlands: Explorations from a Learning History

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Abstract: This case report is about a regional land-use planning project in the Netherlands. Initiated by the province of Gelderland and Radboud University (RU), the project aimed to create "Communities of Ownership" (CoO's), local associations of townspeople who would engage in collaborative vision-building related to sustainable land development. The guiding conceptual model was "The Natural Step" (TNS), a systems-level approach to sustainability. We describe the land-use project and the learning history we constructed to help project managers and facilitators learn from the different perspectives that project actors conveyed. The learning history indicated that the project had limited success. We discuss four factors shaping the project's results and the lessons learned related to those factors. The first lesson concerns the importance of a shared vision for sustainability among stakeholder groups. The second focuses on the preconditions necessary to work with The Natural Step effectively in certain contexts. Lesson three is about what it takes for a learning history to serve as a catalyst for collective learning and project improvement. Lesson four sheds light on the importance of respecting differences in stakeholders' levels of sustainability awareness. We speculate that these differences may have shared characteristics with the kind of developmental differences that constructivist stage theorists of human development have articulated. Finally, we discuss the implications of our analysis for the leadership of sustainability initiatives.

Keywords: The Natural Step; sustainability; leadership; developmental levels; awareness; action research

1. Introduction

Perhaps more than any other country in the world, The Netherlands depends on the thoughtful and effective management of water. The name of the nation, literally the "lower lands" suggests an existential truth: Large parts of the country would be underwater if it were not for the nation's conscious relationship with its seas and bays, rivers and tributaries, and floodplains and deltas.

Within this context of concern for its waters, The Netherlands faces a large challenge: River discharges are expected to fluctuate more, in approximately 50 to 100 years, due to climate change. To prepare for this, national and provincial governments have undertaken land use planning and development projects along the banks of the Waal River, one of the nation's major waterways.

The case reported in this paper was a project (Wealthy Waal Sustainable) within a longer-term land-development program along the Waal River (Wealthy Waal) in the Dutch province of Gelderland. Initiated by Radboud University in cooperation with the province, the project aimed to integrate comprehensive sustainability principles in land-use planning and decision-making. The idea was to start local, citizen-led Communities of Ownership (CoOs), which were to develop a vision and make recommendations on land use to regional councils. Radboud University, with support from the province, chose The Natural Step's "Framework for Strategic Sustainable Development (FSSD)", a longstanding and widely respected approach to sustainability planning [1,2], as the substantive foundation for the project.

This paper is an interpretive account of the project. It begins with a description of the land-use planning initiative and then moves into a description of the learning history. A discussion follows of lessons learned about four factors affecting the project's success. We give special attention to one of these factors, inattention to differences in awareness levels, in part because these levels struck as especially significant in Wealthy Waal Sustainable and in part because they have received limited attention in the research literature. In the last major section, we explore implications of our analysis for sustainability leaders.

2. The Sustainability Initiative

We describe two essential features of the project: (a) Its sustainability principles and intended change sequence and (b) its organizational structure and start-up.

2.1. Sustainability Principles and Change Sequence

Wealthy Waal Sustainable was intended to be guided by the Framework for Strategic Sustainable Development (FSSD) set forth by The Natural Step (TNS). Included within this framework is a systems-level definition of the meaning of sustainability. The system in this context is the Earth with everything in, on and around it. According to The Natural Step, we humans engage in practices that diminish the Earth as a complex system, such as using natural resources at a rate faster than Earth can replenish them or making chemical products at a rate faster than it takes to break those products down or in a way that it is not beneficial for nature. Because we depend on nature and natural resources, this means we are in effect cutting off the tree branch on which we sit. Dr. Karl Henrik Robèrt, founder of The Natural Step organization, collaborated with several other scientists [1–3] to comprehend the complexity of the sustainable functioning of Earth as a system and to convey that understanding in principles that a layperson could relate to. Four such principles rooted in basic science, called the four system conditions of The Natural Step, are as follows:

In a sustainable society nature is not subject to systematically increasing concentrations of

(1)   substances extracted from the Earth's crust;
(2)   substances produced as a byproduct of society;
(3)   degradation by physical means; and in that society;
(4)   people are not subject to conditions that systematically undermine their capacity to meet their needs.

The Natural Step not only set forth content principles. It also articulated a change model to empower communities and organizations to implement the principles. One important component of this model is a change sequence referred to as the ABCD approach: "Awareness, Baseline Analysis, Compelling vision, and Down to action". Through The Natural Step's approach, organizations learn:

(A)   to become Aware of a "whole-systems" definition of sustainability, with the guiding principles at its core
(B)   to conduct a Baseline analysis as a way of identifying discrepancies between sustainability principles and an organization's current functioning

(C)　　　to generate a Compelling vision for the future in order to determine the gap between the status quo and the desired situation and come up with Creative solutions that will close this gap, and then

(D)　　　to devise an operational plan and get Down to action to implement those solutions.

An important aspect of this ABCD planning process is that it is based on the concept called "backcasting from principles". Backcasting is the process of moving backwards from an imagined vision of success. One begins with an end in mind, moves backwards from the vision to the present, and then moves step by step towards the vision. It is essentially placing ourselves in the future, imagining that we have achieved success and looking back to ask the question: "What do we need to do today to reach that successful outcome?".

Taken together, the principles-based and whole-systems view of sustainability, including but not limited to the four basic principles, the importance of backcasting and the change sequence referred to above, constitute the FSSD. This is a broad framework for moving towards a more sustainable world.

2.2. Organizational Structure and Start-Up

The project "Wealthy Waal Sustainable" was shaped by two main institutional structures: The province of Gelderland and the Department of Sustainable Management of Resources (DSMR) at Radboud University (RU) in Nijmegen. DSMR's focus is on advancing theory and practice to meet broad societal challenges related to sustainable development. The province's focus, relative to the issues involved in Wealthy Waal Sustainable, is on river safety and on creating workable solutions to land-use problems. The intention of Wealthy Waal Sustainable was to integrate DSMR's broad theory/practice focus with the province's more pragmatic need for successful problem solving through community engagement.

Before attempting to operate a joint project, the province funded RU to organize a "launch conference". This was designed to bring together well-respected authorities in sustainability with local organizations and townspeople from nine communities within the province. On the basis of this conference, which many found inspirational, and of a previously completed survey of stakeholders' views on sustainable land development, the province and RU determined that a cooperative project was feasible.

Soon after, RU put forward a proposal to integrate sustainability into the ongoing project of Wealthy Waal by creating CoO's that would be facilitated by sustainability advisors and facilitators with experience in working with methods in systems thinking, hired by RU. The proposal called for the adoption of The Natural Step model as the innovation framework to guide the work of the university, the province and the CoO's. The university chose TNS for several reasons. One was that a growing body of case studies indicated that the TNS was a conceptual fulcrum for many successful sustainability initiatives around the world, in municipalities, corporations, businesses, academic institutions and not-for-profit organizations [2]. In addition, Karl Henrik Robèrt, TNS's founder, had given a lecture in The Netherlands that inspired a group of people to receive training in the FSSD model. A cadre of facilitators was thus available for the university to tap into. A meeting of experts determined that besides "Ecological Footprint" [4] and "Cradle to Cradle" [5], The Natural Step Framework was an interesting, comprehensive framework to work with [6].

The university's proposal was accepted by the province, and RU proceeded to hire the facilitators, some of whom had completed TNS facilitator training program and all of whom had experience in group facilitation. The facilitators within Wealty Waal Sustainable were expected by the university to help the CoO's and the province's project leader to build a collective capacity for strategic sustainability visioning and decision-making. To guide the project's operational design and implementation, a steering committee made up of RU and provincial representatives was established. The university, eager to learn from applying The Natural Step's framework and committed to creating a sustainable future along the Waal, in addition funded project research, which became the learning history summarized in this paper. However, as we will discuss later, not everyone within Wealthy Waal

Sustainable was on the same page. For instance, the province accepted the choice to adopt TNS, but later this choice seemed to represent more of an acquiescence to TNS than a commitment.

3. Learning History

We first discuss the purpose and method of the learning history. Then we report on some of its findings.

3.1. Purpose and Method

We, as university-affiliated researchers and facilitators, envisioned the learning history as a way to help the team within the university as well as the provincial staff to learn from their own collective experience and make adaptations and improvements in the project as it was implemented [7]. As Gearty and Bradbudy-Hung recently discussed [8], the learning history model was developed by Massachusetts Institute of Technology researchers in the early 1990s and was first used at a large US automobile company. The MIT researchers' intention was to chart the learning of a highly successful team in a form that could be communicated more widely within the company. Inspired by oral history, Gearty and Bradbury-Hung noted, the MIT researchers set out to gather experiential knowledge by staying close to the stories of those involved. Unlike the typical listing of best practices found in project reports, learning histories were intended from their inception to invite readers into the inside world of those who directly faced the complexity of project issues [8] (citing Roth and Kleiner, 1998). Learning histories in root form were designed to stimulate learning from self-told project stories.

Like the action research tradition on which it builds, contemporary learning histories are not merely about conveying stories and other project information and insights. They are as much about what people do with the history as they are about the history's content and form. For this reason, learning histories ideally are supported by organizational or community structures, such as steering committees or communities of practice or of ownership, in which people have a focused opportunity to respond to, learn from and reflect on what the history is communicating to them. Without planned structures, events, and agendas for a group or community to make meaning from a learning history, such histories may sit on a shelf or in a video library and have no impact on project decision-making.

One other feature of learning histories deserves mention. This concerns the researcher's role. It is not simply to be a scribe for project participants' stories and reflections. It is also to offer her or his perspective on the context in which a participant's narrative and commentary are grounded, about the subtext or beneath the surface meaning that a participant's remarks may reflect, or about relevant theory that may shed additional light on participants' perceptions. To show both insiders' and outsiders' viewpoints, learning histories have tended to use a two-column format in wich insiders' interview quotes occupy one side and researchers' interpretations occupy the other.

In Wealthy Waal Sustainable, the learning history model, much like The Natural Step, was driven more by the university than the province. The province went along with the history and with interviews and obserations of project meetings that were the main sources of data. But the province expressed no interest in sharing the costs of the learning history research and only modest interest in what the history was revealing.

Despite the choice of the province not to invest in the learning history, we set out to develop a learning history that anchored to the experiences and voices of both the university facilitators and the provincial managers. As a basis for this history we observed at least 15 project meetings and sessions, made audio recordings and transcripts of several conversations, conducted eight semi-structured interviews and obtained data from several written questionnaires. As a research team, we discussed and weighed all the evidence from these data sources, using the qualitative research method of triangulation. In addition to recording many literal quotations from project participants, everything "said between the lines" was also taken into account, together with our observations about the congruency (or lack of congruency) between observational and interview data and the place, time, and situation in which the data were collected. We discussed first hunches on how to convey what was

being uncovered through the learning history with a circle of five additional people who knew the project but had no direct interest in the research.

We made extensive use of the two column reporting format featured in traditional learning histories, as illustrated below in Table 1.

Table 1. Illustration of Two-Column Format (translated from the Dutch and edited for clarity).

Quotations from Participants	Researcher Interpretations
"A vision of sustainability: What could it be?...A set of agreements with each other whereby we work together step by step. For example, we want a place that is tranquil, has nature and a little recreation or something".	This vision seems to refer to a collaborative process to create a pleasant environment, one that is peaceful, touches nature, and includes recreational opportunities. This sounds nice but doesn't seem to relate to the (future) global crisis we have to deal with (food, energy, climate change, *etc.*).
Interviewer: "What does sustainability mean to you?" Participant: "I think it's very tricky. You're working with Wealthy Waal river action, recreation and so forth . . . Is this not sustainable by definition? There is only one land-use plan that looks beyond 20 years and that is with water safety measures. So, as part of sustainability you think about the longer term, and if you do this you are doing sustainability by definition".	This individual appears to be equating sustainability with any long-term land-use planning effort, such as one that deals with water measures. However, it's not clear that the water safety measures that the person referred to accommodate the system dynamics of the biosphere, The Natural Step's four system conditions. Water measures that do not match the availability of long-term energy and raw materials would not be considered sustainable in The Natural Step framework.
"I think you can stick the sustainable label anywhere . . . We fly it in to wherever a decision is sustainable, because everything we do in land development is sustainable . . . Everyone who works on Wealthy Waal is working on sustainability. There can be no doubt about this".	This individual appears to see sustainability everywhere, regardless of whether any of TNS system conditions are being met. This is an especially relaxed and elastic conception of sustainability.

Quotations like the ones shown above were shared and discussed with the university team several times during the course of the project. In the end such quotations and related commentary were shared with the whole group, which included both the university team and the provincial managers. As noted earlier, provincial managers did not express similar interest in ongoing learning from the learning history, so the ideal of a steering committte that would engage collaboratively in learning and reflection cycles with the learning history material was only realized within the university context. There was no unified university-province learning process.

When the learning history was complete in draft form, towards the end of the approximately year-long period of the funded research project, we checked for flaws and omissions by means of a written questionnaire. In addition, we held a joint meeting with provincial managers and university facilitators to review the draft learning history document. Participants confirmed that the document was accurate and also that it cast clarifying light on the project's experience.

3.2. Findings

The learning history yielded three striking results. First of all we have to admit that the outcomes of the project did not match with the original ambition. Second, only a relatively small number of project participants appeared to embrace The Natural Step as a central framework for their thinking and planning. A third noteworthy finding was that project participants often seemed to talk past each other, seemingly because of their different perspectives. However, at the same time most participants got along well with each other.

3.2.1. Limited Results

The original ambition stated in the project proposal of Wealthy Waal Sustainable appeared to be impossible to realize. The collaboration between the province and the university was not always easy and this seemed to affect the whole project. Project leaders of the province and facilitators of

the university had to work together, but they both had different agendas, interests and commitments related to sustainability. The plan was to form several CoO's for different areas along the river, but only two of them really started. One CoO functioned better than the other. Partly this had to do with the recruitment and selection of townspeople to serve on the Communities of Ownership. The CoO's searched for a diversity of townspeople who were locally known for their active role within their community. However, one CoO was more strict in asking people to start with an open mind and not bring in their own single-issue agenda, for instance, the interest of increasing biodiversity. In this CoO some people dropped out for this reason after the first session. The CoO that functioned well developed a carefully thought out vision and managed to develop into a repsected authority in the region. In this CoO, there was inspiration, lively discussion and learning from each others's viewpoints. But even in this succesful CoO, the land development vision that was produced did not reflect an integrated, science-based, systems-level sustainability planning, as the FSSD of TNS intended. When testing their own vision on a land use development that had taken place, someone ended the discussion by saying: "I notice we did not talk about sustainability yet".

3.2.2. A Disconnect with the Natural Step

The project showed that the TNS framework, however accessible it might appear to be, was not equally on everyone's agenda. Nor was it equally well understood. We came to this conclusion in part by noting and interpreting statements comparing sustainability to "a candle on the cake" (in English one might make the comparison to "icing on the cake" or to "a cherry on top"), indicating that sustainability was seen as a relatively superficial project add-on. For many, principled thinking about sustainability, of the kind modelled by TNS, took place more at the margins of the project than at its core.

We wish to be clear: It was the project's responsibility to meet stakeholders where they were; it was not the stakeholders' job to change their perspective upon joining a community of ownership to match project principles. What we documented was not a problem with stakeholders' thinking per se but a problem with the project's approach to adapting to their thinking. We observed many examples of project actors, lacking effective project support, not seeing or internalizing the complexity conveyed in The Natural Step. For instance, an individual might have been mainly concerned with improving river safety. This covered only one aspect of sustainability, not its comprehensive, interrelated structure, but that might have appeared more than enough to deal with for this project participant. People were more inclined to focus on parts of the sustainability challenge and not on its integrated whole, for example, choosing to concentrate on the single goal of river safety, perhaps coupled to another practical concern such as a desire to maintain spaces to walk the dog. In another example, people would discuss whether the building of houses was appropriate in the washlands, because buildings have an effect on river safety. People forgot to discuss such broader issues as, for example, the energy efficiency of the buildings, or whether a building within itself could even generate energy. For many project participants sustainability was less about a socio-economic system related to an ecological system than about individual concerns. Some project participants indicated that responding to climate change by creating more space for the river to flow would automatically meet the criteria of sustainability. Several project actors had a tendency to see things from a reductionistic point of view with a limited time frame. Participants were not inclined to think globally and act locally, for instance, to link measures in the landscape to global considerations and to be more self-sufficient with respect to energy or food production. As far as we could tell, this single-issue, complexity-reduced perspective not only constrained participants' understanding of TNS; it also caused them to place a relatively low priority on TNS's conceptual approach to sustainability planning.

3.2.3. Talking Past Each Other

The learning history data also suggested that people at times talked past each other in project meetings and activities, despite the common perception that interpersonal and group relationships

were generally positive. Someone said: "... Then you see also that everybody is participating from different views and expectations. And all that gets mixed up". Another project actor noted the differences between practical, business-oriented thinking and thinking emphasizing learning and development: "(the question was)...do we understand each other? To make practical business appointments as a starting point seems to contradict the approach of others who only emphasized the importance of learning and wanted to invest in that". For those who viewed Wealthy Waal Sustainable mainly as a practical business development project, the whole notion of prioritizing TNS appeared to emanate from a different world. The value of deep learning about sustainability and increasing awareness was simply not understood by those who held a more pragmatic, business perspective.

In addition to misunderstandings and differences in points of view, it was remarkable to find that human relationships within the project were not the problem. The project participants as a whole appeared to sense a definite potential to work happily together. Project actors generally seemed to like each other. One way to put this is that project participants by and large were successful in forming pleasant interpersonal relations but not so successful in making sustainable change together.

As researchers, we wondered: Why was it not possible to gain more consequential results when the learning history clearly showed that people's intentions on sustainability were good and relationships were generally pleasant? Moreover, the fact that people held different views might have represented the kind of rich diversity that often stimulates more complex and more effective thinking and problem solving. However, this was not the case in Wealthy Waal Sustainable. We wondered: Why was it so difficult to integrate sustainability within the Wealty Waal case?

4. Lessons Learned, Part One

When we take a close look at the learning history data and reflect more fully on our own observations and experiences with the project, we might understand at a deeper level what might have helped to be more successful. In this article our search for improvements follows two tracks. One is to locate the findings from the learning history in the broader literature on leadership, action research and social change, especially change for a more sustainable world. This will help to see this case from a wider conceptual frame of reference. The second explanatory track will focus on differences in what we came to call sustainabiliy awareness levels. To gain a deeper understanding of these differences, we re-examined learning history data to try to interpret the data through a theoretical lens.

4.1. The Importance of a Shared Vision

One of the primary functions of leadership is to set a purpose or vision toward which people are inspired to work and collaborate [9]. In the case of Wealthy Waal Sustainable, it seems clear that neither provincial managers nor many members of the Communities of Ownership were inspired or able to work and collaborate toward a vision rooted in sustainability as set forth in The Natural Step. Manifesting a science-based, systemic vision for sustainability seemed to be on the agenda of only a small number of people. Through its selection of TNS, the university set a vision for the project, but this was not a vision shared by the province, which in turn affected the functioning of the CoO's.

It is clear that the province and the university had different institutional missions and interests to advance, and the universitiy's interests were more aligned with applying TNS within Communities of Ownership than with the province. Most university-based facilitators had more positive experiences with comprehensive sustainability initiatives like TNS than provincial managers and local townspeople had. And the project never really offered an experiential approach to sustainability learning that might have benefited provincial staff and townspeople. This was partly because the university was not capable of transferring the Framework for Strategic Sustainable Development of TNS to the experience of the Communities of Ownership. It was also partly because the province did not see the value of deep learning about sustainability to begin with. And lacking a shared vision for sustainability was a problem from which Wealthy Waal Sustainable never seemed to recover.The case showed clearly

that it is important to promote and sustain a unifying vision among the involved stakeholder groups. Without a mobilizing and unifying sense of direction, a project might drift and never find its center.

4.2. Preconditions for The Natural Step

The Natural Step is what Fullan [10] would likely call a "loose" innovation, because it offers a framework of relatively abstract principles and concepts and not a detailed prescription of concrete practices and procedures. There is nothing inherently good or bad about a loose, or a tight, innovation. An innovation's value depends in large part on its relationship to the context in which it is being implemented.

A loose innovation can be perfectly appropriate when there is creative and effective leadership and a well-specified system for building the capacity of participants to understand and work with the innovation. Loose innovations also do well when participants begin the innovation journey with a high level of readiness for change. However, in the absence of these leadership, capacity building and participant readiness characteristics, loose innovations may struggle to gain a foothold. We came across a response made by a project participant when asked if it would be necessary to invest in facilitating learning and development processes. This person remarked: "I don't think that [transferring knowledge and learning] is necessary, not really. . . . Everybody in Wealthy Waal is working on sustainable development. No doubt about that". To us, this suggested the belief that whatever one was focusing on in the project would meet the project's sustainability goals. Such an "anything and everything goes" definition of sustainability implied that everyone with good intentions was working on sustainability. However, this view risked trivializing what Wealthy Waal Sustainable was supposed to be all about.

Unfortunately, Wealthy Waal Sustainable was not a context supported with effective cross-institutional leadership. Nor did it include a carefully crafted capacity building system. Ignoring these preconditions did not provide a context in which loose innovations like The Natural Step could easily thrive. As stated before, some but not all the facilitators completed TNS's facilitator training in the Netherlands. If a facilitator was very skilled generally but did not participate in TNS's specific facilitators' training, he or she would do some "homework" and ask for help from a facilitator who had completed the training. The facilitators also arranged several meetings among themselves to discuss their approaches to working with the Communities of Ownership. However, the university lacked experience in translating the principles of TNS and its "looseness" into concrete action and useful tools for people who were not familiar with TNS and who were expected to undertake complex change in the CoO's. Applying a complex framework when there is little experience is especially difficult when operating in a less-than-responsive and supportive environment.

Robèrt himself acknowledged the abstract quality of the TNS framework and the concomitant need for people to creatively fill in the framework with concrete specifics. He referred to TNS's " . . . non-prescriptive focus on principles, in combination with the support of individual creativity . . . " as the stimulus for community building and teamwork [1] (p. 88). Put differently, TNS is a principled-based innovation more than a skill or tool-based one, and as such, leaders and facilitators need to have a deep grasp of the principles themselves and creative skills in order to nudge thinking and action in the right direction. The low level of prescriptiveness in TNS is a virtue if leaders and participants being asked to implement the model bring a kind of artfulness and openness about working toward sustainable change. If they don't, local leaders and facilitators face a big challenge in relying on TNS as the main lever for change.

4.3. Need for a Mutual Commitment to the Learning History Model

A third force in the project was that there was a lack of a shared understanding and commitment to the learning history model. As we explained earlier, a learning history is a change intervention and not simply a document that records what project actors say, think, and feel about a project. However, the province was not very much interested in learning and therefore not interested in the potential of a

learning history to influence action. It was not possible to bring the voices and insights of the learning history document to life within a community of facilitators and provincial managers in a manner that inspired deeper project thinking, planning and problem solving. As researchers we were pleased that the learning history document was well received. But with a more fully shared commitment between the university and the province, the learning history might also have been used as one guide to learning and thereby to improved actions.

In retrospect, as action researchers, we might have thought more fully about how to develop and evoke greater interest in the joint learning and collective action side of the learning history model. It struck us that this model may require researchers to be not only learning historians but also learning leaders, who designed experiences that might lead stakeholders to see for themselves the benefit of using learning history data. For some stakeholders, interest in the learning history model may come after and not before they have a successful experience with the model. Our emerging sense is that some stakeholder commitment at the outset of a project and some planned experiences during a project are both necessary to realize the full benefits of the model.

5. Lessons Learned, Part Two

The final factor affecting the project's success that we wish to explore is the lack of knowledge about and responsiveness to differences in participants' sustainability awareness levels. Building awareness is an important step in the Natural Step's ABCD change sequence ("A" stands for awareness). Gearty and Bradbury-Huang [8] made the point that the link between human behavior and climate change repsonses remain largely under-explored. These researchers noted that only recently have studies examined the psychological and sociological dimensions that affect people's response to sustainability challenges. While each of the factors inhibiting change identified in the present article represent human behavior issues, the factor that is perhaps least well understand is the nature of people's awareness of sustainability.

5.1. Ballard's Levels of Sustainability Awareness

Our re-examination of the learning history data gave us grounds only to speculate about the qualities of participants' sustainability awareness. However, our speculation on this topic was substantially aided by an article David Ballard published in the journal *Action Research* [11] entitled "Using learning processes to promote change for sustainable development". Ballard's writing was of great importance to us, because people's awareness of and perspective on the world is one of the key factors in the design and implementation of change [12] (Brown citing Doppelt, 2010, Sharma, 2000), and Ballard offered a very thoughtful perspective on awareness in sustainability initiatives.

More specifically, Ballard proposed a change model for viewing sustainability initiatives. The model focused on three conditions and one process that he believed must be present for a sustainability initiative to succeed. The three conditions involve:

(a)　Awareness of sustainability issues, at progressively deeper and more complex levels of understanding and care (Ballard identified four awareness levels, which we present below);
(b)　Agency, the ability to find meaningful and effective responses to sustainability challenges; and
(c)　Association with other people in groups and networks that support sustainable development.

According to Ballard, each condition is necessary but insufficient in isolation; any sustainability project needs to work across all three conditions. Doing so successfully, according to Ballard, requires the key process of Action and Reflection. This process entails making deliberate efforts to achieve sustainable solutions and then being able to gain a higher perch on those efforts, view them from multiple perspectives and learn from the view. Ballard's action and reflection cycles are very similar to the kind of social learning and change processes represented in the learning history model examined earlier.

Although we sensed the value of Ballard's model as a whole, it was his first condition, sustainability awareness, that struck us as being particularly noteworthy. Ballard observed that if there is association and the opportunity for agency, but levels of awareness remain low, then actions tend to miss the point and might even be trivial. We had begun to suspect that something like this was taking place in Wealthy Waal Sustainable.

What are these four levels of awareness that Ballard described in detail and how can we best understand these developmental levels? A description of each level follows.

Level One, Awareness of the Agenda, refers to people's basic knowledge that sustainability issues like climate change exist and are important for society to address. Ballard cited research in the United Kingdom indicating that virtually everybody had heard, for example, of climate change. Although few people knew of the phrase "sustainable development", most people, Ballard noted, could accept the general notion that we ought to preserve the finite natural resources necessary to meet the needs of future generations.

Far fewer people, Ballard maintained, demonstrated Level Two, Awareness of Scale, Urgency and Relevance. At Level Two, people appreciate that sustainability is a huge problem that we, as a community, a society, a nation and a world must address now, and not in some unspecified future. People with the second level of awareness know that sustainability issues affect them as well as everybody else and that putting off a sustainability-related problem until later is a way of not dealing with the problem.

Level Three, Awareness of the Structure of the Issues, Ballard wrote, was even more rare for people to attain than the preceding level. At Level Three, people demonstrate a good understanding of the systemic complexity of sustainability, its interdependent processes and its "many delays and feedback loops". In addition, at this level, people understand that if we wait to act until the first evidence of a problem appears, we will have waited too long.

Finally, Level Four, Awareness of the Limits of Human Agency, involves a humble acknowledgment that the challenges of sustainability cannot be met simply through a rational-technical approach to managing nature. We need to recognize that we are a part of nature, not its director, and that ultimately "nature knows best". Ballard suggested that this quality of humility in the face of our limited control is rarely attained.

According to Ballard, the four levels of awareness are of increasing importance and appear to be of increasing difficulty to acquire. Ballard readily conceded that it is unrealistic to expect every person in a sustainability initiative to have a high level of awareness. At the same time, he argued that work for sustainability needed access to all levels. For most people, Ballard added, the primary challenge seems to be that of developing awareness of scale, urgency, and relevance, or Level Two Awareness.

5.2. The Possible Relevance of Developmental Stages

Before we thought of applying Ballard's sustainability awareness levels as a lens through which to view learning history data, we looked for connections between Ballard's levels and other studies examining the influence of different levels of ecological awareness, thinking, or caring on sustainability change efforts. We knew from our studies of developmental psychology, especially the constructivist-developmental theories of Piaget, Kohlberg, and Gilligan [13–15], that levels of development could play a large role in people's thinking about the world and in their moral reasoning and caring about self and others. In this context we would like to refer to recent research [12,16] which made a cogent case that sustainability leaders' level of development influenced the quality of their leadership. Furthermore, Brown reviewed literature suggesting that in the domain of ecological value systems and worldviews, the developmental levels of participants in sustainability projects was of pivotal importance in realizing sustainable development.

It seemed to us that on conceptual, if not empirical, grounds, Ballard's levels were also "developmental", along the lines suggested by Brown and by constructivist developmental psychologists. Specifically, in Ballard's framework, it appeared that:

A   A new level leads to more differentiation, complexity and integration and more possibilities than the previous level;

B   Levels cannot be skipped, and earlier levels are integrated into new ones;

C   Levels develop slowly, and it takes time to maintain high consistency at a certain level without support.

These three characteristics of developmental levels are consistent with the constructivist requirements for stage models agreed upon by Piaget, Kohlberg and Gilligan. We would add one important note: Levels do not say anything about how worthy a person or situation is or whether one thing is in some way superior or inferior to another, like better or worse within a dominance hierarchy of levels. "Higher" developmental levels only indicate the capability to integrate more complexity.

Within this research we lacked the kind of cross-cultural and longitudinal data that developmental psychologists use to theorize about stages of development. We do not know whether the kind of levels that Ballard identified and that we sense were at work in Wealthy Waal Sustainable embodied the characteristics of stages of development in the tradition of constructivist stage theories. But we would speculate that participants in this case with a limited awareness of sustainability were not intentionally rejecting the TNS framework. Instead, they were likely interpreting the framework in a manner appropriate for their level of awareness. In Piagetian terms, participants may have been "assimilating" TNS into their existing stage of awareness perhaps because they were not interested or able yet to interpret this kind of complexity and to "accommodate" their thinking to a more comprehensive point of view.

5.3. Re-Examining Data with the Lens of Developmental Levels of Awarenss

For us as researchers one of the most pithy and most telling statements suggesting the impact of "developmental levels" was made by a project leader: " . . . I noticed that it (TNS) was perceived as woolly and vague (in Dutch we say 'floating'). It was as if it was just a bit too abstract for the time being". At first, this quote looked like many others. However, reflecting on developmental principles, it struck us that this sense of the *floating* meaning of sustainability was an interesting and apt way to characterize the notion that meaning was at least in part a reflection of people's varying developmental levels. Project actors lacked a shared and anchored meaning for the idea of sustainability. For those who did not embrace the first two levels of awareness, the integrated complexity of sustainability summarized within the TNS framework became an up-in-the-air notion, not a grounded vision. This quotation also seemed to reinforce the developmental principles that levels cannot be skipped and lower levels should be integrated. A project cannot lift a group's level up simply by introducing a complex framework such as the TNS; time and effort on everyone's part are needed to move slowly and surely from one level to the next.

To the extent that many project actors had overall a Level One or Level Two Awareness, and levels represented stages of development, it's not difficult to see that within this case there were, on the one hand, unrealistic expectations about what could be accomplished and, on the other hand, unrealistic expectations about how long progress would take. The people introducing TNS did not know how to adapt concepts and language in a way that would meet other people's perspective and help participants to internalize the value of the Natural Step within the time available. As one project actor put it: "Not being able to pass on knowledge (of the complexity, urgency and relevance of the Natural Step framework) had partly to do with the fact that it takes time to familiarize oneself with the framework. This learning period was part of the original plan. But in the end it was scrapped".

Ultimately, the necessity to take it slowly, because development takes time, and the necessity to invest in learning and development processes, in order to honor the complexity of sustainability, was blurred by the desire to achieve pragmatic goals. These goals involved organizing and supporting the smooth functioning of Communities of Ownership. One of the project participants said, for example, "I warned them, because it was a very ambitious plan . . . and it had to be done very quickly. If that's what you want, then you have to keep your expectations realistic". As another project actor poetically

observed: "Grass does not grow by pulling on it". Development can't be rushed or crammed into a few months or even a year.

5.4. Content Analysis to Check for Ballard's Levels

We thought that Ballard's levels of awareness were represented in many of the quotations we recorded in the learning history. However, we wanted to check our speculation on this issue more systematically. Was it really true that participants in Wealthy Waal Sustainable showed evidence of Ballard's sustainability awareness levels? We might not be able to launch the kind of study that developmental psychologists would mount to investigate the characteristics of developmental stages, but we could ask ourselves whether various statements in the learning history matched Ballard's levels. We reviewed the learning history again with the question: Did participants in Wealthy Waal Sustainable express the different levels of sustainability awareness identified in Ballard's model?

The method we used to take a deeper look at this issue involved a review of dozens of quotations that were obtained for the learning history. We did a content analysis of the quotations to determine whether any reflected the levels of awareness that Ballard articulated and, if so, which quotations matched which level. One of us, the lead author of this paper, did this searching and matching first. She identified a set of quotations that she believed reflected Ballard's levels. Then the other two members of the team for this sub-study independently reviewed this set and did their own matching of the statements to each of the levels.

Each member of the team made very similar choices about the matching of individual statements to Ballard's levels. Eventually there were discrepancies regarding only two quotations, in which team members' matching diverged by only one adjacent level. In these cases, we resolved the discrepancies through discussion, which included a consideration of the contexts in which the statements were made. This process of cross-checking interpretations among the three sub-study team members was intended to increase the reliability of the conclusions we reached about the awareness levels. Along with this inter-rater reliability checking, we also, when appropriate, checked the consistency of statements made by project participants over time (did a person make a statement indicating the same level of awareness on more than one occasion?) and the congruence between word and deed (did an individual seem to walk her or his talk?). Our perceptions of consistency and congruence were in very close agreement.

5.5. Findings about Levels

With respect to our content analysis about the presence of Ballard's levels, we did find evidence that the levels applied in Wealthy Waal Sustainable. In fact, we gained a more nuanced appreciation of these levels by systematically considering quotations that matched them. A selection of quotes that illustrate and were ordered according to the four levels of awareness are shown in the Table 2 below. Note: All quotes are literal statements made by project participants, translated from Dutch into English. The quotations suggest an individual's level of awareness or her or his perception of others' levels of awareness. The statements in the square brackets (. . .) are annotations of the authors, intended to clarify either the context of the quotation or the reasons that a quotation was classified as it was.

We thus had reason to think that Ballard's levels were at play in this case. However, we did not have data, even suggestive data, on the proportion of project participants that might embody each of Ballard's four levels.

Looking back, a central challenge for Wealthy Waal Sustainable was to foster growth among project actors in order to build a foundation on which they could base progressively more complex levels of awareness. However, there did not seem to be the leadership or the capacity building system necessary to accomplish this. Additionally, as noted above, The Natural Step depended on participants having a systems-level perspective on sustainability. The fact that many project participants appeared to be at a less comprehensive level of sustainability awareness was not in itself a problem. It was only a problem to the extent that the leadership and support system available were not responsive to the predominant awareness levels.

Table 2. Illustrative Quotations, Classified by Levels of Awareness.

First level	Awareness of the agenda	"It seemed important for Wealthy Waal to pay attention to sustainability. This (sustainability) was put forward as a candle on the cake". (In response to the question: "What does sustainability mean to you?")
		"It's a difficult question. In WaalWeelde you're busy with river issues, recreation . . . We're thinking about the long term . . . Surely that's sustainable by definition?"
		"I think you can stick a sustainability label on anything . . . . We don't specifically ask whether a decision is sustainable, because everything we do in the project is sustainable" (what seems to be the hidden argument: "...because we mean well, and we are just trying to do the right thing").
Second level	Awareness of the scale, urgency and relevance	"Stressing the urgency at an abstract level is too remote for many people and can block the local issues" (with the implicit meaning:"... and therefore I leave global issues out of the process").
		"To me, sustainability means care. The care for humans, nature and money" (as a result the broad and abstract aspects get narrowed down to a single specific and concrete aspect). The CoO approach to citizen participation–taking care of people who live in this area and who want something . . . that to me is a sustainable process".
Third level	Awareness of the structure of issues	"TNS assumes a decent level of factual knowledge and understanding among the users. In the first place (this is) about the actual situation in the system under consideration, and in the second place about the effects of measure to be taken. Such knowledge is often absent or limited while ultimately it determines the effectiveness of the group".
		"Not being able to pass on knowledge about FSSD had partly to do with the fact that it takes time to familiarize oneself with FSSD (and the complexity of the issues). This learning period was part of the original plan. But in the end it was scrapped".
Fourth level	Awareness of the limits of human agency	"I only gradually became fully aware of the tremendous effort and focus that it takes to translate the theoretical frameworks into meaningful, concrete results, satisfying for all stakeholders. The RU team didn't have much practical experience with spatial planning and working with the county".
		"What stays with me after this talk is the expression: 'Grass does not grow by pulling'. This realization was missing in the project".

6. Implications for Sustainability Leaders

We draw from our analysis of the inhibiting factors in Wealthy Waal Sustainable implications for sustainability leaders. We would point out first a distinction in our minds between leaders and leadership. Leadership involves various functions, such as those identified by Scouller [9], like promoting and sustaining unity of purpose and monitoring the quality, pace and means of progress toward that purpose. Different people and groups may carry out leadership functions; leadership need not be centralized at the top. However, we agree with Scouller that there remains a need for an executive leader, one whose job it is to assure that all the necessary leadership functions are fulfilled, regardless of which individual or group might be responsible for performing the functions. Leaders, in other words, are accountable for seeing to it that leadership functions are met. With this definition as backdrop, we discuss six implications of our study for leaders of multi-stakeholder sustainability initiatives.

6.1. Leaders Work Together with Stakeholders to Shape and Resfine a Guiding Vision for Sustainability

Leaders need not expect to achieve a shared, inspiring vision at the very front end of a project. In most cases, that would no doubt be unrealistic. As Fullan [10] (page 39) has argued, " ... shared vision or ownership (which is unquestionably necessary for success) is more of an outcome of a quality change process than it is a precondition for success". Fullan suggested that people have to work together and experience new things that touch their hearts and stimulate and open their minds to shape and reshape a meaningful vision. To promote a unity of purpose, leaders of sustainability efforts must make sure that project participants have ample opportunities for socially bonding and genuinely new and stimulating sustainability experiences, with a chance to reflect together on what those experiences mean to them and to a more sustainable future. A shared vision is not something a leader transmits; it is something that grows and changes over time through engaging, collaborative and reflective experience.

6.2. Leaders Carefully Consider Conceptual Frameworks and Models for Sustainable Development and Adjust Them to the Context in Which Those Models Are Expected to Take Root

Leaders must show discernment in the frameworks and models they choose and how they are put forward to promote sustainability change. If necessary, models can be adapted, for instance, simplified to be more useful. If the experience in Wealthy Waal Sustainable is any sort of guide, models for change must match the purpose and context of a given initiative. In particular, the relative looseness or tightness of an innovation must be congruent with the leadership available, the capacity building efforts planned and the predominant levels of awareness of project participants. Introducing too much complexity when working with people with a limited perspective will lead to failure. The more abstract, complex and open an innovation is, the more dependent it will be on high levels of leadership, integrated but practical models, and a more comprehensive awareness on stakeholders' part.

6.3. Leaders Make Sure That Collaborative Learning, Reflection and Action Cycles Are Woven into the Fabric of a Sustainability Initiative

Leaders must see to it that action is tied to learning and reflection and not an end in itself. Learning, reflection and action cycles should be an integral part of a sustainable development project. Whether learning histories and related kinds of action research are implemented or some other form of collaborative learning, reflection and action proceses are established, project participants need structured and supported opportunities to learn from their experience in making sustainable change and in applying their learning to guide further action.

6.4. Leaders Can Make a Plan, but They Need to Remain Open and Flexible to Serve the Evolving Needs of Participants in a Certain Context

Successful leaders pay attention to and respect the sustainability awareness levels that participants show up with in a sustainability project. Project leaders may need to adjust their concepts and timelines and plan more intensive and sustained awareness-building activities. Leaders should be very aware during a project's early stage of how the initiative is unfolding and of where and how adjusments need to be made to ensure progress. As the project moves forward, leaders should foster the development of shared languague and concepts and, to the extent possible, a mutual concern with progressively more complex issues.

6.5. Leaders Listen Deeply and Hear What Is Most Real for Stakeholders

Leaders should strive to genuinely hear what stakeholders mean by sustainability and what motivates them. They must not be too quick to assume that when people say they are interested in sustainability they are speaking from a system-level perspective. Actively listening to participants' beliefs about sustainability and carefully considering their interpretations of sustainable strategies in specific instances are indispensable acts of relationship. As a project participant stated: "You have to

connect to the people who want to put the shovel in the ground". If leaders can't hear the voices of those with a more limited perspective, little real progress is likely.

6.6. While Reaching Out to Understand and Adapt to Participants, Leaders Should Stay Connected with Their Own More Comprehensive View and Goals

Leaders need to adjust to people with more limited awareness of sustainability without giving up their own perspective. Tailoring language, concepts, and expectations to varying levels of development, while remaining centered in one's own sustainability worldview, would appear to require a high degree of personal groundedness, know-how and sensitivity. For example, leaders need wisdom and expertise to accommodate the perspective "What's in this project for me?" in a way that actions contributing to this more limited interest can be helpful (or not a problem) on the path to complex change. Leaders also need insight and skill to help people self-regulate and cope with sustainability questions, for instance with their fears about what they may have to give up to live in more sustainable ways. Honoring people where they are while at the same time standing for a more complex, comprehensive frame of reference is not easy to do. But this kind of artful balancing of support and challenge would seem to be an unavoidable and sometimes lonely task of sustainability leadership.

More research is needed on developmental levels of sustainability awareness and on how best to effectively take those differences into account in change efforts. For example, the theory and practice of "Spiral Dynamics" [17] and the perspective on developmental levels within integral theory [18,19], provide promising approaches to understanding and working with different developmental levels and might be a fruitful focus for application and study in the context of sustainability initiatives.

7. Conclusions

Wealthy Waal Sustainable was an ambitious, well-intended partnership between a university and a province to realize long-term sustainability goals. The partnership established local Communities of Ownership, in which townspeople engaged in creating a vision for river safety and the development of lands around the Waal River, one of Holland's major waterways.

However, it turned out to be difficult to create a sustainable vision that reflected science-based, system-level thinking about sustainability. The focus of planning tended to be more on single issues and pragmatic concerns and not on long-term and more global, integrated consideratons. We carried out a learning history that documented the project's experience, largely through listening to the voices of project actors and observing project meetings.

Project results did not match the project's original ambition. We asked ourselves why this was so, especially given the good intentions and pleasant working relationships that were established. We analyzed the learning history data from different angles, reflected on our own experience of the project, and consulted relevant research. Through this process we identified four factors that shaped the project's results and represented lessons learned. These lessons concerned the importance of a shared vision for sustainability, the need to meet preconditions for effectively implementing a system-level innovation like The Natural Step, the mutual commitment necessary to realize the full potential of the learning history model, and the need to hear, see and respond sensitively to different developmental levels of awareness. We examined in considerable detail challenges related to differences in awareness levels, because the characteristics of sustainability awareness levels have seldom been studied, and they seemed to have been centrally important in the experience of Wealthy Waal Sustainable.

Finally, we discussed imlications of our study for sustainability leaders. These implications point to the complex challenges that leaders face. They have to consider multiple, interacting factors when making plans and taking action. It is important to assure that a vision is more than a statement on paper and is fully embraced by each organizational partner in the change initiative. Further, leaders have to choose approaches and words to introduce innovation models that closely reflect both the project's vision and the context in which the model will be implemented. To be successful, leaders must create awareness and capacity building efforts that take into account participants' awareness

levels and provide for collective learning, reflection, and action cycles. They must thoughtfully balance challenge and support in the change process. In addition, it is vital that they stay connected with their own deep commitment to long-term, comprehensive change for a more sustainable world.

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