5 Community-Based Mapping: A Tool for Transformation

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> Maps, like theories, have power in virtue of introducing modes of manipulation and control that are not possible without them. They become evidence of reality in themselves and can only be challenged through the production of other maps and theories.
>
> – David Turnbull (1989, p. 54)

We are all mapmakers. Any community can make maps. Community mapping rests on such a claim and assumption. Maps are inspiring. They provide a unique language for humans to communicate with one another. Maps can enable and record great losses and discoveries, the changes of physical and political landscapes, great beauty and great destruction. They reflect our relationship to ourselves, to one another and to the environment. They reflect the history and geography of our lives and communities. Maps can be used as tools to reinforce the boundaries of colonization, but also as tools for emancipation.

Whether conscious or not, our cognitive or mental maps guide the paths and routes that make up our lives. Each of us has a different mental map, a different sense of place, and a distinct way of seeing and being in the world. We each have our own stories and geographies, as well as different physical, mental, and social landscapes that we experience and inhabit every day. How we spatially and visually represent such stories and geographies is, in effect, cartography. When we do this with other people we are "community mapping."

A community can be geographical (e.g., local, school, neighbourhood, regional, national, or global), socio-cultural (e.g., ethnic, women, men,

gay, youth, or children), sectoral (e.g., education, recreation, government, police, or health), and ecological (e.g., bioregion, plant, animal, or biosphere). Community mapping is the process of creating collective representations of the geography, history, and shared experiences of these communities. Community mapping "lets people think together graphically, instead of verbally" (Wood, 1994, p. 24). It tells the stories of what is happening in our communities, and every community has stories, recent or long buried, in the lives and landscapes of our common ground.

There is increasing interest in interdisciplinary community-based research (CBR) frameworks and teaching methods that can bridge academic disciplines (the arts, sciences, fine arts, and humanities), more effectively address the complex issues of our times, and reflect the interplay among social, environmental, and economic forces. CBR requires creative pedagogical tools and methods that both engage students and community learners and make research socially relevant. Community mapping is an effective and holistic CBR pedagogic tool used in formal and informal classroom and community settings, where the participants and learners become the mapmakers and re-present their knowledge and experiences both as individuals and collectively. Community mapping is a powerful modality for learning, because it can expose and then deconstruct totalizing or essentializing claims to knowledge, power, and territory. Moreover, it places decision making, knowledge exchange, and production in the hands of the learners – the mapmakers – and, in the case of jointly produced maps or mapping projects, back into the hands of the broader community that the maps claim to represent. On a psychological level, community mapping employs theory and methods that emphasize collective learning and knowledge production based on the engagement and affirmation of the lived experience, gifts, world view, and connection to place that every human has. Community mapping can awaken the social and ecological self and a collective geographical and historical imagination that is often neglected or degraded in an individualized and commodified world.

This chapter has two objectives: First, we share the experience of community mapping as practised by the Common Ground Mapping project and the University of Victoria (UVic) in collaboration with the worldwide open-source mapping system called Green Map. Second, we use the experiences from the University of British Columbia (UBC) and UVic to examine the emerging role of community mapping as a teaching method that serves to link university students with relevant

social issues, and in doing so we make the case that community mapping is a powerful pedagogic tool that can initiate, stimulate, and support community-based research, learning, and civic engagement.

The first section of the chapter lays the theoretical foundation for community mapping and discusses how it can become a transformative tool for knowledge production, reflexive learning, and empowering action that is grounded in real time and place. This begins with exploring the meaning of maps and mapmaking with reference to Indigenous and anti-colonial mapping. It then introduces the Green Map System, and provides some guidelines for facilitators who are working with beginning mappers. The second section focuses on the practice and pedagogy of community mapping as core CBR methodology. It describes a range of situations where community mapping could be employed, and then goes into some depth on two mapping projects.

The final section of the chapter focuses on the challenges and opportunities for the ongoing development of community mapping as a CBR teaching tool within and between the academy and community. This includes recognition of the tensions, power imbalances, and mediation between people and technology, between product and process, and between institutional knowledge and community-based knowledge. The chapter concludes that an academic context that favours interdisciplinarity and applied learning and creates mutually beneficial relationships and real-life projects generated with communities provides a solid foundation for the development of community mapping.

Community-Based Mapping Discourse

In teaching community mapping, an ideal starting point is the analysis of maps and the history of cartography. Maps are tools to represent knowledge claims and selective perceptions of reality. They are also tools of power, used to validate local and global scale planning, world views, and claims to territory. On a primary level they re-present the relationship of humanity to itself, to each other, and to the physical and metaphysical world that they believe exists or relate to. In his famous critique of scientific knowledge Korzybski (1941) reminds us that *the map is not the territory* and instead is paradigmatic of the *mapmakers'* situated knowledge and inevitable bias. Key questions emerge such as, who makes the maps and therefore whose knowledge and reality counts? The work by Haraway (1988) on situated knowledges helps explain the inherent bias in all knowledge claims, including maps, as

each one of us occupies a different space and place in time and has different experiences.

The Origin and Power of Maps

Community mapping leads naturally to a discussion and debate about the origin, nature, and function of maps themselves. Questions arise such as, what is a map? Why do maps have power and how does this power manifest itself? And, why do we need maps? Harley and Woodward define maps in *The History of Cartography* as "graphic representations that facilitate a spatial understanding of things, concepts, conditions, processes or events in the human world" (in Turnbull, 1989, p. xvi). Such representations, according to Turnbull (1989), could be iconic (pictorial or visual portrayals) and/or symbolic (conventional signs and symbols like letters and numbers). However, all maps represent and reflect how individuals or societies name and project themselves onto nature, literally and symbolically. Mapmaking has thus both socio-cultural (myth-making) and technical (utilitarian and economic) functions and traditions. The latter are more pronounced in the West, where cartography has been professionalized as a discipline.

In "The Origins of Cartography" (1987), Malcolm Lewis suggested that the development of language and spatial consciousness in early humans enabled the development of the first maps, cognitive (mental) ones. This involved the naming of symbols, place names, individuals, and actions and the sequencing of these symbols. Some humans expanded beyond oral language and wrote down these icons and symbols. They became written maps. Whether oral or written, however, the belief systems or myths of those making the maps are reflected on the maps themselves. Thomas Kuhn (1970), in his work on the philosophy of science, refers to this as the paradigm, meaning:

> The pattern of knowledge that determines which "entities" nature is said to contain and how they behave. The paradigm creates theories, a "map" whose details are elucidated by scientific research: And since nature is too complex and varied to be explored at random, the map is as essential as observation and experiment to science's continuing development … paradigms provide scientists not only with a map but also with some of the directions essential for map-making. In learning a paradigm, the scientist acquires theory, methods and standards together, usually in an inextricable mixture. (p. 109)

Maps and Knowledge

Given this paradigmatic lens, mapmaking as a scientific or technical tradition can be seen as self-referencing; it is anchored in a knowledge system dependent always on the cultural paradigm and world view of the mapmaker. Barbara Bender (1996), in *Mapping Alternate Worlds*, believes that all maps are actually "indexical" in that they point to people's sense of history and relationships. Ronald Wright (1991) extends Kuhn's and Bender's explanation of mapping to the world of myth making. A passionate writer on the history of colonial and Indigenous relations in the Americas, Wright believes that to recover and reclaim power effectively, Indigenous and non-Indigenous peoples alike need to oppose and transform the discovery myth of the conqueror:

> Myth is an arrangement of the past, whether real or imagined, in patterns that resonate with a culture's deepest values and aspirations … Myths are so fraught with meaning that we live and die by them. They are the maps through which cultures navigate through time … while Western myths are triumphalist, those of the losers have to explain and overcome catastrophe. If the vanquished culture is to survive at all, its myths must provide a rugged terrain in which to resist the invader and do battle with his myths. (p. 5)

The myth of discovery has guided the colonial cartographic tradition. Since the advent of perspective geometry in the fifteenth century, followed by the rise of colonialism and the Scientific Revolution, maps became possessions and instruments of military, cultural, and economic power, and increasingly in the hands of those with colonial and commercial interests (Harley, 1989). Cartography soon became an indispensable tool of state and colonial power, while portraying the world with a European bias. Spaces and cultures were "indexed," and the geography and cultures of other spaces and places were subjugated, vanquished, or colonized in the process. Until this century, the Mercator Projection, named after the Flemish cartographer, was the standard classroom wall map depicting the entire world. However, it was argued that this projection disproportionately represented a larger-than-reality Northern Hemisphere. In doing so it was argued that maps such as this were used as tools to accompany a hegemonic world view and manipulated the reader's understanding of territory and the relative importance of different states.

Colonial maps and mapping were thus graphic representations of the myth of discovery and became key symbols and tools of formalizing and maintaining power relations. However, marginal people and places, mostly Indigenous peoples worldwide, have increasingly used maps as a mechanism to resist control and attempt to recover their land and culture. These examples have provided a foundation and inspiration to community mapmakers worldwide. The myth of discovery is challenged by a vision for cultural survival and sustainability.

Historical and contemporary Indigenous maps and mapping inspire non-Indigenous community mappers to re-examine their own values and relationship to their local places. In Canada, for example, partnerships have been formed between First Nations and non-Indigenous community mappers. Gitxsan mappers from British Columbia have shared their mapping stories and work with groups throughout Canada and the United States, as well as with Indonesian community and Indigenous groups and activists. They also inspired and acted as mentors for the Victoria urban-based mapping project Common Ground. The Gitxsan gave workshops in Victoria (which is on the traditional territory of the Coast and Straits Salish Nations) and on their own traditional territory, sharing practices, principles, and their overall vision of community mapping. The Gitxsan emphasized to the city dwellers that the key elements of community mapping included: the recovery of local history and stories from young and old; developing an inventory of local economic, social, and environmental assets; and the importance of getting out and walking one's home territory. This partnership and the identification of common goals between a First Nations and Victoria residents illustrate that Canadians from all communities have much in common. In this case, a rural First Nation taught and inspired an urban non-Indigenous project to begin the process of rediscovering their sense of place and community. This provides an ironic turning of the mapping table and directly bucks the trend of the colonial Canadian mapmaking tradition.

The Green Map System

The Green Map System (2009) was started in 1997 by the New York–based eco-designer and community educator Wendy Brawer. She created an iconic language that can be presented using a cartographic map to be shared by global citizens wanting to re-present and protect their environment and communities (see www.greenmap.org/ for details). The system has now spread worldwide and has resulted in over

700 different Green Map projects. There are organizing "hubs" in North America, Europe, and Asia, and in countries such as Japan and Cuba, there are extensive national green map networks. Green Map provides comprehensive teaching and engagement tools for community, schools, and campus use. Their website includes tools created by universities and school-based educators for course- and community-based research projects. Wendy Brawer and the universities who have engaged with Green Map have applied the mapping and mapmaking processes to a wide range of university courses including architecture, art and design, community development and social issues, and environmental and global education.

Wendy Brawer acknowledges academic pioneers and bioregionalists such as Doug Aberley and Briony Penn (see, e.g., Aberley & Harrington, 1999; *Giving the Land a Voice: Mapping Our Home Places*) as having a big pedagogical influence on the Green Map System's early development. She now regards Victoria as a centre for community mapping experience and expertise. Brawer met Maeve Lydon from Common Ground in 1998. Common Ground is a Victoria community-based mapping and planning project that provides mapping and learning resources for schools, neighbourhoods, and communities wishing to undertake sustainable community development and planning projects. In coming together, they connected the Green Map System and its global networks (especially among educators) with the participatory learning and planning processes for inclusive sustainable community development that Common Ground was creating. According to Brawer, "UVic's important role in meshing geography and community-engaged research cannot be understated. This is really what we need more of in order to make our communities resilient, strong, and verdant" (W. Brawer, personal communication, 2011).

To link nationally and globally, Common Ground and many worldwide community mapping efforts work closely with the International Green Map System. Green Map's online tools and international linkages have been a foundation for inspiring and empowering community mapmakers worldwide.

Community Mapping Practice

Dialogue requires an intense faith in human beings; their power to make and remake, to create and recreate; faith that the vocation to be fully human is the birthright of all people, not the privilege of an elite.

−Freire (1986, p. 62)

Community mapping is fun, inclusive and encourages everyone to give free rein to his or her creativity. People realize they don't have to be wonderful cartographers – the most important thing is how they feel about their place.

– Linda Beare (personal communication, 2001)

Mapping as a pedagogical and planning tool has the potential to conceptualize, create, and use images of place. CBR practitioners recognize that almost anything can be mapped. Examples of mapping projects that community are directly involved in fall under different themes, including:

1 *Personal connections* – sense of place, gifts and assets, values and visions, marketing, outreach tools
2 *Heritage* – community history atlases, heritage trees, sites and Elders stories, walking tours, lost streams, species
3 *Conservation* – greenways and spaces, local farms, habitat and sensitive ecosystems, underground water sources, toxic sites, fruit trees, vacant land for community garden sites
4 *Community planning* – neighbourhood plans, traffic flow, trouble spots, unsafe and high crime areas, housing types, gentrification, income and services, health issues
5 *School curricula* – language arts, social studies, math, information technology, fine arts, physical education, science, personal health, planning
6 *Economic development* – capital flow, resource use, opportunity sites, markets, income, demographics
7 *Sustainability* – alternative energy, food and water systems, resilience, preparedness.

Many examples of community mapping exist. In British Columbia, school children are making walking-to-school maps, and "walking schoolbuses," for personal and ecosystem health, safety, and community building (Kassirer, 2012). In Quebec, the Algonquin First Nation made composite maps to create a local resource management plan, and included spaghetti maps of trap lines and Elders' map biographies. In Montreal, the Eco-Montreal Green Map "Tiotiake" begun at McGill University has expanded into the community and is used by the city ward system to identify local resources and needs (Green Map System, 2009; B. Zuber, Green Map consultant in New York, personal communication, 2003). On BC's Gulf and Coastal Islands, hundreds of local residents and artists participated in the Salish Sea community-mapping

project by making artistic community maps and atlases of their local assets and history (Land Trust Alliance of B.C., n.d.). In Yellowknife, a Northern Canadian community, green mappers created 10 Northern "low impact winter activity" icons as part of their Green Map (Canadian Parks and Wilderness Society, n.d.).

These efforts all have two features in common: one is that community mapping is not mapping *for* or *of* a community, it is mapping *by* the community of their values, assets, and visions for the future. The other is that technology, when used, is a tool to accompany the community learning and building process. Hand-drawn maps and community learning opportunities such as workshops, outreach, and walkabouts are the basis of most of the efforts. Online tools provided by the Green Map System (described above) have also proven to be particularly useful.

The following case stories illustrate different community-based and green mapping projects and lessons learned.

The Shelbourne Corridor Project

The Shelbourne Corridor mapping process from 2010 to 2011 was designed to determine existing and desired sustainable housing, transportation, walking and bike routes, and service planning for residents, students, and businesses to guide the next 20 years. The area included 16,000 residents and included the UVic and Camosun College campuses. Maeve Lydon and Ken Josephson facilitated this process to support the local Municipality of Saanich. The foundation of the project was the development of a stakeholder group with local residents, businesses, and NGOs. This step is vital because community-based ownership and leadership development in the planning and/or learning process is the major foundation of community-based mapping. The team worked together to identify their own values and visions for the community, including what personal gifts they brought and what community assets they believe existed.

The second step was to move from the individual and group to the community. The emphasis for the process was to empower the committed local volunteer stakeholders to find and, if necessary, to co-create with the facilitators, the tools, community outreach, and engagement activities necessary to reach as many citizens as possible. As in most community mapping projects related to planning, a community-based survey and interactive print and online maps were created to gather the ideas and data necessary, while sparking the imaginations and interest of the diverse array of people who lived, worked, shopped, owned

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property, or studied in the area. In this and other similar community mapping processes, students and local leaders were trained as mapping "animators" who then went to local workplaces, meetings, markets, shopping centres, liquor stores, and other community events. In effect they became the community-based researchers. By leveraging existing assets and gifts and connecting people to place from a geographic, economic, and cultural perspective, local citizens participated in unprecedented numbers (according to the Municipality of Saanich) in a municipal planning process. Almost 800 residents filled in the surveys and another 1,000 participated in schools and community workshops, outdoor biking and walkabouts, and natural and human history events. The result was more community relationships and connections, a composite community map with GIS layers that show the existing and desired assets, routes, and changes, as well as a report that expresses the interests, assets, and visions (rather than simply the needs) of the local citizens.

This process created a widespread involvement and enthusiasm for the current (2011–12) stage of implementation and funding that would not have been possible if a small group of planners and mappers had created a plan *for* citizens. Throughout the process there was some push and pull between the stakeholder and senior planners, with the latter expressing concern that managing expectations would become an issue. However, the planners realized that engaging and empowering citizens and employing processes such as community mapping to truly reach out has long-lasting and positive effects. People feel that they have been involved in determining the future of the place they call "home," and not just consulted.

Peninsula Play Spaces Map

Supporting early childhood development through identifying and increasing outdoor recreation opportunities was the goal of this 8-month process. Local citizens – those involved in diverse roles as family and community caregivers, educators, recreation, business owners, and parks planners – were engaged in the creation of this local map and engagement process. Again, as with the Shelbourne Project, a local stakeholder volunteer group worked with the facilitator and university students to create an outreach and survey plan and to find ways to reach citizens creatively.

As with other projects, a particular focus for this and many of the regional mapping projects was to support and challenge the stakeholders

to move beyond their own interests and what they wanted to be represented on a map, and instead for them to use mapping as a tool to listen to and mobilize the community. Often, service providers and "representatives" of community "service" the community rather than engage the community in creative change. To break through this divide, an appreciation of the historic and educational significance of the area and, in this particular project, of the need to respect diverse ways of caregiving (particularly in Indigenous communities) was part of the learning and planning process. This was enabled through visiting people's homes, inviting local Indigenous people, parents, local citizens, and schools to meet each other (often for the first time) and to participate in the map and visioning process in fun and creative ways. The result of the process was a beautiful community map distributed widely and illustrated by local artists, children, and Indigenous people, stronger working relationships between caregiver and educator groups, a greater appreciation of the historical and cultural significance of the area and ideas for concrete action to be used by parks, educators, and early childhood advocates to increase access to parks and the outdoors for young children. What also emerged was the recognition that access to green space and recreation opportunities for caregivers and young children was better for the affluent; the project exposed an environmental justice and equity issue, rather than simply one of early childhood development.

From mapping favourite childhood places for personal and group development, mapping excess fruit for food banks, to creating a city-wide land use plan, all these mapping processes are about community connecting and building based on sharing lived experience, values, and visions.

Community Mapping and Academia

For me it is really important that learning not be always a study of what is out there, in other places, all the time. When my [students] were doing the geography of making their own maps, it was their geography, their place. Today I just came from my class and one of my kids said, "We are history." Mapping has been a wonderful way for them to develop that feeling of being a participant.
     – Susan Underwood, schoolteacher (personal communication, 2002)

Over the years, the CBR methods used in community mapping "in the field" have worked their way into innovative methods and approaches that work well in a teaching setting. At the University of Victoria and the University of British Columbia the work of community mapping

practitioners, teachers, and scholars offers practical insights into the methods and approaches that work well in a teaching setting.

At the University of Victoria, faculty members and staff are directly involved in a number of community-based and Common Ground/green mapping initiatives while they share and develop their own mapmaking and research resources and expertise. In turn they receive access to a "living laboratory" in the community when they undertake their research. The UVic Geography Department was closely involved in the development of the Community Green Map of Victoria and Region (2004), and has provided student research support for many neighbourhood, school, and regional projects. Twelve other neighbourhood and regional maps and mapping projects have been supported between 2000 and 2011. The partnerships, projects, and methodologies have had tremendous impact on a number of courses taught and research projects conducted in Geography and Environmental Studies at UVic and have provided myriad opportunities for students and researchers to engage more deeply with communities. (see Figure 5.1) Participatory interactive online community maps are also starting to be used in off-campus, experiential, community-based field schools, particularly in remote, rural, and First Nations communities to document undergraduate student research based on questions posed by and in collaboration with communities.

UVic's cartographer Ken Josephson had worked for over 25 years on mapmaking for government and academic research purposes before he was invited in the late 1990s to take part in the Common Ground mapping project and the world of community-based mapping. Now Josephson works extensively with communities, students, and researchers on many curriculum projects that use mapping for practical hands-on projects for students. Ken often describes his transition from professional cartographer to the world of community mapping as transformative: "I used to make maps for government and academia and did not think about the impact they had on how we look at and relate to land and people. Now my role is more of a mapping facilitator; I see mapping is not neutral and they can truly empower students and community members alike to make significant and lasting changes" (K. Josephson, personal communication, 2011). Josephson now presents on and conducts community mapping workshops in a number of first-, second-, third-, and fourth-year classes in Geography and Environmental Studies and in the University 101 program for those with barriers or challenges to pursuing higher education. (See Figure 5.2.)

Figure 5.1. Creatures of Habitat: Earth Day celebration mapping event with 700 Grade 6 students on Saanich Peninsula (Greater Victoria Region), facilitated by graduate students, faculty, staff, and community volunteers. Photo by Ken Josephson.

Charles Burnett, who specializes in GIS and web mapping applications for community resource development, designed and taught an undergraduate course at the University of Victoria. Burnett has found the best resource for practical community mapping is the challenges that community groups give us – because they are always topical, and the learner can always contribute, even in a small way. The next best resource is learner creativity and initiative. Innovative courses such as Burnett's, based in real-life case studies, and Josephson's cartographic and engagement role are fundamental to the ongoing University–Common Ground community mapping partnership, which is now exploring and expanding the role of the university in supporting on- and off-campus sustainability projects, to be a portal and data repository for geographical and spatial data that communities need, and to facilitate regional, national, and global networking between community mapping projects. Their website – mapping.uvic.ca – has become a useful resource within and between universities and communities alike.

Figure 5.2. Community Planning Game: University 101 program for learners with barriers/challenges to pursuing higher education. Photo by Ken Josephson.

Jon Corbett, co-director the UBC Centre for Social, Spatial and Economic Justice, is an Associate Professor in the Community, Culture, and Global Studies Unit at UBC Okanagan. Jon's community-based research and teaching investigates community mapping processes and tools that are used by communities to help express their relationship to, and knowledge of, their territories and resources. Teaching and supporting undergraduate and graduate students to undertake projects with local and global communities, including many Indigenous communities, is an important focus of Corbett and the Centre. Both theoretical and applied community mapping is taught with action, theory, and research operating in an ongoing cycle. He teaches students how to develop, implement, and evaluate a map and mapping project while understanding and creating an overall and personalized theoretical

context. Once the mapping and mapmaking process is complete, he works with the learners to analyse both their experiences and data and to re-theorize it.

In his Geography undergraduate course entitled Cartography and Society, Corbett encourages students to read the subtext of the map from the outset. This is done by asking a series of questions about the map: What is the "story" being told by the map? Whose story is represented? Whose is not? This questioning helps deconstruct the world view of the mapmaker as well as the historic and cultural context. It further lends itself to exploratory discussions related to privileged narratives and cartographic silences and thus echos Kuhn's dominant paradigm, or Haraway's work on the essentializing or totalizing discourse, that sees everything from nowhere instead of the situating narrative or discourse that sees somethings from somewhere. After deconstructing the map, the students are asked what is missing on the map and why?

Wherever possible, Corbett uses problem-based learning (PBL) methods in the classroom. PBL is increasingly used as an alternative to traditional classroom learning and is not reliant on lectures, assignments, or exercises. In PBL, the teacher acts as facilitator and mentor, rather than a source of solutions. Students are presented with, or else identify for themselves, a socially relevant and geographically bounded problem. Because students are not handed "content," the learning process becomes active in the sense that they discover and work with processes, content, and tools that are determined to be necessary to solve the problem, and this solution requires working with some form of community mapping.

In Corbett's Cartography and Society course, students work on a mapping project throughout the semester. The aim of the project is to create a map or mapping related product in any format (paper, electronic, web-based, art form, terrain model, etc.) that directly addresses an issue related to social change and/or community development. This requires choosing a research project that is relevant; in most cases this involves addressing a local issue and working with a local community organization. Three student projects are briefly outlined below.

Fire Mapping: The Facebook of Forest Fires

As climate change makes summers drier, hotter, and more erratic, the Okanagan Valley has seen increasingly severe forest fires as urban development expands into forest fire interface zones. Major forest fires have

occurred in 2003 and 2009, affecting many thousands of people. The Okanagan Mountain Park Fire in 2003 was "the most significant interface wildfire event in BC history" (Wildfire Management Branch, 2011), and resulted in the evacuations of over 30,000 people and destroyed 238 homes. In 2009, the Terrace Mountain Fire burnt over 9,000 hectares and led to the evacuation of several communities. Two undergraduate students, Samantha Brennan and Aidan Whiteley, as a part of Corbett's Cartography and Society course, developed a project that provides new insights on the human dimensions of forest fires in the Okanagan through developing a crowd-sourced interactive web-map. Crowd-sourcing is the process of small tasks, in this case short descriptions of experiences and memories, being contributed by large numbers of people to the map. The website, www.firehistory.ok.ubc.ca, serves as an interactive online map that layers images, videos, and text about the fires onto a Google Maps base layer with a scrollable 25-year time line. This Fire Mapping Project contains official data from government and media on fires as far back as 1984 and creates a short history of the subject, organized both spatially and temporally. Users are encouraged to expand the website by posting stories, personal videos, and photos to the map to foster understanding and education regarding forest fire issues.

The website allows users to visualize the scope, scale, and chronology of fires – a different understanding of fire than can be gained from pure text. Students have partnered with the Kelowna Fire Museum, where the website was displayed as an exhibit for the summer of 2011, to gather public knowledge on forest fires and use it for educational, therapeutic, and historical purposes. The resulting database will serve as a spatial, temporal tool with data from governmental, media, and public sources to paint a clearer picture of forest fires in the Okanagan, and to tell "the millions of stories" about the fires that go untold. This partnership, in turn, has helped reorient teaching (not simply research) at the university to be more community service-oriented.

Critical Cartography Curriculum

The BC Ministry of Education website states that elementary students' curricula are guided by principles of learning which entail the active participation of the student in both an individual and a group process. Critical thinking is a core component of the active participation requirements. Working together with the UBC Centre for Teaching and

Learning and local teachers, Kathleen Rhode's project seeks to incorporate a critical cartography component directly into the elementary school curriculum. Basic concepts of cartography such as longitude, latitude, and direction are already integrated into the Social Studies curriculum for the intermediate grades (4 to 7); however, the skills required to critically evaluate the hidden meanings and subtext of the map are lacking. The critical cartography lesson plans and curriculum materials developed in this project will aim to change the children's perception of what a map is and how it is read. The objective of this project is for the children to learn to look at a map critically rather than just using it for a navigation tool. It is important for children to learn to think critically and to judge the information presented to them in a skilful manner. As Rhode moves on to become a teacher, she intends to build a portion of her Master's degree around the concept of developing the potential of building critical cartographic principles into the elementary school curriculum.

Kelowna: A Tale of Two Cities

Gated communities close themselves to the outside social world in the belief that their inhabitants will be more secure. Visually, they are very different from the housing that surrounds them; they have gates most of the time, some always locked while others are not. The average housing price is usually significantly higher within the gates, so one can assume that they contain wealthy residents. To live within the gated communities, there are often restrictions, for example, on family numbers, noise, or visible belongings such as outdoor yard items and vehicles. Kelowna is known for its multiple gated communities. These areas begin to act as areas of social exclusion and in doing so have a profound effect on the surrounding neighbourhoods. Edith Bonnette, an undergraduate student, set out to create a reflective map that combined the locations of the gated communities throughout Kelowna and presented them on a Google Map mashup (a map mashup is a tool that combines web-based media including photos and video hosted on multiple web services and displays them through the interface of an online map, such as Google Maps). Her project involved collaborating with city officials, Remax realtors, and other students from the university newspaper. This map combined her own perspectives on the gated communities with photographs; she tied the separate communities together using selected narrative from the novel *A Tale of Two Cities* by Charles Dickens.

The use of *A Tale of Two Cities* provided a metaphor for the differences that exist between the Kelowna behind the walls of a gated community and the rest of the city. It draws on the social inequity and exclusivities of Dickensian urban Europe and implies that similar class, gender, and socioeconomic variances remain prevalent today in Canada. The map aims to shock the audience into re-evaluating the Canadian ideals of equality and multiculturalism, and ultimately to "facilitate a spatial understanding of things, concepts, conditions, processes or events in the human world" (Turnbull, 1989, p. xvi).

In each of these cases, the students do not just immerse themselves in the technical endeavour of creating maps; they also have the opportunity to connect directly with a socially relevant issue that in turn often requires a direct connection with local government, a community group, or business. This engagement is not typically a one-way process that results in the student simply "learning more." Rather, it helps them critically engage in the role of activist, inspired and passionate about issues related to social and spatial justice, a core element of the discipline of Geography (Harvey, 1973). Furthermore, because of a map's inherent ability to communicate complex spatial information, the maps created by the students are often used to inform other students in the class and across the university of these social justice related issues, and in so doing, support activists working on campus and in the broader community. In other words, this approach to learning in the classroom can become a tool to activate students, to support them in becoming more socially involved and overall better prepare them to be engaged and vocal citizens in the future.

Another factor is that the map projects undertaken by undergraduate students can also serve to inform university administrators about key issues of relevance within their own communities and influence them to become more engaged. Students are often more socially and environmentally involved than decision makers within the university. Yet, when students begin to generate interest in their mapping work, administrators also often take note and will lend their vocal support for these types of projects. Often, this is not only because of the public relations opportunity, but also because it helps to brand a usually less-than-agile and risk-averse institution as socially relevant to their own immediate geographical constituency. This is well illustrated by level of coverage that the university public relations office has invested in covering and promoting the fire map described above, as well as other socially relevant online maps created by students. This, in turn, has

helped students attract internal travel grants and fellowships to further support and promote their community engagement work.

Whether using mapping as a learning process in itself or as part of a wider community project, the following are some guidelines for facilitators lead to the successful Community Mapping projects:

- *Create a positive learning space*. Keep the learning atmosphere focused on listening and making connections between people and their local place. Make sure mapping sessions, inside and outside, are comfortable, friendly, and guided by a skilled facilitator. When working with hand-drawn or topographical maps, have participants gather around a table; four to six per group is ideal and encourages everyone to share.
- *Work for inclusion*. Involve as much as possible a diverse cross-section of the community, particularly children and Elders (seniors and long-term residents). When working with children, remember that they see the world and space in different ways at different ages. With Elders remember that they have plenty of stories and experience to share and may not want to draw or use maps. To encourage cultural diversity try to translate mapping outreach and survey materials and involve local leaders into the learning and design process.
- *Agree on questions and outcomes*. Be clear about why you are mapping and what you need and want to learn with and about the community at various stages and events. Breaking down categories of maps can be helpful for inventory and projects, i.e., tactical (specific purpose and planning oriented) and strategic (social change and vision), or along sustainable development lines, i.e., natural and built environment, economic and socio-cultural features. The Green Map System breaks this down further into mobility, infrastructure, nature (flora and fauna, land and water, toxic hot spots and pollution sites), renewable resources, information, and Economic development.
- *Focus on mapmaking process not product*. Keep the directions simple and encourage people to draw and write directly onto a base map or to make their own personal or collective mental maps. Using icons and numbering special sites linked to sticky it notes with a longer description are easy ways to gather information and not clutter up the map. Forget about technical accuracy when gathering the stories and ideas of local citizens. When working with hand-drawn or topographical maps, have participants gather around a table; four to six per group is ideal and encourages everyone to share.

- *Creativity is vital*. Use a wide range of materials and media: colours, clay, tapestry, photos, written narrative, hand-drawings, when making a community map or atlas. Involve and train locals who have technical interest in putting the stories and inventory on maps if that is necessary. Artists, young and old, weave magic and beauty into the mapping and mapmaking process.

Conclusion: Mapping Our Common Landscape

Love makes you see a place differently, just as you hold differently an object that belongs to someone you love. If you know one landscape well, you will look at all landscapes differently. And if you learn to love one place, sometimes you can also learn to love another.

– Michaels (1996, p. 82)

We need enlightened ways in the world of learning to engage with each other and with the local and global places we call home; community mapping is one such tool that can help facilitate this reconnection, re-enchantment, and, ultimately, love of place. The opportunities and potential for using community mapping as a teaching tool to support CBR, develop community-university partnerships and understanding, and reorient teaching (not simply research) to be more community service-oriented are immense. Not only do community mapping projects support these relationship-oriented objectives within the university, they also have the potential to encourage interdisciplinarity, campus activism, and public engagement, as well as provide students with real-life living laboratory experience that involves the actual experiences of real people in a real place. These experiences directly prepare students to be thoughtful, skilled, and engaged citizens.

From our experience, teaching community mapping empowers the learners and directly connects them to the history and experience of real people in real places (including their own), while recognizing the reality of historical and contemporary social and environmental issues. These personal transformations can become a gateway not only to reinhabit our home places, to echo Aberley, but to alter learning and research to benefit broader society. For example, in Victoria, the late Tsartlip Elder Dave Elliott Sr. (d. 1985) helped create the first First Nations map of the territory; it was designed to be used as a teaching tool, the Saltwater People's Map. His work and the map have inspired many Indigenous and non-Indigenous mapmakers from both within

the university and those groups working with the university to affirm the past, however painful it was, and to create a better future. On a global scale, his words resonate with us all:

> We have come through a great disaster and we are like people in shock. We were almost destroyed. We are living in the wreckage of what was once our way of life … this is a state of shock really – our memories have left us. Many of the young people don't know where they're coming from and where they are going. It's their future. We need to give them their past by telling their history and we need to give them a future. (Elliott, 1983, p. 82)

However, we feel that in many universities the system still largely mirrors the predominant reward system found in the world today. This system is based on capital accumulation. In the case of academia, this "capital" is largely understood in terms of the production, number, and value of peer-reviewed papers and journal articles. This understanding of "value" often finds itself in direct conflict with the CBR movement, where success is contingent on negotiating overlaps of mutual interest, developing and maintaining complex relations and knowledge constructs, while ultimately trying to undertake, reflect on and co-write about relevant and bounded research. This means that academics often feel that they are faced with a disconnect between their research aspirations and expectations, and this in turn can make them feel that they are faced with a binary choice about their research career trajectory. As Edward Said (1996) states:

> I think the major choice faced by the intellectual is whether to be allied with the stability of the victors and rulers or – the more difficult path – to consider that stability as a state of emergency threatening the less fortunate with the danger of extinction, and take into account the experience of subordination itself, as well as the memory of forgotten voices and persons. (p. 35)

As a result, for many academics working in CBR, our role often becomes to mediate the dialogue and expectations between our community partners and university employers.

Despite these tensions, we ultimately conclude that the praxis of community mapping supports new kinds of social innovation as well as teaching and research outcomes that we believe students want and the

world needs. Engaging in locally bounded issues through community mapping initiatives makes universities more socially relevant in the eyes of their constituent communities, as well as more broadly within society. We do caution, however, that it is important for community mapping initiatives to remain innovative (as has been demonstrated by the projects profiled in this paper) and for academics working with these tools within a supportive CBR environment to take risks and to experiment with new CBR methods, which often require a non-traditional interdisciplinary framework. It is also important to leverage the resources from within the university to support mapping projects that would otherwise never take form. We are inspired by universities becoming more service-based, with a clear mandate and incentive structure that supports community-engaged teaching and scholarship, as well as the growing recognition by people within the institution of their ability to influence positive social change and to directly support the development and transformation of their constituent communities and society as a whole.

Please see Appendix A for a list of websites and resources for community-based mapping.