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Competing Ideas of 'Natural' in a Dam Removal Controversy

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ABSTRACT: In spite of general support for removal of dam structures within the ecological sciences community, local residents sometimes contest dam removals. This article examines the competing ideas of 'natural' and 'nature' that may surface in a dam removal controversy. Using the conflict of the Colliery dams of Nanaimo in northwestern Canada, the article explores how those who want the dam to stay and those who want it removed identify what is 'natural'. Through an examination of public documents, survey data, and social media, the article shows that what is 'natural' is constructed differently in epistemological, ethical, and aesthetic terms by those for and against the dam removal. Because the two sides differ in their idea of what 'nature' is, the conflicts may be difficult to resolve. This paper stresses the role of perceptions and values in environmental issues. Understanding the complex nature valuations is where the potential for truly interdisciplinary restoration projects becomes both evident and necessary.

KEYWORDS: Dam removal, ecological restoration, environmental politics, natural

INTRODUCTION

Dam removal is an increasingly common practice as old splash dams and small hydropower dams have become obsolete, or as dam safety standards have been modified. Ecological connectivity is often an explicit goal of dam removal projects, although the economic aspect of maintaining old structures is also a major factor. In a dam removal operation, the water flow is diverted while the structure that is regulating the river is safely removed in a way to manage excess sediment. The end result of a complete dam removal is that the water will flow freely in the original riverbed and the pond or lake that had been on the upstream side of the dam will no longer be present. From an ecological standpoint, dams radically modify ecosystem processes, including increasing water retention, impeding migration of animals, reducing sediment transport, and inundating former terrestrial ecosystems. Reversing these human-induced changes through dam removal has become a regular ecological restoration practice, although the removal has both positive and negative ecological consequences (Bednarek, 2001). Restoration activities after dam removal often attempt to counter sediment releases and encourage re-vegetation of the new riparian zone.

In spite of general support for removal within the ecological sciences community, local residents have sometimes contested dam removals (Lejon et al., 2009; Fox et al., 2016). In many dam removal cases due to old age, the upstream lake has existed as a water feature for decades, if not over a century. This means that the dam may have been integrated in both cultural and ecological systems. Previous research into contested dam removal has shown that ecosystem services of the dams and dam lakes had different values to different actor groups (Jørgensen and Renöfält, 2013) and that local history and identity matter to protesters (Fox et al., 2016). Public opposition in these cases was not caused by knowledge deficiency, where more information would lead to better ecological decision-making, but by the fact that local residents valued different aspects of the environment than scientists or environmentalists that want the dam removed.

Stakeholders represent ecosystems in different ways depending on their values. In a study of urban park restoration in Chicago, Gobster (2001) found that the perceived structure and function of the landscape created different 'visions of nature'. These competing visions – landscape as designed, as habitat, as recreation, and as Pre-European settlement place – meant that different stakeholders focused on different landscape features as the iconic elements to preserve. Buijs et al. (2011) found that stakeholders in a Dutch national park conflict held different cultural representations of nature, with the proponents of the park favouring 'wilderness' and the opponents referring to aesthetics and anthropocentric values. The two main stakeholder groups viewed the establishment of a national park in radically different ways based on different ideas of what constitutes 'good' nature. A similar study of the context of dam removal controversies in Sweden showed that stakeholders for and against the removal likewise expressed different values for ecosystem components and services (Jørgensen and Renöfält, 2013). Buijs (2009b) discovered that residents adopted three distinct frames when either supporting or opposing river restoration projects in the Netherlands: (i) attachment (focusing on cultural heritage and place attachment) (ii) attractive nature (focusing on nature as attractive living space) and (iii) rurality (focusing on rural values). All of these studies affirm that differing valuations lead to differing ideas about what counts as nature.

Valuation of nature is not a simple matter. Swart et al. (2001) identified three philosophical positions driving the valuation of nature: epistemology (What is true?), ethics (What is right?), and aesthetics (What is beautiful?). Epistemology is the study of knowledge – what knowledge we have and how that knowledge is recognized as true. For the purpose of this paper it is critical to acknowledge that there are many valid ways of *knowing* nature beyond the ecological sciences. Ways of knowing nature include the physical experience of being in the place with all of its sensory inputs. This epistemology is not less valid than others, such as knowing nature through measurements and models of particular ecosystems.

Ethical positions within nature valuation are typically on a spectrum in which purely anthropocentric and purely ecocentric are the two extremes. These two extremes are, however, difficult to disentangle. In the twenty-first century there is wide acknowledgement that humans have been radically remaking nature through wide-scale changes to geophysical properties of the planet, leading to suggestions to label our geological epoch as the Anthropocene (Crutzen and Stoermer, 2000; Steffen et al., 2011). The biological modifications include the creation of novel ecosystems (new non-historical ecological configurations) that have begun to challenge conservation and restoration norms (Hobbs et al., 2009).

Aesthetic valuation of nature involves caring about the attractiveness of an environment, and may motivate its preservation and conservation (Callicott et al., 1989), although aesthetics should not be overestimated as a driving factor (van Marwijk et al., 2012). Environmental aesthetic valuation relies on perception of the landscape, including the contextual social dimensions of the environment and sensory experience (Carlson, 2016). Because the valuation of nature is wide-ranging, attitudes toward nature conservation also vary based on the individual's "image of nature" (Buijs, 2009a). The 'images of nature' concept put forward by Buijs (2009a) acknowledges the pluralism of values and beliefs, while also permitting the characterization of what nature represents to different people into dominant typologies. As a result, diverging opinions on local nature conservation practices should be the expectation in any environmental modification project, not a surprise.

Investigating the cultural representations underpinning values in a conflict can involve conducting interviews with stakeholders, reviewing official documents and promotional material, and examining news coverage (e.g. Buijs et al., 2011). Analyzing discourse – the words and images deployed to represent an idea or thing – of the stakeholders to determine their value sets and conceptions of nature can give us insight into how dam removal projects are perceived, and thus how public sentiments might affect the success or failure of projects.

This article furthers research into the value systems of stakeholders in dam removal controversies by examining the competing ideas of 'natural' and 'nature' in their discourse. Using a conflict in

northwestern Canada, the paper explores how those who want the dam to stay and those who want it removed identify what is 'natural'. For this article, qualitative data was collected from publicly available documents, including city governmental documents, meeting minutes, and public presentations of the dam removal plans. The City of Nanaimo created an online informational website and archive of documents pertaining to the dam removal, including reports and studies, presentations, correspondence, meeting summaries, video recordings, legal documents, and other information related to the case, in response to citizen concerns.¹ This article uses the documents on this website intentionally created to communicate the dam removal decisions to citizens to characterize nature from the pro-removal position. A citizen group founded to protest the removal posted information and documents onto the group's webpage. This information is analysed to characterize the protest position. For both the pro- and anti-positions, the documents analysed were created specifically for public consumption and disseminated via online media. The analysis also uses the results of a survey on valuation from residents who use the dam area. The survey was conducted prior to the controversy erupting.² An analysis of the language used by the surveyed individuals about what is 'natural' at the dam site reveals the specific elements of the dam ecosystem that are considered part of 'nature'.

This paper will show that what is 'natural' is constructed differently in epistemological, ethical, and aesthetic terms by those for and against the dam removal. Because the two sides differ in their idea of what 'nature' is, the conflicts may be difficult to resolve. This paper stresses the role of perceptions and values in environmental issues.

THE COLLIERY DAMS OF NANAIMO

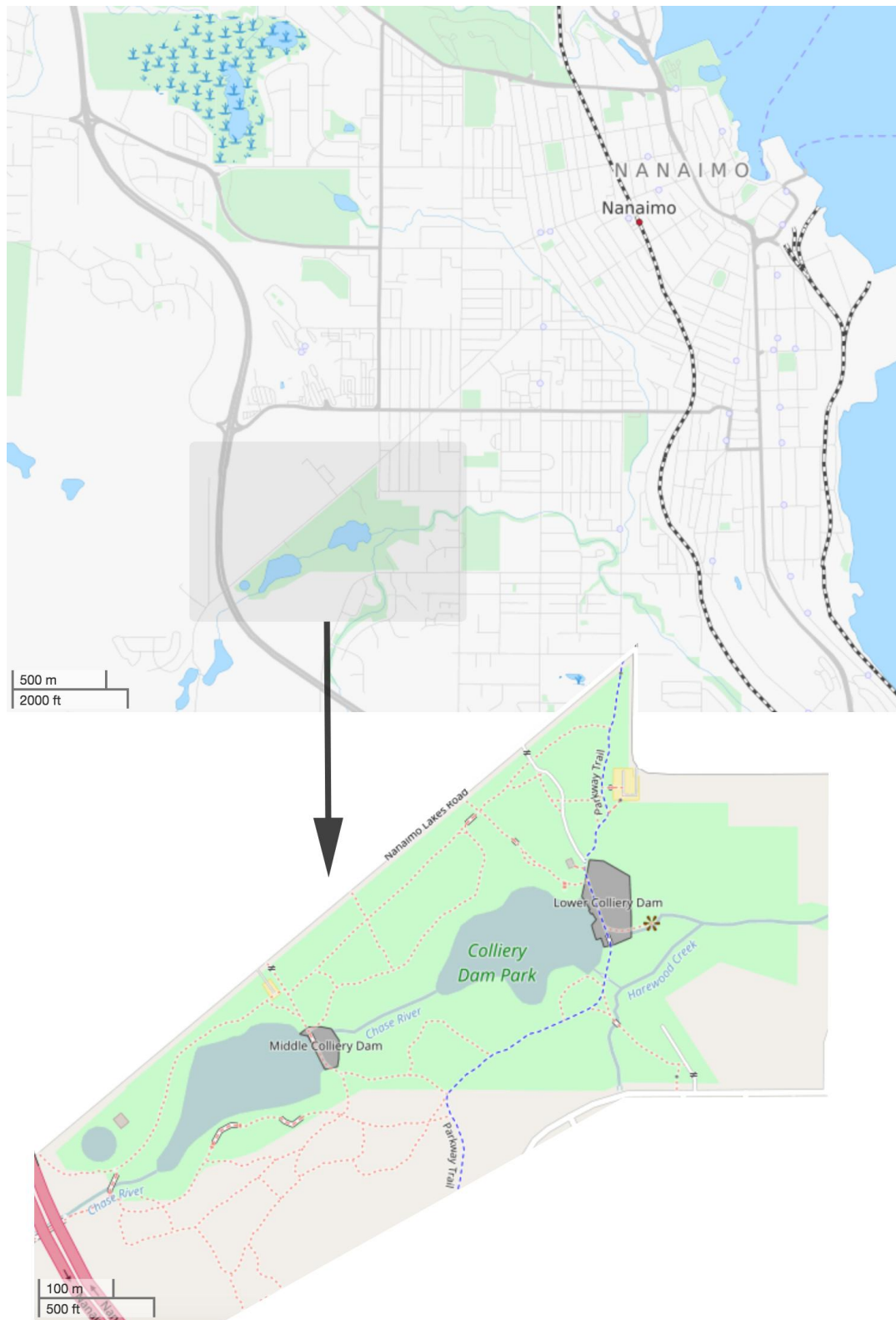
In 2012, a controversy emerged about the potential removal of two dams. The controversy demonstrates how nature can be constructed differently through epistemology, ethics, and aesthetics. This conflict happened in the small coastal city of Nanaimo (population 90,000), located on Vancouver Island, across a strait from the major city of Vancouver, British Columbia, Canada. European settlement of Nanaimo in the mid-nineteenth century was linked to the discovery of large coal deposits in the area and Nanaimo's suitability as a harbour for transporting the coal to San Francisco. Nanaimo was economically and geographically dominated by collieries (coal mines and the buildings and equipment associated with the mines) in its early years.

The two dams in the Nanaimo controversy were part of the colliery operations and are thus appropriately called the Middle and Lower Colliery dams (Figure 1). These dams, constructed of reinforced cement, were built in 1911 on the Chase River to provide water for washing coal at the waterfront and for miners at the Western Fuel Company No. 1 mine. They are 13 m high x 50 m long and 23.5 m high x 77 m long, respectively (Golder Associates, 2014). At normal water level, the Lower dam holds about 165,000 m³ of water and the Middle dam stores 112,000 m³. The dams replaced log crib dams built in 1887 to provide drinking water and the dam lake continued to be Nanaimo's water source until 1932. The water has not had an industrial use since 1968.

¹ www.nanaimo.ca/EN/main/departments/Engineering-Public-Works/CollieryDamProject.html

² Brad Maguire of University of British Columbia conducted the surveys as part of the project 'Representing the Importance of Place in GIS' hosted by the Department of Geography. The principal investigator (supervisor) was Brian Klinkenberg. Thanks to Maguire for providing his raw dataset for use in this paper. Maguire completed his PhD thesis based on these surveys in July 2017 at the University of British Columbia.

Figure 1. Map of Nanaimo with detail of the Colliery Dam Park (Map layers © OpenStreetMap contributors and reproduced under CC BY-SA license).



The area around the two dams is now a 28-acre recreational park owned by the City of Nanaimo called the Colliery Dam Park. The park is located on the edge of the suburban Harewood neighbourhood, which has about 9,000 residents. The Harewood Improvement District owned the parkland from 1962 after the Western Fuel coal company closed down, and then transferred the title to the City of Nanaimo in 1975 after its amalgamation into Nanaimo. There are approximately 2.5 kilometres of trails through the wooded sections of the park. The park is particularly popular for swimming and fishing in the lakes during the summer and for dog walking, cycling, and jogging all year round.

In 2012, an engineering inspection of the dams indicated that they did not meet the required safety standards in case of an earthquake. In October 2012, the Nanaimo City Council decided to remove both dams in 2013 to eliminate the safety risk (Gordon, 2013). On the recommendation of the Engineering and Public Works Department, the Council adopted a proposal to 're-naturalize' the river and its surroundings. This plan was met with significant public resistance, both because of the perceived outcome of the dam removal and doubts about the veracity of the risk claims.

In response to the city's decision and after an initial citizen meeting in November 2012, a grassroots protest group called the Colliery Dam Preservation Society was founded by Jeff Solomon, a local resident and child protection social worker. The group started a webpage (savecollierydam.org) and initiated a social media profile including a Facebook page. Solomon and others from the group made numerous presentations at city council and other public meetings, wrote letters of concern to local, regional and national officials, and were regularly interviewed in local media coverage of the dam removal proposal. Most of those involved in the protest group were local residents and regular park users.

In May 2013, the Nanaimo City Council passed a motion to replace both dams with dams meeting the current standards instead of going forward with removal only. This was still not an acceptable solution to the protest community.

As a response, the city established a Technical Committee in October 2013 to make viable recommendations for consideration by the Dam Safety Section. The Technical Committee was a multi-interest stakeholder group with representatives from the City (particularly the City engineering office who has jurisdiction over infrastructure), the Colliery Dam Park Preservation Society, the engineering firm Golder Associates (who was contracted to perform risk assessments and develop the technical removal plans), and the local Snuneymuxw First Nation (who is the indigenous First Nations group with fishing rights on the river).

After much negotiation and the commissioning of new engineering reports, the Council decided in July 2015 to construct an auxiliary spillway adjacent to the Lower Dam to comply with the safety requirements instead of replacing the Lower Dam structure (City of Nanaimo, 2017). The Lower Colliery Dam Auxiliary Spillway was completed in 2016 at a cost of \$4.463 million (Rosen, 2016). The Middle Dam safety risk assessment is still ongoing in 2017, so no plans for removal, replacement, or enhancement have been finalized.

While the political process of protest and negotiation over the Colliery dams has included many factors, including questioning of engineering expertise, taking into account Indigenous fishing rights, demands for direct involvement of the public in the decision-making processes, and more, this article focuses exclusively on the discourses of environment/nature in the controversy.

The first section below analyses what the City of Nanaimo representatives labelled as *natural*. Because many of the documents used in this study are official documents issued on behalf of the City with no authorship attribution, these documents are considered representative of the view of the government as a corporate entity. The second section turns to ideas of nature expressed by local residents and frequent users of the park. Some of the data in this section comes from a survey of attitudes toward the park that took place shortly before the dam removal controversy erupted. This

provides a foundation for the rest of the second section, which examines protest group discourses that appeared in response to the proposed dam removal.

Language of re-naturalization

Between the October 2012 decision to remove the dams and the May 2013 decision to leave them in place, the language used by the City government representatives labelled the removal as a 're-naturalization' process. Information on the city's website described the dam removal benefits in this way:

While removal of the dams will also result in changes to the park via the loss of the man-made lakes, the full intent of the restoration process will leave a naturalized, forest-lined river valley... This option also has the least permanent disruption to the park, and in fact provides for an enhancement to the park. It is true that removing the man-made lakes created by the dams will change the park; however the intent of the project is to move aggressively in replanting and restoring the natural areas left by the lakes' footprints. Initial thoughts include planting various ages of undercover and forest material (hundreds of trees) to get as close to 'nature' as quickly as possible. As well, the City will investigate the ability to incorporate pools and riffles in the restored stream course to provide for fishing and salmon passage (City of Nanaimo, ND).

In this statement, the dam removal brings back nature by restoring the *natural* areas and getting close to *nature*. The lake ecosystem in Colliery Dam Park is characterized as *man-made*, while the ecosystem after restoration is *naturalized*. The *naturalized* area is put forward as an *enhancement*.

A Powerpoint presentation given by Susan Clift, Director of Engineering & Public Works, and Bill Sims, Manager of Water Resources, to the Nanaimo City Council on 29 October 2012 presented the requirement to remove the dams as an "opportunity to naturalize the Chase River" (Clift and Sims, 2012). Although the presenters noted that the underlying reason for the dam removal was safety concerns, the presentation included images to highlight the 're-naturalization' potential to replace the large lake area with a small stream and extended forested land. They noted that the re-naturalization would benefit salmon by removing the Lower Chase Lake Dam spillway barrier, allowing access to an additional 1,300 m.

The Nanaimo City government issued a public presentation/brochure titled *Colliery Dam Removals & Park Naturalization* after the October 2012 removal decision (City of Nanaimo, 2012). In this brochure, the dam removal is described as a response to catastrophic failure risk, yet the text also portrays the removal as an environmental benefit. After eight pages about the risk of dam failure and emergency evacuation procedures, twelve pages outline the "naturalization of the Chase River" in both words and pictures. Statements such as "The City will return the Chase River within the park to its natural state" and "Naturalize the river and improve it's [sic] ecological state" imply that a *natural* condition can only be achieved through restoration activities. The brochure includes a "Naturalization Time Line" to show how the process will take place. Pictures of another dam in British Columbia that was drained and removed, followed by replanting of the area, are used to visualize the process in the document. The potential for enhanced salmon habitat in the Chase River is also mentioned. The goal of the activities is presented as a "natural setting of the river channel".

The official City position put forward in these public documents reveals a valuation of nature on the three levels of epistemology, ethics and aesthetics, as described by Swart et al. (2001). First, the epistemological position of the City's statements inherently relies on ecological restoration science. Ecological restoration has been defined by the Society for Ecological Restoration as "an intentional activity that initiates or accelerates the recovery of an ecosystem with respect to its health, integrity and sustainability" (SER, 2004). The activities defined in the Nanaimo brochure align with desires to recover the ecosystem. The document, for example, affirms scientific methods for restoring the channel by showing a timeline and process photographs. It also presents the benefits of the scheme to a

particular species, salmon. The document does not, however, use the word *restoration*; instead it refers to the related idea of *naturalization*.

Second, the ethical element indicates the *return* of the natural condition as an automatic good. The form of nature before human intervention is considered ethically superior to the form created by human action and should be favoured.

Finally, in aesthetic terms, the City's statements and choice of illustrations reveal that human artefacts (in this case, a dam) need to be absent from the landscape for nature to exist. However, walking paths and walking bridges are shown in images that purport to be images of nature, so not all infrastructure is portrayed as antithetical to nature.

Language of existing nature

Because a public park space incorporates the Colliery dams and their associated lakes, local residents regularly frequent the area surrounding the dams, which is administered as Colliery Dam Park. Trail use statistics for 2008 showed average daily uses between 133 in January and 306 in June (City of Nanaimo, 2012). What did these park users think about the Colliery dams? In 2011 and 2012, before the dam removal became an issue, Brad Maguire, a researcher from the University of British Columbia, collected data from park visitors to determine how they valued different geographical features of the park in order to create an 'importance' map of the park (Maguire, 2017). Park visitors were asked to participate in an open-ended on-site survey in which they identified places or objects within the park that they consider important, and then assigned a degree of emotional attachment to each place (see Maguire 2017 for a full description of the data collection methods).

For the purposes of this paper, the data collected by Maguire has been re-examined for descriptions and characterizations of water features in the park. The data set used for this article included 1194 separate geographically-based data points. Of these, 251 were specifically about water features created by the dams. Comments about the water features focused on recreation and aesthetic pleasure, such as:

- Swimming: "can go swimming outside in clean fresh water"; "Swimming and dog swimming in summer – cool water, hot sun"; "Often encounter families, kids swimming, open sunny, more social area"
- Fishing: "Way to cool down, Fishing is relaxing"; "all around beautiful place + fishing"
- Aesthetics: "The lake is very awe-inspiring + peaceful"; "Area is a very soothing place to be"; "Nice relaxing environment with aesthetic beauty"
- Seven of the comments described the existing water features specifically as *nature*:
- Waterfall: "Quiet time to enjoy nature and beauty"; "highlights the natural beauty of the park"
- Lakes: "Natural Beauty"; "grounding, natural, calming"; "Miracle of nature, beauty"; "Proud of natural beauty"; "peaceful, primordial connection with nature sense of intimacy"

In addition, there were 29 comments about the Colliery Dam Park in general that described the area using the words *nature* or *naturalness*. The area was also described as a "living ecosystem" and a "wilderness-type park". Overall these statements reveal the visitor perception that the water bodies in Colliery Dam Park are part and parcel of nature.

The public sentiment of the recreational and natural assets of the Colliery Dam Park prior to the dam removal controversy shaped the responses to the proposed removal. Public comments on the proposed removal were received by the facilitator in the dam removal collaboration process and summarized (Gordon, 2013). These comments came primarily from local residents and those involved in the protest group Colliery Dam Preservation Society. The public comments showed that the "community, social,

spiritual, and recreational values" of the lakes and park were of high importance (Gordon, 2013). The Colliery Dam Park was contrasted in one comment with other parks in the area which were "artificial, small, and surrounded by galvanized chain link fences", indicating that the Colliery Dam Park was perceived as the opposite of artificial. Several public comments argued that the removal of the dams would destroy the ecosystem that had developed in the area for over 100 years, as well as undermine fisheries in and below the dams. The standing water of the dam was considered an environmental asset. The bird life in the park was noted as particularly diverse, making the park "an ecological treasure that deserves the greatest respect and protection".

The attitude of the Colliery Dam Preservation Society representatives toward the park as nature is evident in the seven-minute 'Save Nanaimo's Colliery Dam Slide Show' that the group created and uploaded to Youtube on 30 April 2013, and embedded in the Save Colliery Dams webpage (Colliery Dam Preservation Society, 2013). The video starts with a text explaining that the community is responding to the potential loss of "the lakes in this very special park" in order to "leave a legacy for our children, their children and all future generations". The last part of the text sets up the slideshow to come as a "glimpse into the beauty and uniqueness of a very special place". When the images of the Colliery Dam Park begin, the video is supplemented by a soundtrack of the song 'What a Wonderful World' by Louis Armstrong. This song begins "I see trees of green, red roses too / I see them bloom for me and you / And I think to myself what a wonderful world". The images reflect the lyrics, with pictures of heavily forested lakeshores, blooming flowers, bridges over the spillway, a bird nest filled with eggs, and many shots of the reflective water surface of the lake. The focus is on the waterscape. Images of families on the lakeshore, children splashing in the water, and individuals walking dogs at the waterline match the lyric sentiment "The colors of the rainbow so pretty in the sky / Are also on the faces of people going by / I see friends shaking hands saying how do you do / They're really saying I love you".

The second half of the slideshow offers a shift with the song 'Fragile' by Sting as the soundtrack. Although the video continues to show lake images, these are supplemented by the forested inland area. The forest images come at the lyrical moment "That nothing comes from violence and nothing ever could / For all those born beneath an angry star / Lest we forget how fragile we are". This musical choice could be a reference to peaceful protests against the dam removal. In May 2013 the local Nanaimo coordinator of the environmentalist protest group Veterans of Clayoquot (most famous for their protests against clearcutting in British Columbia in 1993, which was at the time the largest act of civil disobedience in Canadian history) called for an occupation of the dam site to prevent removal (Gorman, 2013). The involvement of the Veterans of Clayoquot insinuates that protesters believed both the park's trees and lakes and the old growth forests of the region are worthy of the same kind of protection.

The analysis of the local park user discourse on the three levels of epistemology, ethics, and aesthetics shows a radically different valuation of nature than the pro-removal City position. First, epistemologically nature is defined in these discourses in terms of how the place is experienced. The water features (lakes, channels and waterfalls) and the forested trails are natural. They create places which are enjoyed by people and benefit birds and fish. Experiencing this place *as nature* is *knowing* nature.

Second, ethically, these respondents argue that these natural elements deserve protection. The lakes and trees in the Colliery Dam Park are considered no different from forests threatened by logging. The water elements are not ethically defined by how they were made (i.e. by the dams) but simply by the fact that they exist.

Finally, in aesthetic terms, in these discourses the Colliery Dams already form a natural landscape and do not need naturalization. The natural setting of the park is already present and does not require human intervention to restore it. The aesthetic valuation does not see the concrete structures as non-nature, instead the dams are part of the natural landscape.

A shift of language

At an open City Council meeting on 14 May 2013, the potential remediation or replacement of the dams and steps forward were debated.³ The meeting took place shortly after an engineering firm had prepared a document which presented the dam removal and lake re-naturalization as the preferred option (Klohn Crippen Berger, 2013). At the meeting both views of nature, as discussed above, were evident.

Re-naturalization was put forward by the first speaker, Charles Thirkill, a fisheries biologist from the community. He stressed that the dam removal would lead to "stream rehabilitation" of the Chase River, which he labelled the most productive river in the area. He made two key arguments about the condition of the river. First, using a historical narrative as a source, he claimed that the Colliery Dams had drastically harmed fish production. Second, he strongly criticized those who spoke fondly of the fish in the lakes because they were farm-raised sterile fry, "almost as artificial as the Atlantic salmon that are raised in net pens". Finally, he noted that nature would return to the area: "Nature always bats last, and when the engineers are done with their mitigation of these dams, wildlife will take over. ... The 800 m of the Chase River which will be rehabilitated to their original condition is worth the price".

A later speaker at the meeting, local resident and First Nations person Grace Nielsen, espoused the opposite view that nature in trees and water was already present at the dams. "I value nature. I value the trees. I value the water which we are quickly losing, and which, as a First Nations person, we experienced over and over again. ... It is well known if you're really involved in health that the trees and the water are a place where you can connect mentally, emotionally, and physically".

At the May 2013 meeting, the City Council slightly shifted its direction and decided to pursue a dam removal with replacement option (even though the design and timeline of the replacement structures had not been finalized). While there were many political, social, and technical reasons for this change, it also affected the way that nature was harnessed in the debate. After this decision, 're-naturalization' disappears completely from the political discourse generated at the city government level. The decision to replace (and later only modify) the dams meant that 're-naturalization' was no longer on the table as a reason for the City's actions. As a result, from that point on, the opposition movement could claim the 'natural' status of the park as an unchallenged position in all discourse.

The appropriation of the existing condition as natural is visible in a four-minute film about the Colliery Dam site. The film, released in March 2015 by a local photography company (5 Star Aerial Photography, 2015) features drone photography and highlights the aesthetic aspects of the lake and forest around the dam sites as seen from above. In the footage, the heavily forested area just around the water is contrasted with the less forested urban landscape of the city beyond. Gushing waterfalls and flowing channels were filmed by the drone gliding through the air next to the current. A young girl with a backpack walks through the forest and crosses the channel on a wooden bridge in several different segments. Although the film audio track is dominated by the song 'Spring Up, Oh Well', the sound of rushing water takes over at several points in the film. The film focuses on places where there is forest and water, as well as the recreational use of the space. These aesthetic preferences are echoes of the photo gallery that was created on the Colliery Dams Preservation Society webpage in April 2013 at the beginning of the controversy.⁴ That series of photos also highlights the still lake, flowing channels, forested areas and recreational users of the park. The views of the park in the 2015 film, as well as the earlier 'Save Naniamo's Colliery Dam Slide Show', could be presented unquestionably as nature.

³ The city council meeting was filmed and is available online: www.nanaimo.ca/meetings/VideoPlayer/Index/C130513V. All quotations are taken from the speakers' recorded presentations.

⁴ www.savecollierydam.org/photo-gallery/

WHEN AND WHERE IS NATURE?

The evidence above shows that proponents of dam removal talk about *nature* as being something that will only appear after the restoration activities, somewhat paradoxically as a deliberate outcome of human intervention in landscapes. They posit that only an environment *without the man-made dam* can be natural; the dam as technological artefact makes the whole environment unnatural. We can classify this as a *nature-culture dichotomy*. Environmental thinking since the nineteenth century has represented nature as an inherent good and humans (and their technologies) as inherently destructive to that good (Gandy, 2002). The presumption is that humans are the cause of environmental degradation. This view is pervasive within environmental regulation such as biodiversity and climate change measures, which construe nature as needing protection from culture (Uggla, 2010). The implication of such a view for restoration science and practice is that restoration becomes a moral imperative, something that must be done – or nature will suffer.

The valuation of nature within this framework is that nature has an intrinsic value that has been degraded by the dam construction. Those thinking within the nature-culture dichotomy framework consider their values as the only correct values, based on ecological science, thus stakeholders who have competing value judgments about the natural value of the dam are thought to have the wrong philosophical positions. Those adopting a nature-culture dichotomy valuation devalue alternative ways of knowing, particularly experiential ways of knowing nature, as well as the aesthetics of existing, as core valuation modes. The nature-culture dichotomy group does not recognize the lake ecosystem as a valid and protection-worthy ecosystem because epistemologically the dam structure does not conform to their valuation of nature. Instead, the nature-culture position sees the river in an undammed state as desirable nature.

On the other side, we find the opponents of removal – the people who want the dam and the environment it has created to stay – who adopt the stance that nature is *already present* in these places. The dam structure itself may be a technological artefact, but over time it has created the conditions for new forms of nature (the lakes), that are just as valid as other forms of nature. Over time, these new natures have become part of people's everyday lives, something we often see in discussions about recreational use and aesthetic values of dam areas. The experiential space is created into a place with value (Tuan, 1979). We can classify this as a *natureculture* position. Bruno Latour (1993) argued that the world is and always has been a place of socio-natural hybrids, or naturecultures. A valuation of nature based on natureculture is one that fundamentally blurs the lines between natural and cultural, between environmental and technological.

Natureculture as an epistemological, ethical, and aesthetic category has been widely accepted in the humanities and social sciences as a condition of the Anthropocene. Donna Haraway (2008), for example, argues convincingly that the multi-species world in which we live is by necessity a hybrid natureculture. The natural sciences, particularly ecological restoration, have tended to reject the natureculture view and favour restoration to a time prior to major human intervention. Because restoration scientists supporting novel ecosystems are amenable to hybridity as a restoration goal (e.g. Hobbs et al., 2013), a clash has developed between conservative restorationists and those supporting novel ecosystems (Lennon, 2017).

The *nature-culture dichotomy* and *natureculture* positions are mutually exclusive, which can lead to an environmental conflict in which one side must by necessity lose (see Jørgensen, 2013 for an analysis of this type of conflict). Neither side really acknowledges the validity of the other side, as they have different valuations of nature. We see this clearly in the Nanaimo case, where decisions were originally made without involving the public and alternative valuations of nature, leading to public protest, delays in the process, and eventually to the decision about non-removal of the dams. This led to an alternative planning process that resulted in a different engineering solution that led to the dam remaining in

place. In the Nanaimo negotiations, while they have found a solution that satisfies the safety concerns as well as *natureculture* users of the park, the pure restorationist goals (*nature-culture*) will not be met.

Within a *natureculture* framework, the implications for restoration science and practice are much more complicated to tease out (Eden et al., 2000). The goals and methods for successful restoration must engage as much with culture as with nature, involving stakeholders and users of landscapes as holders of valid landscape knowledge and values. Epistemology (What is true?), ethics (What is right?), and aesthetics (What is beautiful?) all matter when it comes to the valuation of nature.

Understanding the complex nature valuations is where the potential for truly interdisciplinary restoration projects becomes both evident and necessary. Not only do we need to consider the past natural conditions of landscapes, but also how they have become part of people's lives over time, and what roles they might play in the future. This means that restoration practitioners and scientists need to consider more consciously whether their own valuation falls in the *nature-culture dichotomy* or the *natureculture* category, and how that valuation may or may not be shared by other stakeholders. Landscape restoration can then be a democratic process, where questions of representation and power are relevant, rather than a single-minded scientific and practical process where a particular epistemology, ethics, and aesthetics is the only means to success.

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