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## KEY CONTRIBUTORS

### **Ecological mindfulness, spirituality, and life-long (hybrid, dialogical) learning: a tribute to Michiel van Eijck**

**Wolff-Michael Roth**

Om gate, gate, paragate, parasamgate, bodhi svaha  
[Om gone, gone, gone beyond, gone completely beyond, awake, so be it]  
(*Heart Sutra*)

Om gate, gate, paragate, parasamgate, bodhi svaha. With these words from the *Heart Sutra*, and their Dutch translation, began the official death notice with which Michiel van Eijck's family officially notified friends (among which he counted me), acquaintances, and colleagues that he had passed away. Only weeks before that notice I had received an email from Michiel's account that told me about his imminent death. It was not only telling me that he was in the process of leaving, but the sound of the voice, though using first-person signifiers, already had a third-person feel. He was here and already departed simultaneously. I responded at some length to this email, writing to him about finding strength in his spirituality, about how an (eternal) life without ulterior motive realizes itself in each and everyone of us. It is in and through our lives, marked by our coming (birth) and going (death) that life maintains and renews itself. The email note had talked about a short period he had left; and although it gave his phone number and address where he could be contacted, there was no more reply. Within weeks he had passed away. The last information I had received was via a Dutch colleague of Michiel, Arthur Bakker, from whom I also had found out about a serious illness that Michiel apparently had contracted while in South East Asia in the fall of 2012, only weeks after I had met him in person for a last time. We had spent three hours together, in a secluded place at the University of Wageningen, where I had given a plenary keynote speech at the occasion of a conference for Dutch-speaking scholars. We talked a lot about spirituality and its relation to, and treatment in, traditional science education scholarship, and about finding or having found ways of integrating the two. Already prior to that I had had the sense that this bright young scholar had felt the need to shift his activities, which earlier had almost exclusively and with tremendous fervor focused on scholarship in science education, to a part of life that tends to be cut off and hidden from our research and publication endeavors. While I knew him, Michiel had come to realize that this (from scholarship normally hidden) part was integral to who we are, that ecological mindfulness and spirituality are not only something to be written about but also something that needed to be lived. As a life-long, hybrid, and dialogical knower and learner, Michiel, in what would be the last stage of his

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W.-M. Roth (✉)

MacLaurin Building A567, University of Victoria, Victoria, BC V8P 5C2, Canada  
email: mroth@uvic.ca

short presence in life, was exploring all those parts that generally are detached from scholarly activity. It was while working with me at the University of Victoria, as a post-doctoral fellow, and in a context where he encountered and worked with members of the local First Nations, the W̱SÁNEĆ (Saanich), that this side of life became central to Michiel's being. Much of this tribute, therefore, will focus on what he had learned from them, including respect, which Michiel practiced by insisting on writing their words in their native SENĆOŦEN language. In that same spirit, I follow him in this practice.

### **Crossing of paths and walkabout**

There is not much I feel uncomfortable letting you know . . .  
That's why I call you a friend of mine.  
(Michiel, email, February 22, 2012)

Michiel and I had crossed paths before we actually got to work together for a while, and working together become something like a *walkabout*, a term used to refer to the journey that male Australian Aborigines would take during adolescence. Ours was a scholarly and a spiritual journey, initially more focused on the former and ending in the latter. *Walkabout* is quite appropriate for denoting the period of time given that it was during his time working with me at the University of Victoria when he deeply got involved in trying to understand aboriginal ways of knowing during , the role of spirituality in their lives, and the ecological mindfulness in their everyday actions. We started out as mentor/mentee, then became colleagues, and across these relations, became friends. It is as a colleague and friend that I write about and for the memory of Michiel. I got to know him quite well and we developed a friendship that allowed him to talk about his personal struggles (“I am sharing my personal struggles with you since I consider you a kind of tutor and I trust you completely.”). In the following, I sketch how I met Michiel and how I had come to understand his research.

### **Intersecting lives**

I first “met” Michiel (online) in about 2003 or early 2004 when he was writing an article for a Dutch journal for the teaching of biology (van Eijck 2005). It was, as one of the sub-headlines stated, a plea for realistic student research. In this article, Michiel suggested that scientific method can be taught to students—but not as a list of mandatory skills. He wanted students to follow their own interests and creativity, and in a context where peer review played an integral role. He used as an example of my own teaching of science, where middle school students, in the course of a 5-month unit focusing on KÉNES (Hagan Creek), participated in local environmental activism (e.g. Roth and Lee 2004). To provide his readers with some visual materials, Michiel wrote to me asking for photographs related to my work with middle school students. He included three of these in his article.

Michiel and I had another early exchange without really knowing each other when he was interested in understanding some work on graphing that I had conducted among scientists generally and the think-aloud protocols I had collected specifically where practicing university and public sector research scientists did not do so well on graphs culled from introductory courses of their own field.

Our third contact followed an email Michiel had received from his PhD supervisor concerning the advertisement for a post-doctoral fellow position in the Pacific Center for Scientific Literacy, for which I had obtained funding from the Natural Sciences and Engineering Research Council of Canada. In May of 2005, he wrote to me asking if the position was still open (he was a bit late, pre-occupied by the birth of his son), and I encouraged him to apply. It was during the weeks that followed that I received his already-impressive *curriculum vitae*, some sample articles, and a photograph (Fig. 1). Later in August, we met via an iCHAT/AOL-AIM for an interview in person. Based on this interview, I offered Michiel a position. Slightly delayed because of finalization of his dissertation, he eventually took up the position on March 2, 2006. For both of us, individually and together, the work in the context of the Pacific Center became unbearable so that in July 2007 we announced our departure almost simultaneously. Michiel left in November of that year to take up a tenure track position in the Netherlands, whereas I resigned as the project principal investigator immediately. Nevertheless, we continued to collaborate not only while Michiel was completing his post-doctoral fellowship but also during his initial years as an assistant professor. I received notice from him on March 3, 2012 that he was finally appointed associate professor.



Fig. 1. Michiel van Eijck as I had first seen him.

I met for more extensive discussions with Michiel twice after his departure from Victoria. The first time was during my stay in Amsterdam to attend the 2009 bi-annual meeting of the European Association for Research on Learning and Instruction; and the second time was during my one-week stay in Wageningen in June 2012.

While Michiel lived in Victoria, he became a very productive scholar. He was insatiable, interested in researching and writing; and he was good at it. In January 2008, Ken Tobin and I, then co-editors of *CSSE*, decided to invite Michiel to be the foreign language editor, a position that Michiel accepted and filled for the

subsequent 4 years. Then, just after returning from a conference in India, he found himself in a separation, which, because of its surprising nature, he described as “knocking [him] down instantly.” He described the six months that followed as a very difficult time, allowing him barely to work “let alone do some serious writing.” During that time, he asked me to take on the responsibility to chaperone to completion an article on cultural diversity, which was threatened by the very nature of (Western) science (van Eijck and Roth 2011). It was during this time while his “mind was not at ease,” that he searched and eventually found solace in meditation and Buddhist spirituality.

#### Innovative scholar and mentor

Michiel was a very driven and productive scholar. As soon as he arrived in Victoria, he eagerly delved into a first collaborative writing project, where we combined his own earlier work on technology in science classroom with my interests (van Eijck and Roth 2007b). We also picked up what unbeknownst to us had become a thread: his interest in engaging students in real science, and to do so by means of activism. As noted, he had already published about the activist work I had done with middle grade students in a Dutch teacher-oriented journal. Now he aimed high, wanting to communicate ideas to biologists, and doing so in the foremost (by impact factor) journal in the field: *PLoS Biology* (van Eijck and Roth 2007a). It became indicative of Michiel’s drive: always aiming high, always wanting to get his work into the most prestigious journals.

One strand of his interests concerned the role of inscriptions, both in the ways these were used in science and also in the ways science was presented and represented from within and from outside of the field. Thus, for example, he became very suspicious about the findings of other research that attributed images of science to students; he argued instead that these images of science attributed to students were an artifact of method (van Eijck et al. 2009), on the one hand, and a cultural feature that merely reflected the ways in which people come to encounter science and scientists, for example, in textbooks or on television (e.g. van Eijck and Roth 2008b). These images of scientists and the images that scientists had used—e.g., those that the British physician William Harvey had drawn and that became iconic for science as such—were the results of monological classroom processes that asserted—e.g. by means of the triadic dialog pattern (*IRE*)—the truth of and about science (van Eijck and Roth 2011). While mentoring one of the doctoral students on our team (Pei-Ling Hsu), he pursued the question of how an internship in a scientific laboratory was changing the images high school students have about science (Hsu et al. 2010). It was in this sustained program of research that he arrived at coining the idea of *imagination*, the ways in which scientists and science are turned into images (rather than in the sense of unreal, subjective impressions) (van Eijck and Roth 2013). While we were emailing each other about writing some book together, Michiel sent me a note in May 2010 how he had come to understand that “images of science in science education are much more central to cultural studies of science education than I recognized initially.” He continued writing that “culture is all about the way people make available particular images of the world.

So a book about images of science in science education is inherently about the culture of science in science education.”

While working in the *Center of Scientific Literacy*, and because of some of the connections that we had established with local activists in the context of which we had ongoing research projects including the replanting of eelgrass that Nikki Wright and SeaChange were doing together with members of local First Nations (Boyer et al. 2009), Michiel became increasingly interested in the relationship between local knowledge and scientific knowledge, and he coined the notion of *scientific literacy in the wild* (van Eijck and Roth 2010a). The form of literacy he conceived of was situated, distributed, and dynamic in everyday local affairs rather than a stable body of knowledge to be memorized. It was also a form of literacy that was integrated into and to be seen from a life-long learning perspective, where it offered resources to people for expanding the available ranges of actions and the room to maneuver available to people in the context of contentious issues (Roth and van Eijck 2010). One form of local knowledge became especially important: traditional ecological knowledge. Increasingly Michiel oriented towards the relationship between traditional ecological knowledge and Western science (e.g. van Eijck and Roth 2008a), and especially the colonizing and disrespectful practices arising from the privileging of science. Picking up on the idea of “authentic science,” which already had featured in his earlier work (van Eijck 2005), he now began to rethink this notion in the context of traditional ecological knowledge (e.g. van Eijck and Roth 2009). Michiel felt that voices other than sciences needed to be heard and were integral to a respectful, ecological mindfulness. It was not surprising to me, then, to receive in March 2010 an email pointing me to a news release of the European Science Foundation entitled “Listen to the Natives for Better Environmental Monitoring” (ESF 2010). It reported on a case in Northern Quebec, where the Cree had alerted wildlife managers about a collapse of the moose populations, who did not take the Cree serious because the scientific representations did not show such a decline.

Michiel’s start as an assistant professor was difficult, to a great part because of what he described a “stressful battle” with a more senior professor, who was also in a power-over position. Michel, who has always been forthright stating what he was thinking, described it as “having been too difficult to keep my [his] mouth shut about the flaws in [some] project.” He could not apply for promotion when he was ready because new terms of qualification “popped up from nowhere.” As a result, and to exhibit collegiality, he felt forced to “do poor research.” He decided “to be obedient to stupidity,” which he described to be shameful but necessary. He was reminded of the struggles he had with another senior person while at the university of Victoria, where I had to come to his rescue repeatedly. Michiel wrote to me: “It seems to be part of the academia that these kind of people find their way upwards and do everything to safeguard their position, even if this requires exerting power in academically counterproductive ways. So my ultimate aim in academia is a kind of independence that allows me to avoid any contact with these anti-academics. In this way you are a shining example to me.” Thankfully, the situation changed toward the better. By early 2011, the situation had improved, hierarchical positions being taken by new individuals, which led to a rapid and uncontroversial promotion.

## Research interests

Given the tremendous publication record that Michiel had built up over a very short period of time, it may surprise few readers that I agreed to nominate him for the early career award that the National Association for Research in Science Teaching. In this application, Michiel described the emergence and evolution of his research interests. These he described as having been grounded in sociocultural perspectives on science education. He was focusing on the question of how genuine scientific practice can become part of the students' lives. Although he realized that this may sound trivial since bringing students to science seems all what science education is about. However, he did not aim at students buying into science by reproducing what professional scientists know, say, or do. Rather, the question that kept him busy was how a more suitable science education might look like in which students are the producers of *genuine* scientific knowledge. In what followed, to explain this research interest in line with his theoretical perspective, he outlined something like a brief ethnography of his life in research. The following are the origin of Michiel's interests and an outline of the three main interests as he had understood and described them.

### *Origin of Michiel's interests*

Rather suddenly, his research interest emerged around 2000 while he was teaching a unit from a textbook on *the scientific method* to 12–13 year old Dutch students. All students had to conduct an experiment in which a *treatment* plant was exposed to a particular environmental condition while a *control* plant was not. And then there was that one kid who wanted to know what Coca-Cola did to a plant (van Eijck 2005). Driven by tremendous curiosity and enthusiasm, the student simply put the plant in a bottle of coke. And that was it. Despite his deep scientific interest, the scientific method did not impress the student at all. On the contrary, at the very moment when Michiel did his best to explain how a real scientific experiment should be setup according to the scientific method, he learned from the student's waning curiosity and enthusiasm that traditional science education did not work. At that moment Michiel decided to dedicate his professional life to developing a different science education—a science education that allows students to participate in scientific practice in ways that matter to them. It was for the article in which he described the Coca-Cola incidence that Michiel had asked for the images from my own research to argue for students engaging in science according to their own interests. Michiel's PhD study then aimed at developing information technology-based measurement tools by means of which genuine scientific research got within reach of students. Michiel deemed the units he had developed as having been quite successful—these brought students closer to science. Yet, Michiel learned as well that opportunities of doing genuine scientific research are not buried in scientific tools and methods exclusively, but are simultaneously held in place by a wider sociocultural frame. Consequently, from sociocultural perspectives, Michiel became interested in understanding the nature of scientific research. This evolved into

several closely interrelated research interests that Michiel would pursue until the end: images of science, diversity, and authentic and place-based science education.

### *Images of science*

Studying scientific practice from sociocultural perspectives, Michiel learned that the science-in-the-making of scientists radically differs from the ready-made science in traditional science classrooms. For instance, Michiel understood the existence of any scientific method is seriously questioned. Because of such insights, he better understood how students' enthusiasm and curiosity as being suppressed rather than supported in his own science classroom and how this could be changed—something that he started publishing about in Dutch science teaching journals for practitioners (e.g., van Eijck et al. 2003; van Eijck 2005). This avenue finally led him to my research group. Michiel understood the aim of Pacific Center to be one of nurturing scientific and technological literacy. This was to be achieved by engaging local youth in authentic scientific practice. As part of the research program of this center Michiel conducted research on images of scientific practice as observable in science textbooks (e.g. van Eijck and Roth 2008b) and students' images of science emerging from participating in scientific practice (e.g. van Eijck et al. 2009). Identifying static pictures of the science of yesteryear as problematic for students to engage in scientific practice in ways that mattered to students, this line of Michiel's research evolved into solving the basic question how school science can be designed in more dynamic ways, reflecting contemporary scientific practices such as those in genomics research (e.g. van Eijck 2009). In 2010, Michiel's focus was a new book in which was to report our joint research in the context of the state of the art on understanding images of science in science education from sociocultural perspectives (van Eijck and Roth 2013). The aim of the book, at the time, was to make a case for the novelization of images of science in education. The three sections of the book focus on three planes. In the first section we put on the table the theoretical frame by which the two types of images of science can be distinguished. We would argue for a novelized image of science in science education since this is the only way to keep up with current developments in science, to engage students in science, to help students to become critical thinkers (able to ridicule and parody). The idea of novelization came from Bakhtin (1975), who had described the novel as including multiple voices that transform each other by speaking with each other. The second section of the book would show how epics can be found in science education texts and how such epics can be avoided by taking a dialogical, authentic stance. The epic only has one truth; it is monological, speaking with one voice. This was not the kind of science or science education Michiel aspired to; and he wanted to contribute to the field by making a point about diversity. The final section would make a case for the reflexivity of this stance for science education research. In all, he saw the book as paving the way to a novelized, dialogic imagination of science education, helping educators finding ways to engage students in science rather than letting them consume science as a kind of comic book full of heroes.

### *Diversity*

The major part of Michiel's post-doctoral fellowship research concerned the question how to nurture scientific and technological literacy among youth from local First Nation communities by engaging them in genuine scientific research. Michiel collaborated with a federally funded local tribal school (situated on the territory of the ʷᵛᵒᵗᵗᵒᵗ [Tsartlip] nation), a marine conservation organization (SeaChange) under the direction of Nikki Wright who had already participated in our research, and a scientific water quality to setup student internships where Pei-Ling Hsu was conducting her PhD research. Consequently, Michiel became interested in the accessibility of science and, more generally, in issues of diversity in science education. His ethnographic research allowed him to understand science from the angle of his students—an angle from which science can be quite alienating and hence inaccessible. Furthermore, Michiel came to understand that for the majority of students science could be alienating in much the same way as it was to the First Nation students he worked with. Michiel, a trained scientist, considered this work to be a once in a lifetime learning experiences. Gradually he started to take diversity as a given rather than the exception both in the daily lives of students and in scientific practice. Related to his other interests, he came to understand how diversity underpinned scientific development and technological innovation (e.g. van Eijck and Claxton 2009). From diversity as given, Michiel began to frame students' internships in scientific laboratories from a dialogic framework allowing various forms of knowing to mediate the practice of conservation, including both indigenous and scientific ways of knowing, resulting in successful forms of science education (e.g. van Eijck and Roth 2009). He became interested in the question how a science education looks like in which diversity is taken as a given. After leaving Victoria, he continued this line of research together with universities from Malaysia, India, Lebanon, Turkey, and the UK in the *Science Education for Diversity* project funded by the 7th Framework Program of the European Commission. In line with the idea of diversity as a point of departure, the big idea behind this project was to expand the research literature on issues of diversity in science education to include perspectives from non-Western countries such as India, Malaysia, Turkey, and Lebanon, ultimately aiming at learning from each other in dialogic ways. Michiel was developing a dialogical way of thinking to the problems that I had described in terms of *dialectics* and *collectivity* (Roth 2003) and *emergence* (Roth 2007) where science was understood as but one among many voices in a conversation, where the voices were speaking *with* each other, *for* each other, making themselves understood by the other.

#### *Authentic and place-based science education*

From his research while working with the First Nations Michiel learned that forms of science education in which genuine scientific practice were part of the life of students should be characterized as authentic and place-based. Referring to *Authentic Science Revisited: In Praise of Diversity, Heterogeneity, Hybridity* (Roth et al. 2008) that we had co-authored together with Pei-Ling Hsu and Giuliano Reis (PhD



students at the time) Michiel described what he thought of the notion of authentic school science in this way: It refers to the given that the problem of fostering scientific literacy does not lie with the level of agreement between school science and the laboratory science of scientists but with the levels of control, authority, mastery, and authorship that students are enabled to exercise in their science education. Michiel considered as place-based those forms of science education in which students started in developing scientific and technological literacy by beginning with experiences related to their own place (Tippins et al. 2010). Since both these notions accounted for unique standpoints and hence identities of students, diversity could be taken as an a priori given in the production science genuine scientific practice. For Michiel, the direct outcome of this line of research recently was our manuscript for the special issue on the next generation of research on STEM learning, which described the nature of scientific literacy as lifelong, life-wide, and life-deep (Roth and van Eijck 2010). For Michiel, the next step of this line of research—a step that he could not take because life had other things in store for him—comprised the characterization of forms of professional development of science teachers that prepare for authentic and place-based science education.

### Transformations

Each SNITZEE story is a story of transformation, which is a fundamental value of the WSÁNEĆ. Central to transformation is their language, which allows them to understand that they are part of a whole that exceeds any one of them and that they are there to serve this whole (community, life) that transcends each individual. (Roth 2010, p. 289)

SNITZEE (pronounced /sni:kwíθ/), which translates as “the place of blue grouse,” is the aboriginal name for a place that White folks call Tod Inlet, an original village site of the WSÁNEĆ people. It has been more than just a (physical) place in the lives of the local WSÁNEĆ (see below), and it became an important physical and metaphorical site for Michiel not only to rethink the role of science in society; but also it became a catalyst in Michiel’s life and a metaphor. As I had written to him in May 2010, every time I visit SNITZEE, I am thinking about Michiel, especially today that he is gone, gone, gone beyond, completely gone beyond. In an article making a case for activism as a category of learning from which the opening quote was taken, I argue for an ethics of care similar to what the indigenous peoples had done and known for a long time. I suggest that each SNITZEE story is one of transformation, integrating the different ways of being and knowing. For Michiel it initially was a site of research, and then became a metaphor for rethinking the role of *place* in science education. In the aboriginal ways, SNITZEE was deeply integrated into their spiritual being, and transformation. This, unbeknownst to us at that time, also became a metaphor for what was to be Michiel’s turn towards seeking was of integrating science and spirituality, which in his last few years had been a form of Buddhism. In the following, I honor Michiel’s contributions to the field of science education by

focusing on one of his central sites and topics of research, his emerging theories, and the role that this work oriented Michiel during the last few years of his life when spirituality took on a central role. Having already noted the deleterious effect that science (education) can have on everyday ways of knowing generally and on traditional ecological knowledge specifically, *SNITÇEŁ* actually is an appropriate metaphor for the development of Michiel's way of being in the world. It was through the aboriginal ways of being that he had come to be aware of the important place of spirituality—but this was initially more at the intellectual level. When difficult times in his own life brought him to Buddhism, he pursued living in ways what he earlier only thought and wrote about.

One of the crucial notions in Michiel's work and experiences is that of the chronotope. We used this Bakhtinian category as an approach to rethink the notion of place in learning during a project in which we realized how important places were to the First Peoples, for whom a place was not just a point on a map (van Eijck and Roth 2010b). Although there are many places that are significant to the *WŚÁNEĆ* First Nations, some of whom live on a reserve (*WJÓŁŁP*) in the municipality of Central Saanich where I reside, it was this one place more than any other that would increasingly become a catalyst in Michiel's life and work: *SNITÇEŁ* /Tod Inlet. It had been a special place for the *WŚÁNEĆ*, in their spiritual and practical lives.

#### *SNITÇEŁ*/Tod Inlet – an exemplary chronotope

Saaninch Inlet separates the Saanich Peninsula from the main body of Vancouver Island (Fig. 2). Today, there are three reserves and villages along the east side of the inlet (*WJÓŁŁP* [Tsartlip], *WŚIKEM* [Tseycum], *BOKEĆEN* [Pauquachin]), and the First Peoples mark their presence with totem poles, reminders of an irrecoverable time past when they were leading a sustainable lifestyle here, wardens of nature (Fig. 3). *SNITÇEŁ* is a small inlet in the southeastern part of Saanich Inlet. Every part of this geographical area, every locale, has an aboriginal name. But these names are more than just names in the Greco-Roman tradition, not just means to identify a person in a way that is not much different from using an identifying number. Instead, names were part of a dimension of life. An elder from the *WJÓŁŁP* nation suggested that the difference between English and *SENĆOŦEN* is significant. In the former, the speaker is an observer whereas “the *SENĆOŦEN* language captivates the speaker, rarely allowing him or her to speak directly about anything, making it necessary for the speaker to *become involved in order to understand*” (Paul et al. 1995, p. 4, emphasis added). The difference is one between an observer looking from the outside and through a window at the world and that of a witness undergoing events in which s/he is an integral part.



Fig. 2. The Saanich Inlet (seen from southeast) has been the home for the W̱SÁNEĆ people for as far as their oral history reaches back in time. (© Wolff-Michael Roth, used with permission)

In my research, we had already been confronted with the difference. There was another creek that had figured in a lot of my research, and which constituted a first point of contact with Michiel. In English, it is named *Hagen Creek* and flows into *Hagen Bight* of Saanich Inlet (off the right edge of Fig. 2). It is a name, as any other name, with an (almost) arbitrary relation to the physical location. In the language of the W̱SÁNEĆ, it is called KĒNES (pronounced /qʷənəs/), place of the whale, reminding every user of the word of the times whales came to the mouth of the creek to feed. It was an important place, because the W̱SÁNEĆ gathered shellfish around the mouth of the creek, fished in the ocean as well as large cutthroat trout in the creek itself. Hagen Bight was KEXMINĒN, place of the consumption plant; and Hagan Beach was ƆIFEƆEN, a spiritually significant name. It is evident from these names that KĒNES was integral to their lives, providing them with an essential part required to meet their basic needs. It is not surprising, then, that the creek also was an important site in the spiritual life of the W̱SÁNEĆ, a place where they came for cleansing physically and spiritually. It was when Michiel had read about my research in this community around the efforts of restoring the creek to a state that had long *gone, gone beyond* what it had been, to the point of having *gone completely beyond* repair, that we had first contact without knowing that some time later we would actually be working together closely for a number of years.



Fig. 3. A totem pole facing WSIKEM (Tseycum), one of the three WSÁNEĆ First Nations villages on the (east side of) Saanich Inlet seen in the back. (© Wolff-Michael Roth, used with permission)

When Michiel came to work with me, it turned out that it was not KENES but SNITZEE that he came to appreciate in particular and that figured centrally in our piece on place-based learning (van Eijck and Roth 2010b). Inspired by the work of the Russian literary theorist Mikhail M. Bakhtin (e.g. 1975), Michiel proposed a chronotopic theory of place. With the term chronotope. Bakhtin had captured the idea that significant events occur in specific places (Gr. τόπος [topos]) and at specific times (Gr. χρόνος [chronos]). Particularly important among chronotopes are those of passage, including hallways, entryways, and plazas, that is, spaces where people move through, encounter each other, meet, and depart to continue their physical and spiritual journeys. SNITZEE (Fig. 4) had been one of those significant



chronotopes for the local W̱SÁNEĆ (see below). But it had been transformed after the white settlers moved into the area, and especially when a limestone factory came to be established, which used S̱NIṮZE̱Ł as a limestone quarry. This transformation, too, was embodied in S̱NIṮZE̱Ł, however contradictory this might sound and be. With the factory, the aboriginal forms of life were gone, gone beyond, gone completely beyond (repair). The factory and the associated activities destroyed the natural habitat, including the eelgrass (*Zostera marina*) that is so crucial to marine life. But the limestone-related activities were not sustainable and, these, too, are now gone, gone beyond, completely gone beyond. Today, only some ruins remain, grown over, background to some graffiti that is itself weathering away as nature returns (Fig. 5). There have been some efforts to restore S̱NIṮZE̱Ł to some state closer to what it had been, not the original one, which had gone, but something that again invites people to come to recollect and gather force in this place that continues to marvel with its tranquility so close to a busy tourist attraction and the nearby city.



Fig. 4. S̱NIṮZE̱Ł / Tod Inlet was a most important place in the lives of the W̱SÁNEĆ, both in terms of physical terms (because they met their basic needs), and spiritual terms, where they became warriors, cleansed, and renewed themselves. The posts, remains from the times of the lime factory, today are nesting and resting grounds for birds. (© Wolff-Michael Roth, used with permission)



SNITȚEĒ was a special place for the ŪSÁNEĆ. Archeological findings show that a First Nations culture existed here for over two millennia (Marpole culture). A ŪSÁNEĆ elder not too long ago described the importance of SNITȚEĒ in this way: “as the doorway to our winter hunting grounds because many animals would gather here. It is a very protected place, protected from all the winds. I often say SNITȚEĒ is like a ŪSÁNEĆ refrigerator” (SISB et al. 2008, p. 16). For the ŪSÁNEĆ, SNITȚEĒ was where they gathered and hunted fresh food; they also stored their food there, because it was accessible and protected from winter storms at all times. Because it was sheltered all around and especially to the south, it protected them in the winter from what they experienced as vicious southwest winds.



Fig. 5. Nature is taking over again the limestone quarry and the associated factory and settlement. Even the gravity begins to go soon after it has made it onto the remaining walls. (© Wolff-Michael Roth, used with permission)

ŪSÁNEĆ elders still talk about how their forefathers were finding clams, crabs, herring, cod, and salmon that not only were plentiful here but also were harvested in a sustainable manner. For example, they left a whole in their nets so that some salmon could escape and reproduce—so different from the ways in which the White people had dealt with traditional food sources, such as the eradication of the buffalo on the American plains or the caribou herds in southern Labrador where I had taught science for a while. SNITȚEĒ especially was a spiritual place, where people

came for absolution, prayer, and renewal; and it was used as a place of transformation, where young warriors were trained in the practices of survival, fasting, and self-renewal. Here the young did become warriors. And each warrior literally became attached to SNITȚEŁ in and through the practice of choosing a tree and taking care of it over the course of his lifetime; and it is through such relationships that the ŲSÁNEĆ understand life, in which all the other aspects of human and material life are considered to be relatives. A warrior, therefore, became a caretaker of the land in the spirit of the saying “We have not inherited the earth from our fathers. We have borrowed it from our children” (Sarsfield and Emes 1978). More generally, the ŲSÁNEĆ understand themselves as “the ‘care-takers’ of the Earth” (Paul et al. 1996, p. ii).

SNITȚEŁ had such an important role in the spiritual life of the ŲSÁNEĆ people that it was sacred. It was that spirituality integrated with the material life of the ŲSÁNEĆ people that so much impressed Michiel, transforming him forever. But the White settlers drove the ŲSÁNEĆ out from the mid-19th century on, which prevented the latter from engaging in their traditional hunt. Furthermore, the farmers changed the landscape forever by draining bogs, which were no longer suitable habitat for much of the game that traditional fed the ŲSÁNEĆ. This also happened to SNITȚEŁ. In the stories of the ŲSÁNEĆ people, which keep the memory alive of the losses that they sustained, local elders talk about the period following contact and settlement by Europeans as having been a sad time in the history of their nations. They talk about the loss of access to the land generally and that of SNITȚEŁ in particular. They talk about having to adopt a lifestyle and laws different from their own. Michiel understood these developments in the same way that he understood the role of science in all of our lives: as a form of colonization enacted through a monological understanding of life.

Today, the ŲSÁNEĆ people do not quite know what to do about SNITȚEŁ, in the same way that they are uncertain about many other issues of their lives and identities within a society in which, despite all achievements with respect to the integration of multiculturalism, there is a continued colonialist undercurrent. The ŲSÁNEĆ people talk about SNITȚEŁ having become a park about 25 years ago, which they view as a mixed blessing. On the one hand, it does give the place a protected status; but on the other hand, it locks the ŲSÁNEĆ people out from their traditional ways because they cannot use SNITȚEŁ as they once did. Despite their mixed feelings, the ŲSÁNEĆ people have assisted activists in restoration activities, in attempting to bring life back as it used to be by, for example, replanting the eelgrass. Nowadays a big poster sign tells visitors about the importance of to the ŲJOŁEŁP nation, the goals of the revitalization efforts, and the role of eelgrass as a major constituent in the ecology of the land (Fig. 6). The ŲSÁNEĆ people (from the ŲJOŁEŁP nation) did assist in part because they continue to come to SNITȚEŁ, thereby asserting their rights and, more importantly, their responsibility, to keep their ties there.

It is true that they receive assistance from activists, who succeed in receiving funding to engage in restorative activities, such as replanting eelgrass at SNITȚEŁ,



which is a precondition for bringing back some of the marine life that had gone with the environmental destruction. SeaChange, an organization led by Nikki Wright, had endeavored to bring this important plant back. It was through Nikki that Michiel came to SNITÇEL; and it was through her that Michiel got to work with some of the members of the WJOŁŁEP nation. But the WJOŁŁEP, as the WSÁNEĆ and other First Nations generally, frequently are weary about white people implementing their vision about the environment and restoration. Thus, one First Nations individual commented on the efforts of another local environmentalist group to turn KÉNES from the ditch it had become in the hands of the Eurocentric settlers into something that resembles what the creek had been:

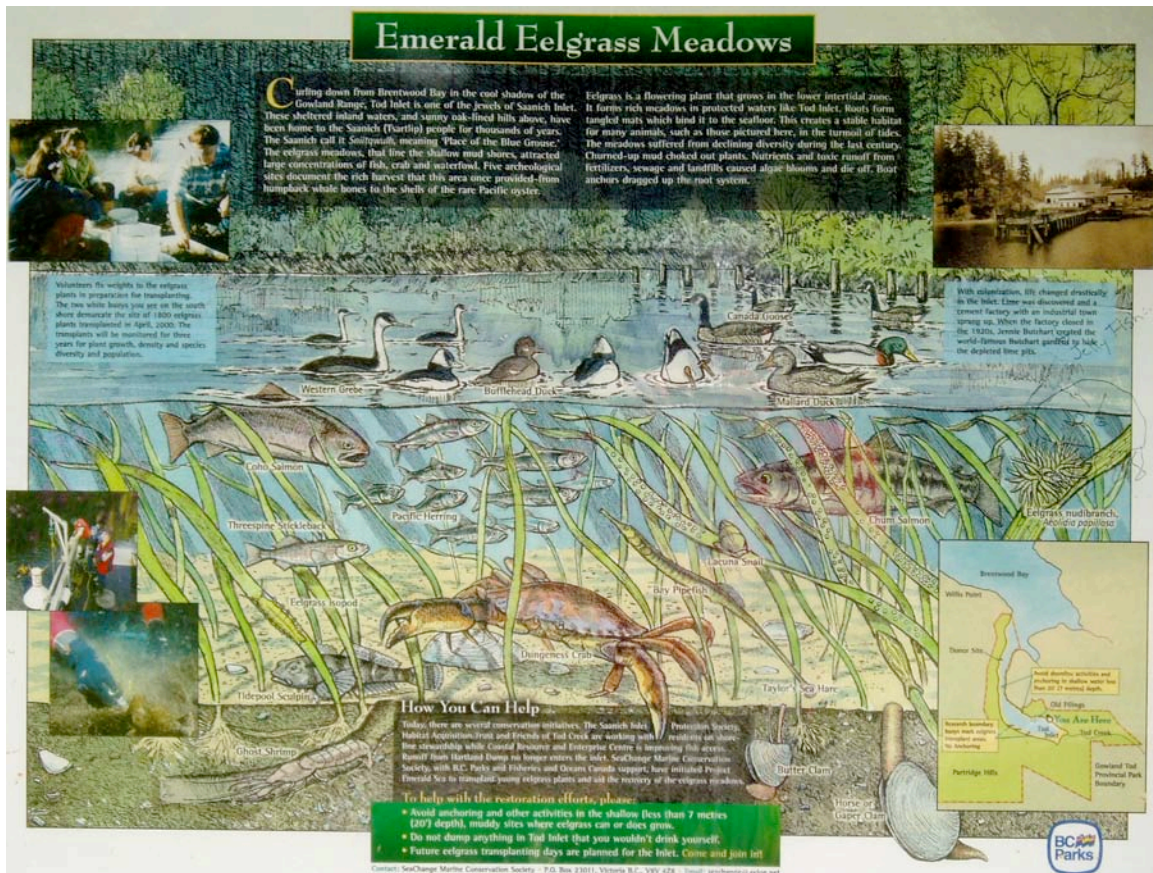


Fig. 6. This poster, mounted near the water, describes the importance of SNITÇEL to the WJOŁŁEP, the purpose of the restoration, and the role of eelgrass in marine ecology of the area. (© Wolff-Michael Roth, used with permission)

The activists are doing the same thing that the farmers did when they first cleared the forests, drained the swamps and channelised the stream. They are perpetuating the dynamics of colonialisation. They haven't taken the time to educate themselves through dialogue with the Coast Salish people who've lived there for hundreds of years and who probably have stories about the birth of the creek. They've spent a summer measuring it with their meters and yardsticks and now they've got their



machines in there, changing it. They haven't taken time to build relationships with the people who first inhabited the land. I do not understand how this can be called a democratic process. (Lee and Roth 2001, p. 349)

I remember very well how this comment affected Michiel, who, in an initial movement of his thinking, wanted to act in the way local activists did. But this statement and what he had come to know about the W̱SÁNEĆ changed the ways in which Michiel felt about the need to respect the spirituality of others and the ways in which they did practice environmental mindfulness. For example, in one article, where we described what could be learned from the path taken by one of the young members of a local W̱SÁNEĆ nation, who integrated traditional ecological knowledge and Western science in very interesting ways, Michiel did not just publish the piece once it was written given that he had received written consent (van Eijck and Roth 2009). Instead, Michiel waited until the person had read and given his approval that the text in fact had been respectful and represented W̱SÁNEĆ creeds and his path and orientation. In another instance, Michiel wrote and published an article together with a young member of the local W̱SÁNEĆ band (van Eijck and Claxton 2009). Through all of this work Michiel had come to understand that there were contradictions in the very way in which science is conceived. He summarized his position in this way:

As chronotope, place emphasizes the dialogical relation of a material location and the narrative nature of the account in which it appears. It thereby has several implications for place-based education. One of these implications counts especially for those forms in which a scientific voice is currently the dominant voice (i.e., ecological place-based education). From a chronotopic perspective, science is only one of the voices by which spatial and temporal categories can be shaped and by which place is described. If only the scientific voice is talking in place-based education, a monologue will emerge. This monologue will not only exclude other voices than the scientific from the discourse and therewith shape a particular place that is not an appropriate representation of the place as a lived entity. Rather, as a lived entity, the open-ended dialogue is the single adequate form for verbally expressing place, for this is the modus of human life in which everything unfolds that has meaning and significance. Hence, we can only appropriately understand place as the result of a dialogue—meaning about the place is articulated as the place, the public square where the community's voices intersect and, as a result, a matrix of spatial and temporal categories emerges that shapes the place as is. Therefore, place-based science education is a *contradictio in terminis*, because science inherently excludes the contingent nature of any this place. At best, in place-based education science can be one of the voices in an unfolding dialogue that establishes place as chronotope. For instance, in the case described here, this voice provided the participants with tools for conducting conservation and restoration of SNITØEŁ/Tod Inlet. As such, students can come to learn how scientific methods and tools add to the unfolding dialogue, resulting in particular spatial and temporal categories by which the place is shaped chronotopically towards a configuration that mirrors the transaction with the community. (van Eijck and Roth 2010, p. 896)

SNITÇEŁ as catalyst and metaphor

Life means change and transformation; when there is no transformation, there is no life. SNITÇEŁ was integral to the life of the ŴSÁNEĆ people, and therefore integral to the lives of its members. This was so because of material reasons: members of the community changed as they became more proficient as hunters and gatherers, and they changed (physically) eating what they had harvested from the land. But it was so also because of spiritual reasons: it was a place of wellbeing and spiritual transformation. SNITÇEŁ represents the five realities of the ŴSÁNEĆ people: thankfulness, kindness, helpfulness, respect, and transformation (SISP 2008). It was deeply integrated in their worldview based on relations, life as a unity. During our last meeting, in June 2012, Michiel and I—sitting in what felt like a secluded part of a courtyard on the Wageningen University campus (Fig. 7) that stood in for SNITÇEŁ—had a three-hour conversation that was about life. Michiel, at that stage of his life, recognized science education as part of and sustaining material life, but as an endeavor that could not be understood other than through a whole-life perspective. He most deplored the absence of any form of spirituality in the ways in which science and science education are taught and theorized; he deplored the monological ways in which many perhaps even most scientists and science educators were speaking and acting. He had learned from the ŴSÁNEĆ generally and from SNITÇEŁ specifically that spirituality is another manifestation and integral aspect of life. Michiel wanted all of us to think dialogically, bringing all forms of human voice to the table: in this way, not only just plain folks and Aboriginals learned (about) science but also science learned (about) other ways of being. Only out of such multivoiced conversation, only out of the diversity that it involves, could true dialogical understanding emerge.

During this afternoon, partly protected by the treillage that surrounded our seating (Fig. 7), Michiel talked about his Zen Buddhist practice and wanting to become a teacher himself (unfortunately, the websites where he wrote about his dual interests, Zen and science education no longer show up in Google searches). We talked about transformations. I clearly remember thinking and telling him about my own beginning meditation practice, and about my encounter with Zen. But in my case, it had taken me to leading life in the Zen way, which does not require any relation to the Buddha as a special figure, nothing resembling religion in any way. He told me that at that point in time, he attributed decreased attention to science education and was more interested in spirituality with the hope to be able, some time in the future, to work towards integrating the two voices of life. I talked about how that integration of the material and psychological-spiritual aspects of life came together for me with the Zen spirit (mind) and how this spirit allows us to rethink teaching and learning (e.g. Masciotra et al. 2007). We talked about how situated cognition and embodiment approaches, too, allow understanding the integration of the material and spiritual (mental) aspects of life, which are but manifestations of what Bakhtin (1993) called “actual once-occurrent becoming” (p. 3). Bakhtin was making us understand that each one of us, “the one who is actually thinking and who

is answerable for his act of thinking—I am not present in the theoretically valid judgment” (p. 4).



Fig. 7. In the Lumen Building of Wageningen University, Michiel and I had our last face-to-face conversation: In the spirit of an integrated life: nature integrated into human architecture. (Wikimedia Commons, free of rights, [http://commons.wikimedia.org/wiki/File:Wageningen\\_University\\_-\\_Building\\_Lumen.JPG](http://commons.wikimedia.org/wiki/File:Wageningen_University_-_Building_Lumen.JPG))

We agreed that Bakhtin (1993) was right when he said that “all attempts to surmount—from within theoretical cognition—the dualism of cognition and life, the dualism of thought and once-occurrent concrete actuality, are utterly hopeless” (p. 7). Life constitutes, in Bakhtin’s considerations, a once-occurrent unity. It was precisely in the experience of spirituality that the loss of life as a unity, which is the result of theoretical cognition, can only be made up when life and all its aspects are approached as a unity, of which theoretical cognition is only one manifestation. This life, as Bakhtin (1975) points out, can be understood only dialogically. For Michiel, as he once said, “nothing can be grasped as a static identity nor be articulated by a single voice, such as the scientific.” Michiel thought that chronotopes lead us to think “the intrinsic connectedness of temporal and spatial relationships,” and these relationships “are artistically expressed in the narrative.” “Chronotopes,” as Michiel said, in and because of all their diversity and contradictions, “allow a coherent narrative about a place.” The stories of the First Nations were among those narratives that celebrated the connectedness of people and the land.

SNITÇĒĒ, in the life of the ŪSÁNEĆ people, constitutes and represents that unity. During this what was unbeknownst to us to be our last face-to-face meeting Michiel told me about working towards that unity through his Zen practice. It, SNITÇĒĒ, was the image of what was to be, and a metaphor for his own life. The five realities of the ŪSÁNEĆ people—thankfulness, kindness, helpfulness, respect, and transformation—were to be among its own foremost realities.

### **Our land holds our ancestors . . .**

We bury our ancestors in sacred places and we bury them near to us; they remain a part of our village. . . . We keep them near so we can watch over them and they can watch over us. . . . Our land holds our ancestors and our ancestors are a sacred presence. (SNITÇĒĒ Statutory Declaration #14, ŪJOĒĒĒP First Nation)

Om gate, gate, paragate, parasamgate, bodhi svaha. Michiel never got to tell me about how far he had come with his meditation. His walkabout has come to a sudden and abrupt end. In my last email notice to him, I was writing about life that transcends all of us and about my hope that he could depart knowing this from the bottom of his heart. We come from dust; and we return to dust. In between, life asserts itself through us. The announcement of Michiel's passing included the notice that he was to be buried in the local graveyard. When I was reading this, I was wondering about whether he had wanted to be buried or whether he would have wished his ashes to be strewn somewhere in or around SNITÇĒĒ. In this key contributor piece, I also bury his heart at the place that not only transformed him but also serves as such a suitable metaphor of transformation. In my notes, I found a copy of our poster with which Michiel was presenting our work on chronotopes (van Eijck and Roth 2010); there he had included a photograph of the statutory declaration that the ŪJOĒĒĒP First Nation has made with respect to SNITÇĒĒ reproduced in the introductory quotation to this section. Michiel had been taken by this statement, even though it was never included in the article. Gate, gate, paragate, parasamgate, bodhi svaha, gone completely beyond and yet kept so that we can watch over him and he can watch over us. It is in and through his work that Michiel continues to be present even though he is gone completely beyond.

The special issue about ecological mindfulness and cross-hybrid learning also emphasizes Aboriginal and Indigenous perspectives. I am sure Michiel would reassert what he had heard and learned from the ŪJOĒĒĒP: Our land holds our ancestors and, because the ancestors are a sacred presence, the land, too, is sacred. We, through our presence on this earth, should respect it as a sacred place. Of course it was a coincidence, but when we met for the last time, Michiel took me through a building of Wageningen University carrying the name *Gaia*, the Greek goddess personifying the earth. He was certain about the Earth as a system within which humans play a part (Lovelock 1979). Michiel, through his early work and the position he adopted after starting with his Zen Buddhist meditation, more than other things, worked towards such a perspective even though he was trained in traditional Western science. Michiel cared about spirituality including ecological

mindfulness, which, in part, he learned in and through his relations with members of the WŚÁNEĆ people. Michiel did not just write about ecological mindfulness, he practiced ecological mindfulness, where the *ecology* included an ecology of mind and the oft-forgotten fact that humans are endowed with spirituality. As the editors of the special issue emphasize, “Dancing, yoga, kayaking, gardening, karate, fishing, mountain climbing, surfing, cooking, music and other cultural arts are all forms of meditational and mindful practice that strengthen and condition our educational balance.” With respect to this sense outlined by the editors, Michiel was an *organic intellectual* (Gramsci 1971), one who walked the walk. It is completely justified for his science education contributions to be celebrated within this special issue.

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