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# Urban indicators and the integrative ideals of cities

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**Both advocacy and performance measurement ends of the city planning spectrum have advanced the approach of measuring and monitoring urban indicators as a practical means to lofty planning goals. Urban and regional indicator projects aim to generate synergistic utility out of measures of urban quality and progress, trying to transform assessment measures into strategic levers for system change. This article reports on the theory, methods and design of an action research project that has taken place since late 2004, the Regional Vancouver Urban Observatory (RVu). RVu is the first member of the UN-Habitat Global Urban Observatory network to be established in a developed country. RVu conceptualized and completed overlapping processes in generating both expert-based and citizen-based recommendations on key regional indicators, with a view toward sustainable development. Our hypothesis has been that negotiation and integration of values and ideals will occur throughout such a process and common indicators will emerge that approach a new sustainable view of the region.**

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## Introduction

The emergence of cities as the unchallenged site of human development for the future and the goal of sustainable development have pushed hundreds of cities around the world to seek better means of assessing urban trends. Many forms of assessment, audit, and indicator systems for guiding and better evaluating the effects of urban development are now in place. However, their utility is still in question. Innes (1990, p. 15) concluded from eight years of field research on the use of indicators in diverse policy contexts that: “decision use of data is rare”. Indicator-based approaches to better guide our cities’ development get stuck at conflicting understandings of the components and frameworks of sustainable development, at the deplorable state of much of the information available to plan for and act in our cities, and at the failure of the ‘rubber’ of indicator reports to meet the ‘road’ of decision-making traffic jams. The means by which urban indi-

cator projects can encourage a synoptic view, act as levers for strategic change, and facilitate sustainable development, remains to be discovered. This article will discuss the extent to which sustainable development provides a useful integrative framework, a balanced understanding of the roles of different types of knowledge as strategic and process-revealing, and the democratic, advocacy-orientation of an indicator-based process in opening the potential for social learning and democratization of the policy and development process.

The Regional Vancouver Urban Observatory (RVu) takes up the challenge to use the best of our rational and learned tools not just to analyze but also to inform, attract, and unite the widest range of citizens possible toward the goal of improving our common urban future. In this article, the theoretical directions taken and RVu’s work to date are discussed in terms of: a process-based stance on urban sustainability, indicators and values in decision-making, and moving toward consensus, advocacy and action through indicator projects. As this is a project in process, this article will not be able to assess the success of RVu within the Vancouver region or relative to other members of the

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Global Urban Observatory network, as no comprehensive evaluation has yet been conducted. Instead, we point to the local context for sustainability governance in Vancouver and to the experience of other urban indicator projects presented in the literature.

*Urban sustainability as a community-based struggle to learn*

Sustainability, offers Greider (1997, p. 448), is a concept that “carries revolutionary implications” for urban planning and management, “but sounds so wholesome that almost everybody can endorse it”. Amongst the growing ranks of urban policy professionals and decision-makers who use the term ‘sustainability’ at different levels of conceptual abstraction, widespread agreement apparently exists on the legitimacy of the Brundtland definition of sustainable development, that is:

Development that meets the needs of current generations without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development, 1987, p. 23).

The report of the World Commission on Environment and Development, chaired by Norwegian Prime Minister Brundtland, proposes sustainability as a new integration of poverty alleviation and environmental improvement, concluding “that the problems addressed by these two sets of issues are entwined to the point that ecological sustainability cannot be achieved if the problem of poverty is not successfully addressed around the world” (Robinson, 2004, p. 372). Sustainability scholars admit, however, that the Brundtland report represents not so much a consensus-based understanding of the term as a language truce about a set of ideas, like democracy, freedom, or justice, over which wars could be waged (Mebratu, 1998; Pezzoli, 1997; Guha and Martinez-Alier, 1997; Redclift, 1987). For those scholars and practitioners in international development, environmental sciences, policy, and other fields who have found resonance with the concept, sustainable development has become a universally integrative term. Stead and Stead (1996), for example, consider six “fundamental values” of sustainability including wholeness, posterity, smallness, community, quality, and spiritual fulfillment. Such principles elevate the idea of sustainability well beyond the comfortable domain of urban planning and policy. While critics decry this conceptual fuzziness, many Canadian scholars and policy-makers have recognized its utility, cf. Robinson (2004, p. 374): “Diplomats are familiar with the need to leave key terms undefined in negotiation processes and in much the same way the term sustainable development may profit from what might be called constructive ambiguity”.

Sustainability and sustainable development have strong currency in Canadian governance, from *Infra-*

structure Canada’s sustainability priorities (2005) to the National Round Table on the Environment and the Economy (2003), to the Royal Canadian Mounted Police Sustainable Development Strategy (RCMP, 2003). The Government of Canada’s New Deal for Cities and Communities (*Infrastructure Canada*, 2005), initiated by Prime Minister Martin in 2004 in the federal government’s first turn toward an urban agenda since the short-lived 1971–1979 Ministry of Urban Affairs (Higgins, 1986), also has a strong focus on sustainability in environmental, economic, social, and cultural realms. Canadian policy-makers have seized the broad and integrative, modern and progressive implications of sustainability as a long-term planning and policy framework.

Some adopters of sustainability policy frameworks have created more directed approaches, such as that adopted by the European Commission: “economic growth [that] supports social progress and respects the environment, social policy [that] underpins economic performance, and environmental policy [that] is cost-effective” (European Commission, 2001). At a minimum, this three pillar approach to sustainability policy articulates a new set of checks and balances beyond the basic efficiency-equity, benefit-cost binaries of traditional policy analysis. This sounds reasonable enough in theory. In policy practice, however, maintaining a positive balance in all three accounts directly implies privileging limits and precaution over growth and accumulation. The architect Austin Williams decries this implication as political and cultural suicide:

Ultimately, with precaution its watchword, sustainability indicators lead to proscriptive regulation, or worse, self-proscription, lowering one’s sights to that deemed achievable rather than elevating our gaze to the higher goal of what is desirable (in Abley and Heartfield, 2001, p. 48).

For those who continue to see value in the concept of sustainability despite this strong criticism, the challenge becomes that expressed by philosopher Norton (1999, p. 452): “how to give a sustainability definition the kind of forward, normative thrust it needs” for political relevance in democratic societies. In the Canadian context, as Gibson (2001, p. 6) asserts, sustainability tends to be seen as “necessarily an attack on conventional thinking and practice”, and a sustainability framework for thinking about urban futures provides an alternative with some potential for optimism. From a philosophical perspective, Norton also defines sustainability as a social relative rather than an ecological imperative with social and economic implications. To Norton (1999, p. 456):

If we can envision the search for sustainable living as a community-based struggle to learn, and to perpetuate a process of learning, then objective truth is a question of justifying goals and policies within a community of inquirers – of understanding and pro-

jecting a kind of transformation of subjective consciousness – not a matter of correspondence with an external reality.

Sustainability as a struggle to learn more, to learn better, and to learn in a more contextualized fashion within the communities of our lived experience, re-prioritizes the first principles of sustainability to include adaptability, negotiability and flexibility. This move strongly implies a longer timeframe for considering the impacts of our decisions. Making these the key tenets of sustainability opens its pursuit to the highest aspirations of human experience and invention. The wager is that the outcome, in terms of a policy scorecard with a balance of environmental, social, and economic criteria, can be the same as a more rigid approach, and the policy process becomes immanently more attractive and inclusive. The body politic across a contemporary city may never agree on the necessity of sustaining a population of polar bears living two thousand miles away, by taking new regulatory action on fossil fuels at home. However, the necessity of sustaining learning, and sustaining our ability to continue learning how to learn, is an issue few could dispute. If these future opportunities for learning are understood properly as dependent on our protection and conservation of as many aspects of regional systems as possible, then we are working to prevent the permanent interruption of human learning, rather than to promote polar bears or ice sheets per se.

Sustainability as adaptive and social learning requires profound openness to uncertainty and trust in the human learning community, to engage with the kinds of experiments whose processes and results gradually bring people from diverse perspectives to converge on similar conclusions. Adaptive policy processes set up iterative cycles of goals and means that are amenable to self correct and change with new information and understanding: “We must start where we are; but we do have the ability to engage in experiments to reduce uncertainty and to refine goals through iterative discussions among stakeholders” (Norton, 1999, p. 459).

#### *Sustainability in the case of the Regional Vancouver Urban Observatory*

Sustainability was selected as a frame and inspiration for the RVu project in a context-dependent way. This frame has been set deliberately at a high level of abstraction, rife with “constructive ambiguity” (Robinson, 2004, p. 374), as a means to embed within the project – even while still in pilot phase – the notion of building a legacy, developing dense and grounded connections at a range of policy scales, and setting high expectations for the future. This strategy has been key to setting the vision, audience, structure and scope for RVu.

At the most internationally encompassing scale, RVu is a member of the UN-Habitat Global Urban

Observatory (GUO) network. The GUO aims to assist member cities and states monitor and report on urban trends on a regular and reliable basis. It also helps to adapt Millennium Development Goal targets to the urban realm and, as per Millennium Development Goal number 8, Ensure Environmental Sustainability, with urban sustainability goals.

RVu’s membership in the GUO network has opened up possibilities for common meetings networked through the GUO from its headquarters in Nairobi. While there are over 100 local observatories throughout the developing world, all are at different stages of development. According to UN-Habitat (2004, p. 6), local urban observatories may be set up by a range of different official and non-official governance groups in a city, either within a larger national observatory or independently, and have at least three reasons to exist:

- to involve local policy-makers and organizations of civil society in dialogue;
- to generate information on local themes and problems; and
- to encourage policy responses to locally felt needs and priorities.

No comparative evaluation and lesson-drawing work has yet been done to assess the relative progress of local urban observatories. UN-Habitat’s Global Urban Observatory has compiled a number of case studies, however, for cities including Jinja (Uganda), Alwar (India), Addis Ababa (Ethiopia) and Nairobi (Kenya), and found that “the process goes beyond providing information for decision-making by promoting governance and sustainability of institutions that promote good urban practices” (UN-Habitat, 2004, p. 7). Strategic decisions in the design and construction of RVu have been highly contingent on particular relationships RVu was able to form with more established local observatories in the network. The ORBIS-MC observatory in Curitiba, Brazil, was an ideal candidate due to that observatory’s approach to its work, embracing a sustainable development framework and an Appreciative Inquiry<sup>1</sup> model for indicator development, as well as its extra-governmental status, as part of the local Chamber of Commerce (ORBIS-MC, 2005).

At the national scale, other network linkages are important to RVu. The Federation of Canadian Municipalities developed a quality of life reporting system for 20 cities across Canada, based on national and municipal data, and has embarked on a process

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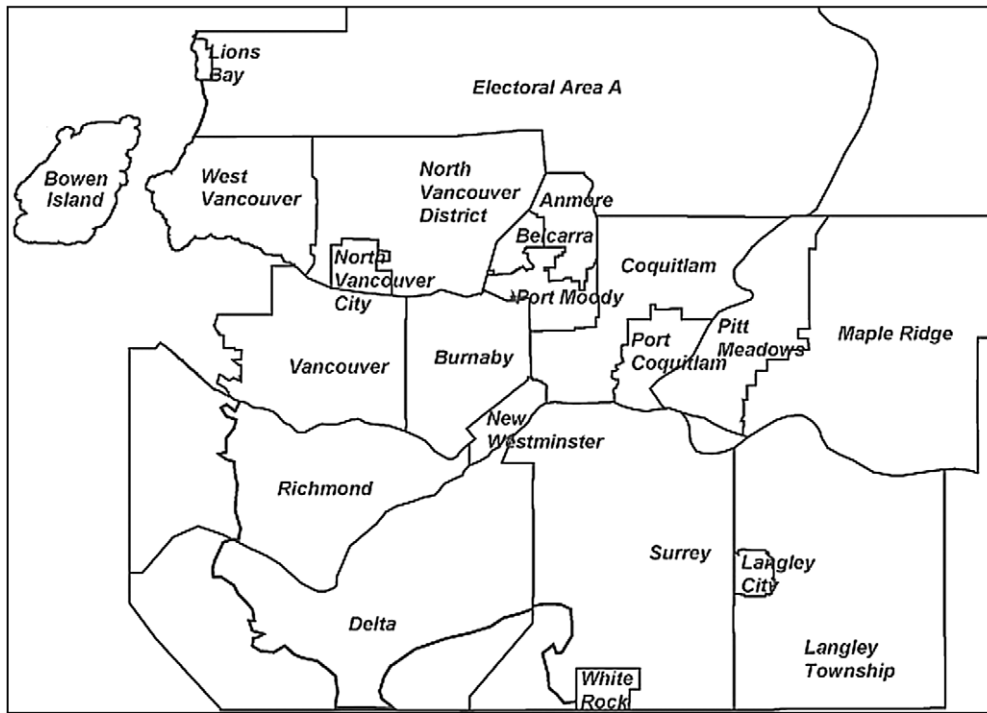
<sup>1</sup>Appreciative Inquiry is a model of organizational change and learning developed by David Cooperrider and others at Case Western Reserve University. Based in a systems understanding of organizations, AI consists of a set of tools and techniques to draw out positive and constructive thinking based on recognition of values and capacities (see e.g., Cooperrider et al., 2000).

to add sustainability dimensions to this system (FCM, 2005). RVu's nearest neighbours at the urban scale within Canada can be found in the Sustainable Calgary project (Keogh, 2005), as well as the Communities-in-Action municipalities of the United Way of the Lower Mainland (2001). Linking across our southern border, RVu takes part in the Cascadia bioregion sustainability indicators network, with Sustainable Seattle its closest neighbour (Holden, 2006).

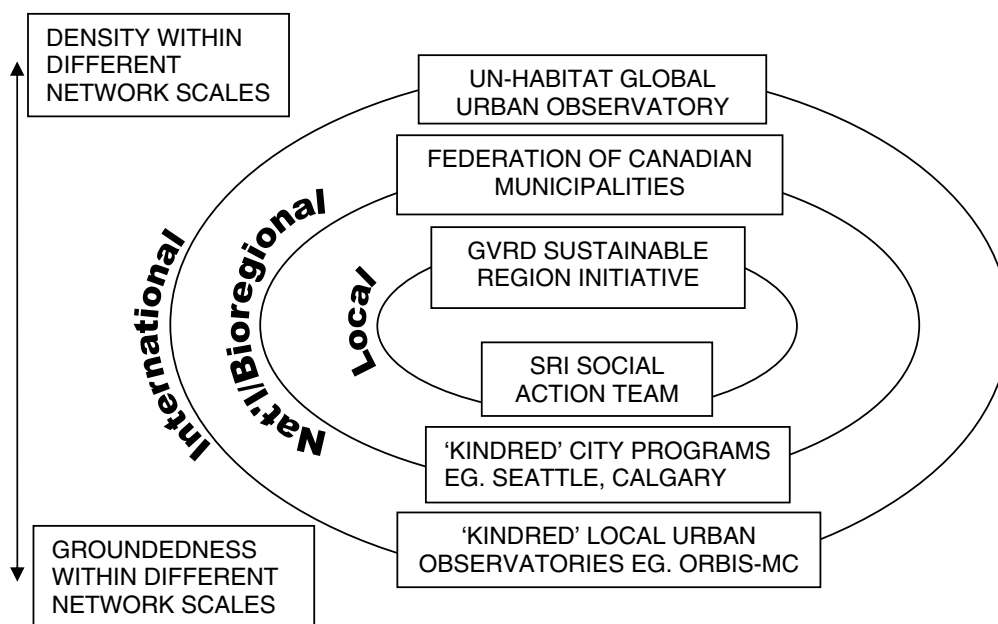
At the regional and local scale, RVu has embedded itself into several sustainability processes. In 1997, the Greater Vancouver Regional District (GVRD) established the Livable Region Strategic Plan (LRSP), with the four-pronged sustainability strategy of protecting the green zone, building complete communities, achieving a compact metropolitan region, and increasing transportation choices (see *Figure 1* for geographic context). The LRSP has achieved "covenant" status for many concerned with development at the regional scale, although more recently it has been challenged, and maligned as obsolete (Condon, 2005). In 2002, the LRSP was expanded well beyond the GVRD's mandate via the Sustainable Region Initiative, which constitutes a framework, vision, and action plan for the region that embraces economic prosperity, community well-being, and environmental integrity.

By establishing membership, inviting members from the different networks to join the RVu advisory

board, and participating in these sustainability-oriented networks, RVu has taken up the challenge and goal of sustainable development by first rooting itself within a range of networks at different scales. The strategy, borrowing from a grounded theory approach (Corbin and Strauss, 1990), has been to establish concurrent groundedness and density (*Figure 2*). Groundedness for RVu has come through developing relationships with organizations and initiatives working at similar scales as RVu, in order to share experiences, lessons and insight. These are relationships within a community of practice, defined in terms of sustainability and the project of indicators, and they exist at scales that range from international (with the ORBIS-MC local urban observatory in Curitiba, Brazil), within the bioregion with Sustainable Seattle, within Canada with Sustainable Calgary, and within the GVRD, among other members of the Sustainable Region Initiative Social Action Team. At the same time, RVu has developed density in its networks at different scales. These relationships rely less on common understanding of sustainability or indicators, and more on a common understanding of the value of leaving open channels for communication, broadcasting results to a targeted audience, and spaces for negotiating key policy changes. RVu's main international relationships are with the UN-Habitat Global Urban Observatory, while national relationships of interest exist with the Federation



**Figure 1** Municipal boundaries within the Greater Vancouver Regional District.



**Figure 2** Density and groundedness of network connections at different scales for the Regional Vancouver Urban Observatory.

of Canadian Municipalities as well as with the Canadian Cultural Observatory<sup>2</sup>; and the key regional network is the GVRD Sustainable Region Initiative.

Sustainability as a community-based struggle to learn is dependent on building and sustaining the relationships and networks for continuing the learning process. Part of the relationship-building strategy has been to frame RVu using the principles of sustainability rather than using the term ‘sustainability’ per se, creating a process that is integrative of different knowledge types, inclusive of values, and grounded in a systems-based approach. The RVu network strategy also balances the project’s limited resources for networking activities with its desire to build-in network redundancy at different scales and via different types of relationships.<sup>3</sup>

The meaning of membership across the different scales needs to be creatively negotiated. The Vancouver region’s key trends and goals bear little overt resemblance to the Millennium Development Goals,

even given the attention paid by both to some version of sustainability. And yet, the success of the Vancouver region at meeting long-term sustainability goals depends on finding means to support development in cities where primary education, opportunities for girls and women, clean water, and health care, to take a few key Millennium Development Goals for example, are not a given. This is a responsibility that falls on Vancouver as a region of immigrants, as a region with global economic connections, and as an emerging global city region with ‘model’ status.<sup>4</sup> From a pragmatic perspective, different cities have different entry points into solidarity with the emerging global urban context and landing upon synoptic ideals and frameworks for reaching beyond expediency in seeking better information, making plans and setting policy. For some cities, like Chicago and Porto Alegre, labour solidarity may provide common ground for high aspirations; for others, like Berlin and Sarajevo, post-war reconstruction and the prevention of violent extremism may be the most compelling framework. Vancouver’s situation as a region with seemingly limitless natural resources, as the birthplace of Greenpeace, with the proven ability to mobilize citizens in the protection of natural resources and heritage, is a city in which sustainability provides a uniquely suitable synoptic framework for

<sup>2</sup>The Canadian Cultural Observatory is a network and web portal providing data and research resources and other services to advance culture and cultural development throughout Canada. The project is based at Canadian Heritage and many resources are available online at <http://www.culturescope.ca> and [http://www.canadianheritage.gc.ca/progs/occ-cco/index\\_e.cfm](http://www.canadianheritage.gc.ca/progs/occ-cco/index_e.cfm).

<sup>3</sup>RVu’s major initial source of funding is Western Economic Diversification Canada, which provides 76% of the project budget totaling just over \$200,000 for the period 2005–2006. The 24% complement of project funding comes from Simon Fraser University, Human Resources and Skills Development Canada, BC Hydro Social Sciences and Humanities Research Council and other sources.

<sup>4</sup>Vancouver consistently ranks high on global livability surveys, such those by the Economist Intelligence Unit (assessing stability, healthcare, culture and environment, education and infrastructure) and Mercer Human Resource Consulting (<http://www.mercerhr.com/qol>).

the highest and best aspirations of urban and regional policy (Berelowitz, 2005; Punter, 2003).

#### *Performance measurement and indicators*

Performance measurement and indicators of urban sustainability defined in terms of adaptive and social learning may seem somewhat contradictory. Notions of measurement bring with them a hegemonic history often criticized by feminists and others as an obsessive tendency toward fact-finding over value-seeking, typified by Dickens's Mr. Gradgrind in *Hard Times*, who was "ready to weigh and measure each parcel of human nature, and tell you exactly what it comes to" (Nussbaum, 1990, p. 77; Wertheim, 1995). French mathematician Blaise Pascal anticipated the danger of falling into such a trap with his statement in the 17th century that there are two equally significant dangers of the Enlightenment: one is to shut reason out, the other is to let nothing else in.

Frecker (2005, p. 11) identifies debate over contending paradigms as a major area of concern about the general utility of the indicator approach to social analysis and the evaluation of public institutions. The entirely reductionist paradigm sits at one extreme, exemplified by the Driving Force–Pressure–State–Impact–Response indicator framework (Denisov et al., 2000).<sup>5</sup> A systems approach to sustainability indicators, at the other extreme of the debate, subscribes to an organic, complex, holistic paradigm, exemplified by the Natural Step framework (Robèrt, 2002), an approach that has a group of representative stakeholders begin the search for consensus-based indicators with a discussion to uncover "a list of the key changes needed in human arrangements and activities if we are to move towards long-term viability and well-being" (Gibson, 2001, p. 8). The medicine wheel framework introduced by Nathan Cardinal later in this special issue is a comparably holistic example (Cardinal, 2006). Embracing a systems-based approach, the Government of Western Australia (2003, p. 40) has, for example, developed broad and encompassing principles and matching criteria for statewide sustainable development: long-term economic health, equity and human rights, biodiversity and ecological integrity, settlement efficiency and quality of life, community, regions, 'sense of place' and heritage, net benefit from development, common good from planning, precaution, and hope, vision, symbolic and iterative change.

In negotiating a position within the indicator framework debate, it is useful to distinguish between descriptive and diagnostic indicators. This, to indicator historians Cobb and Rixford (2005), has been the key debate throughout the history of the use of indi-

cators. Descriptive indicators, that tell us simply the number of homeless individuals or the quantity of greenhouse gases emitted from private vehicles, assume expert-based knowledge and cognizance of the best framework for understanding cause–effect relationships and a reliance on experts to assimilate the new information and devise solutions. The role of the public thus comes after the release of indicator results, and is limited to the task of moving sufficient political will to back the required action. Diagnostic indicators, by contrast, can only be derived based on up-front work by the body politic to understand and conceptualize a framework to suggest how a problem indicated by a reported trend could be solved. If high greenhouse gas emissions is the trend, then public discussion could be called upon to target best case steps to solution, such as the development of more bicycle-friendly road infrastructure, more mixed-use live-work developments, or stricter enforcement of air quality standards on vehicles. Indicators capable of taking into account the emissions trend and implying progress toward the intended solution could be selected on this basis.

The framework for an indicator project can have a strong bearing on the validity it is perceived to have and the use to which it can be put. For descriptive indicators, embedded in frameworks that tend to be rational and expert-derived, establishing validity is a fairly straightforward exercise using models and assumptions (Hoernig and Seasons, 2005). Validation of diagnostic indicators is more complex and requires negotiation of the most suitable utility of the indicators, based on different understandings, professional and other knowledge bases, judgement and intuition (Innes de Neufville, 1975). Whereas descriptive indicators rely on direct observation, diagnostic indicators "require an act of scientific imagination" and an understanding of social and political networks, relationships, and opportunities in order to venture toward effect (Cobb and Rixford, 2005, p. 34). Diagnostic indicators take an extra step toward invoking theories of causality, despite the fact that indicators can only very rarely establish direct causal relationships. The potential of diagnostic indicator projects in developing inferential skills, considering systems of cause and effect, therefore need to be balanced against the danger of presenting information for interpretation that is more literal and causal than warranted by the information and understanding. Moreover, there exist political motivations for choosing particular interpretations of expert-derived fact; and diametrically opposed interpretations are entirely possible in any politically charged context (Grindle and Thomas, 1991). Instead, the most appropriate interpretation of an indicator is as a "flag" for further investigation and action. As a "flag", both qualitative and quantitative indicator types can serve equally well in different political and research contexts.

<sup>5</sup>This framework is discussed in more detail in Olewiler's article in this issue (2006).

Despite a vast amount of new information about the nature of environmental, social, economic and other lived systems that has come to light in the past generation, and despite increasing interest in sustainability assessment as a vital tool in the use of this information, “there remain very few examples of effective sustainability assessment processes implemented anywhere in the world” (Pope et al., 2004, p. 595). Even in the domain of planning, where monitoring and evaluation have long held a key position at the end-stage of a planning process, planners rarely determine whether or not their plans are ever actually implemented or whether or not the implementation is successful, effective or efficient (Talen, 1996). Among the many possible reasons for the failure of monitoring and evaluation in planning, we can cite inadequate financial and political support, no well-defined rationale for doing monitoring and evaluation, and the lack of “an organizational culture attune to learning and improvement, as well as long-range planning” (Seasons, 2003).

A variety of approaches to sustainability assessment exist, varying in their negotiations of each of the major debates in the indicator field. Some, like integrated assessment, have emerged primarily out of environmental regulatory authorities, while others, like triple bottom line assessment, have emerged from a different starting point of business management and profit maximization. Integrated assessment approaches integrate the consideration of environmental, economic, and social impacts of a proposed project or alternative. Both beneficial and negative consequences of one or several alternative courses of action are investigated under integrated assessment, with a focus on trade-offs at the subsystem, system, and inter-system levels (Pope et al., 2004, p. 601).

Trade-offs are a key expectation of sustainability indicator projects, whether they rely on descriptive or diagnostic indicators, and whether the output of the project is a single index value, a triple bottom line, or a larger number of incommensurable values. Because of the complexity that sustainability indicators attempt to capture and communicate, because of the aversion to radical change within any human society or institution, and because certain important elements of any framework are guaranteed to be hidden, trade-offs are an expected decision-making outcome (Upton, 2004).

Here, however, the integration begins from the original “bottom line” of economic profitability of a proposed alternative and seeks to consider other alternatives via the incorporation of information about their potential social and environmental costs and benefits. Both integrated assessment and triple bottom line approaches run the risk of considering social, environmental, and economic costs and benefits as parallel and incommensurable inputs and outcomes of decisions, without sufficiently under-

standing systems-based interrelationships among them. No approach to sustainability assessment guarantees that an alternative will rise above the challenge of minimizing negative trade-offs to offer synergistic benefits. Gibson (2001, p. 19) suggests that “the essential immediate effect of a shift to sustainability-based criteria is an expansion of central concern from avoidance of significant adverse effects to expectation of positive contribution to the achievement of sustainability objectives, however vaguely specified”. Assessment priorities do still need to be clearly articulated, and sources specified for the assessment team’s approach to determining both the relative risk and benefits of different alternatives and the potential contribution to larger societal sustainability goals – negotiating with questions of distance as well as direction tending and embeddedness of decisions at several scales of impact and implication (Gibson, 2005).

Decision-making based on assessments of risks and benefits implicitly focus the output of indicator initiatives on forecasting about trends, timeframes, and implications. While the history of science proves societies’ ability to make and test hypotheses in order to improve certain kinds of knowledge, our record in forecasting, by contrast, is a “manifest record of failure” (Smil, 2002). This recognition is behind the push among many sustainability advocates for the decision use of the precautionary principle rather than the more conventional risk assessment approach. The precautionary principle states that in the presence of plausible evidence of harm from a proposed or ongoing activity, preventive or corrective action should be taken to reduce that risk or harm, despite uncertainty of causal relationships (Harremoes et al., 2002).

#### *Indicators in the case of the Regional Vancouver Urban Observatory*

Despite the Vancouver region’s progress and innovation in sustainability policy, as described in the previous section, the region lags behind others in North America in sustainability assessment and indicator-based approaches (Portney, 2003). Thus, the region exemplifies the time-honored lesson in planning that it is easier to innovate than to assess and monitor. RVu’s experience in attracting the commitment of a regional advisory board, a group of research advisors, a large number of citizen volunteers, and government and other sources of financial support, is testimony to the growing recognition of this lag and the need to develop better means of assessment of our highest and best plans for the future. Our experience demonstrates that while trade-offs are necessary in moving away from status quo development, trade-off decisions can become more manageable when more people are involved in grappling with them from the full spectrum of sustainability perspectives.

RVu has designed a multiple-pronged approach to developing indicators of a sustainable region, in an attempt to inject new life into these long-standing debates about the purpose, method, and utility of indicators. Our approach has been designed to test the public awareness-raising potential and motivation potential of an indicators-based approach to sustainable development. The initial selection process for indicators to be tracked and reported by RVu involves an expert phase, a public phase and an integration phase, as outlined in *Figure 3*.

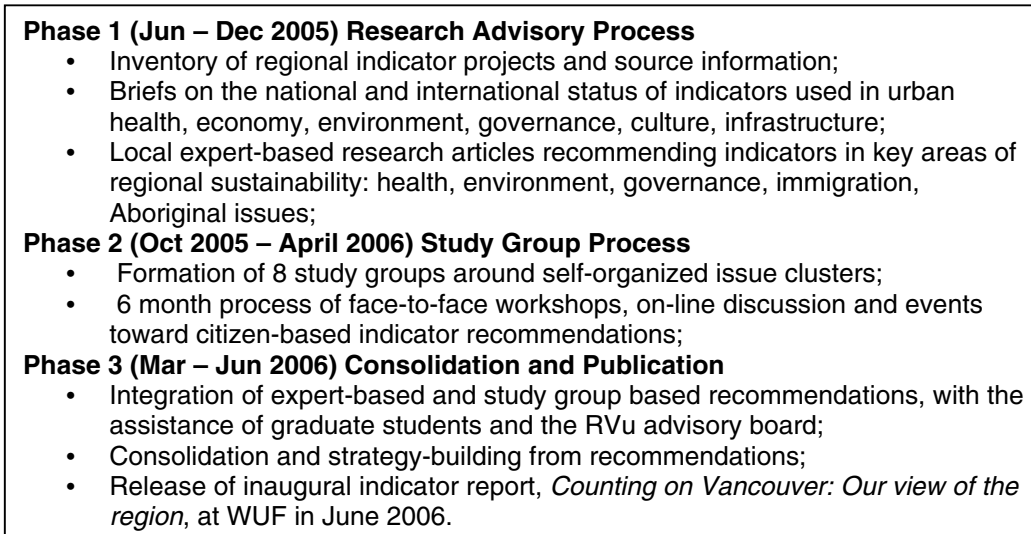
The overall intent of dividing and then integrating (over the course of about a year) expert and citizen-based elements of the initial indicator selection and reporting process is to embed the different types of knowledge and legitimacy in RVu on an equal footing. RVu's working hypothesis is that the most integrative and meaningful common indicators will emerge from this three-phase process. An ancillary research interest is to contribute to our understanding of the divergence and convergence of expert and non-expert understandings of sustainability issues and indicator recommendations.

Phases 1 and 2 have bridged the purposes of presenting expert-based work recommending key indicators and organizing and carrying out the study group process to facilitate and represent key citizen-based indicator recommendations. The process that clustered interested citizens into groups with integrated threads of interest and the six months of study that followed in each of these groups is discussed more in the next section. The outcome of this process is a set of 24 key indicators of sustainability for the Vancouver region, or three indicators per study group, based on a negotiated logic of integrated social, environmental, and economic systems. These key indicators were presented at a public

event and celebration of the volunteer effort of citizens in April, 2006.

Phase 3 of the project involves the consolidation of expert-based and study group-based indicator recommendations, data collection, and strategy-building around reporting and communicating the process and outcomes of the project. Reporting of the project occurred at the World Urban Forum in Vancouver in June 2006, at national forums via the Canadian Sustainability Indicators Network and the Federation of Canadian Municipalities, and at regional forums, via work through summer and fall 2006 with the Sustainable Region Initiative Social Action Team to host workshops at the various municipalities region-wide.

Gaps exist in the content and conduct of both expert and citizen-based processes. These gaps exist in part to keep the project on a number of tight policy schedules and in part to avoid the perception that either expert or citizen-based processes are capable of deriving 'the whole truth' and highest and best recommendations for key indicators of regional sustainability. Instead, it is the interplay of the different knowledge types that RVu seeks to support and optimize. While experts' work is likely to have a bias toward international standards, citizens' work is likely to have a richer context-dependency. While expert-based recommendations are sectoral in nature, by definition given the nature of expertise, indicators resulting from the study group process have been developed with the intent to reflect trends across sectoral boundaries, and with the intent to be more related to local than non-local conditions. This mixture of intents, backgrounds, interests, and ways of thinking of the role of indicators has additional bearing on the openness of outcomes of RVu to multiple audiences in policy, expert, and advocacy languages.



**Figure 3** RVu's three-phase process for indicator selection.



The recognition that all types of knowledge are necessarily partial can open up crises of confidence and failures of legitimacy in indicator projects. At RVu, we take this condition of a limited confidence in expert-based knowledge as a societal given and see it not just as a challenge but also as an opportunity to open new doors for collective learning, and public and transparent testing of the bases for decisions and beliefs. The average person or group in the Vancouver region holds little stock in information presented about social, economic and ecological systems. In this context, the most likely conclusion is that which feels intuitively 'right', based on that person or group's experience, ideology or other persuasion. The challenge that RVu embraces in this context is for productive dialogue on topics about which no absolute truth can be established, and, in doing so, to take away from the formation of dubious networks established to promote only particular kinds of knowledge and outcomes, even where more useful conclusions might be reached by working across such networks, in favour of a broader understanding of sustainability and the public good. In other words, rather than attempting to articulate a common specific vision of the future, which the failures of forecasting attempts tell us we are unlikely to realize, our vision for the construction of indicators through RVu is to articulate and negotiate our theories of change for the region. In developing sustainability indicators, we are accessing and attempting to reconcile people's theories of change. We consider this to be a pragmatic move toward sustainability thinking at the regional scale – attempting to articulate the ways in which we see change happening, alternate routes to change what we consider possible, and to learn from one another about these routes and perceptions of pathways for change. This approach is fuelled by the commitment of residents to the future of our region, to the multiple visions that have already been offered up and advanced. Our aim is to turn these commitments and visions into concrete propositions for change.

#### *Participation and advocacy in indicators of sustainable urban development*

So far, we have argued for an understanding of sustainable urban development as the preservation of learning and opportunities to learn and the trend toward assessment and performance measurement as a key tool in seeking specification of intentions and integration opportunities. The missing link in this argument is an understanding of the role of social and political processes in the advancement of sustainable urban development and the use of measurement and indicator tools. In this last section of the argument, we seek to develop an understanding of the roles of citizen and public participation in sustainability indicators work and their value-based dimensions introduced by diverse participation.

A very common drive of community and sustainability indicator projects is to be "inclusive and participatory". Meaningful participation, consensus-building, and people-centredness are central elements of most sustainability initiatives to date (Carew-Reid et al., 1994; Sapountzaki and Wassenhoven, 2005). Enhancing participatory democracy is often cited as second only to improving the quality of information used by decision-makers as a key contribution of indicator projects (Frecker, 2005, p. 5). While consensus-building is a near-universal goal of local sustainability initiatives, the difficulties involved in building, maintaining, and activating consensus are little understood and underestimated (Sapountzaki and Wassenhoven, 2005, p. 433).

Hoernig and Seasons (2005, p. 25) express the stake that planners have in the involvement of a wide range of demographic groups in a community: "[a]ll people experience and evaluate communities differently. Attention to the perspectives of groups such as seniors, youth, physically and developmentally challenged people, ethnic and racial minorities can alert planners to issues of populations that are often marginalized by mainstream planning processes". Indicators themselves can take these diverse local knowledges into account, as well.

The need for, and gains to be expected from, public participation in indicator projects are clear, but the means by which this participation can happen, how we can assess the trustworthiness of the participation, and the validity of the information derived from a participatory process remain largely unaddressed in the literature (Sapountzaki and Wassenhoven, 2005). Hoernig and Seasons (2005, p. 24) suggest four key themes for investigation of these aspects of participation and indicator projects:

- (1) What knowledge defines, develops, monitors, analyzes and reports on indicators?
- (2) How to make knowledge understandable, accessible, and relevant to stakeholders and publics?
- (3) Who is involved in making decisions, who represents whom, to what degree should non-public employees be involved in public sector decision-making?
- (4) Empowerment as the link between knowledge and action; does greater participation bring greater responsibility?

The planning literature contains significant research into the potential for new and improved technical tools to increase the quantity, diversity and impact of citizen participation on planning and policy results (Elwood, 2002; Innes and Booher, 2000; Innes, 1990; Goelman, 2005; Holden, 2000). Projects experimenting with the role of information and technologies in citizen engagement in decision-making vary in one respect, based on their intent to use information and technology to facilitate the process of engagement or to facilitate the communication and mobilization of action based on the re-

sults of a process. The Georgia Basin Futures project is a clear example of the former intent (Carmichael et al., 2005), focusing on Hoernig and Seasons's (2005) first theme of investigation, while the Display Campaign (<http://www.display-campaign.org/>) is a useful example of the latter, focusing on Hoernig and Seasons's (2005) second theme of investigation, as cited above.

Project-level innovations that grapple with the last two of Hoernig and Seasons's (2005) themes for investigation are harder to come by. It is at this level that critical issues of representation, decision-making, roles and responsibilities, empowerment and action must be dealt with. Here, planning theory often falls back on the Arnstein (1969) ladder of citizen participation, along with a few updates (Drake, 2000; Saunders, 1983; Friedland, 1982). Effective citizen participation, via consensus-building and similar processes, has met with some success in planning initiatives (Brown and Mikkelson, 1990; Fischer and Forester, 1993; Irwin and Wynne, 1996). Arnstein's classic typology of the means, agendas, roles and responsibilities negotiated between government bodies and citizens remains helpful, but fails to elucidate fully the difference made in such processes by different motivations for participation, unexpected outcomes and hidden adversity, variations in power and other kinds of group dynamics (Habermas, 1996; Fagence, 1977).

Learning from a case of failed consensus-building around a sustainable development initiative in Greece, Sapountzaki and Wassenhoven (2005, p. 434) encapsulate the wicked problem within participation for sustainable development this way:

[Sustainable development and planning's] assumptions, objectives and content are not always understood by the public at large, especially their comprehensiveness and global nature. Inversely, the community of academics, researchers, government officials and professionals engaged in the study, planning and implementation of sustainable development ... does not always have a satisfactory grasp of the view of the citizens, which, quite naturally, tends to focus on the level of everyday life and experience.

The solution to this enduring problem would seem to lie in a two-way learning process in which sustainability professionals learn more about public values, everyday lives and experiences, just as citizens learn more about overarching frameworks and specific trends and issues within sustainable development. This suggests an 'informatization' process that builds collective community knowledge encompassing hard and measurable trends and facts as well as soft and unmeasurable values and perceptions.

From this perspective, the question is not whether or not values have a role to play but at what scale and what level of precision. The urban capital framework for indicators (preferred for example by the World Bank Multiple Capital Approach, used for

sustainability reporting in the EuReporting Targeted Socio-Economic Research Programme), adopts the language of accounting and obfuscates the role of 'soft' and unaccountable values. The experience of the sustainability movement teaches that, from a policy perspective, better accounting is a large part of what is needed for reliable, directed change. Better accounting, while necessary, is not sufficient for the change sought by sustainability indicator proponents; indeed, some are deeply suspicious of the accounting-based stance. Sennet (1970) disclosed what he saw as planners' inability to become comfortable with the language or other expression of uncertainty and ambiguity, and noted that this lack of comfort results in a restricted, uncreative, and conservative set of acceptable planning behaviours and activities. Sandercock (2003, p. 208) takes a radical perspective on the need for explicit and daily consideration of values at the individual, as well as larger social scales: "I want a city that is run differently from an accounting firm; where planners 'plan' by negotiating desires and fears, mediating memories and hopes, facilitating change and transformation". Surely sustainability as change of any fundamental kind demands more acceptance of uncertainty and ambiguity and diversity of values.

Agreements reached by consensus are expected to be higher-quality agreements in their ability to generate new understandings among adversaries, address multiple kinds of needs and goals, to allow multiple roles and responsibilities in their implementation, and to endure based on impressions of fairness and legitimacy (Harter, 1997; Suskind and Field, 1996). On the other hand, agreements reached by consensus may put excessive expectations on policy actors, other stakeholders, institutions and processes to adapt, generate information and procedures in time, may lead to mistrust and disappointments when they fail to reach mythical win-win solutions, and may lead to unclear implementation paths if multiple jurisdictions, information and cash flows, personnel and levels of agreement and understanding are involved. We may find ourselves struggling to fit comprehensive triple bottom line solutions into discrete decision-making silos and chains of authority (Sapountzaki and Wassenhoven, 2005, p. 440). Even more disconcerting from the sustainability advocate's perspective, what guarantee can be made that a consensus-based decision will necessarily be the most sustainable decision in environmental, economic, social and other terms?

For consensus-based processes to promise effectiveness in terms of what Habermas (1996) called communicative rationality, several conditions must be filled. All stakeholders, whether or not they hold an official or historical role in the policy process, must be identified and be at least willing, if not actually able to engage in the dialogue. A range of participants from different roles in a decision-

making process ensures connections will be made along chains of power and influence as well as networks of legitimacy, persuasion and resistance; the conspicuous absence of certain people or groups from the consensus table can otherwise diminish trust in the conversation. Further, stakeholders must be armed with sufficient and equal information such that, as they engage in a process in which each has the right and opportunity to speak and be heard, each has equal occasion to speak with authority and understand and adequately contextualize what they are hearing. Participants in such a process must further act with sincerity, be comprehensible and accurate in the claims they make, and have acceptable reasons for engaging and acting in the way they do. The problem is not just that some participants are insincere, incomprehensible, inaccurate, or unreasonable; it is that those that exhibit these uncooperative behaviours are likely to be the self-same participants whose behaviours most need to change, based on the outcome of the dialogue. Limitations in policy options depending on history and political climate at different scales can severely limit the scope of authentic dialogue when it comes to considering alternatives (Sapountzaki and Wasenhoven, 2005).

*Participation and advocacy in the case of the Regional Vancouver Urban Observatory*

The “R” in RVu (the “our” in “Our View”) represents a continuous reminder that the project values the production of common understanding and action from many diverse perspectives on sustainability and progress that exist throughout the region. The project has been designed to recognize the unique positioning of each participant within networks, neighbourhoods, experiences and paths; these contexts are sure to generate different perspectives on how sustainability works or could work in the region. The challenge for RVu in this regard is to articulate intersection points among these diverse perspectives sufficient to establish a regional sustainability indicators agenda. RVu seeks to mobilize a wide range of citizens to contribute their perspectives but expects the process to generate more public-minded versions of them, respecting self- and group-interests but taking

these forward toward new negotiated consensual applications.

Invitations to RVu’s initial public event, Focusing ouR View in October 2005, and communications about the project, were broadcast widely among potentially interested citizen, academic, and policy groups. Over one hundred citizens attended this event, which had the twin objectives of reporting out the expert-based indicator selection process and launching the public study group process. Study group clusters were generated based on four questions posed to event participants (Figure 4). These questions were phrased to seek discussion of participant values, their optimistic as well as pessimistic enactments over the medium term of the next ten years, to focus on information needs in the regional context, and to encourage consideration of the meaning and responsibilities tied to the regional contexts of participants’ lives. Responses to these four questions were discussed in facilitated groups of approximately ten participants.

As participants returned to the large group assembly to listen to research presentations, the RVu facilitator team of ten clustered responses to these questions into initial study group themes (Figure 5). Clustering was done visually by searching for nearest conceptual neighbours, based on the need for a focus within each cluster that would demand an integrated approach, preventing study groups from segregating simply along ‘economic’, ‘environmental’, and ‘social’ lines, and that would have regional significance. Clusters were grouped using geometric shapes rather than category headings in order to avoid the hegemony of any particular term in framing a set of ideas and in order to open up space for naming and focusing study groups as group membership solidified. The eight clusters that emerged were presented back to participants, who had the opportunity to circulate amongst the visual cluster presentation boards and then select a cluster for membership. The latter part of the day at Focusing ouR View was spent with participants meeting in their selected clusters of eight to fifteen participants, led by a group facilitator. Approximately eighty participants committed to engagement with a study group on a monthly basis for the five months to follow.

Study groups worked through stages of identifying their point of focus as a sustainability challenge and

If you could enhance or preserve one thing about the region, what would it be?  
What do you feel is the greatest challenge facing the region in the next decade?  
What goals are most important for us to pursue as a region?  
What reality in our region demands new or better information most urgently?

**Figure 4** Study group framing questions asked of participants at Focusing ouR View.

<p><b>Circle Study Group</b></p> <p>Building community ... for sustainability. A strong and cohesive community contributes to the overall quality of life of individuals in the region. It improves the health of the population by reducing social and economic distances between people, celebrates diversity, and sees to it that all members of the community participate.”</p>	<p><b>Cloud Study Group</b></p> <p>To create governance systems that are participatory, democratic, and responsive to the present while preparing for the future. Governance in the Vancouver region ought to incorporate: access to meaningful involvement in governance for all people; accessible educational opportunities; transparency, accountability and fiscal responsibility.</p>
<p><b>Doughnut Study Group</b></p> <p>The Greater Vancouver Region is a living organism striving to dynamically achieve and maintain equilibrium within its own social, economic and environmental components that are directly and intricately linked to those of the global commons.</p>	<p><b>Infinity Study Group</b></p> <p>Our mobility system optimizes equitable access while developing positive social, cultural and economic systems and healthy populations and mitigating negative environmental impacts.</p>
<p><b>Rectangle Study Group</b></p> <p>Overcoming poverty demands a holistic and continuous response, to the full capacity of our socioeconomic systems, which attempts to understand its impact in our lives and the future of our communities. We must take action in whatever way we can to challenge poverty in our communities.</p>	<p><b>Square Study Group</b></p> <p>For the region to be a world leader in policies and practices for understanding and protecting our local food resources. This means a food system that promotes equitably distributed and affordable food that is local whenever possible and organic and ethical in its practices.</p>
<p><b>Squiggle Study Group</b></p> <p>To recognize arts and culture as one of the four pillars of sustainability, to see the integration of arts and culture, including spirituality, multicultural diversity, traditions, and creative expression, into policy in order to recognize and transmit the value and meaning of life.</p>	<p><b>Triangle Study Group</b></p> <p>To replace the driving notion of regional growth with a new notion of regional development that supports a vital local economy, assesses development to encourage increased efficiency and the use of fewer resources, and that recognizes land use planning as our competitive advantage.</p>

**Figure 5** RVu’s eight study group clusters and their integrative foci.

goal, constructing and reconstructing a system of relationships between this point of focus and regional environmental, economic and social issues, considering data availability opportunities and constraints, and making consensus-based decisions about three key sustainability indicators. These stages of work

were guided by a trained facilitator, a custom workbook, a dedicated discussion space on the project website, and a number of inter-group networking opportunities.

RVu’s eight study group focus areas, by necessity, represent the range of interests present at the one-

day Focusing our View event, tempered as well by the range of active policy issues on the regional agenda. The clustering process did a good job of bringing out comparative values of event participants in a broad and inclusive way, undetermined by any particular sectoral heading, even the heading of 'sustainability.' Recruitment to study groups continued into November and December, driven by word-of-mouth of study group facilitators and members and assisted by the RVu advisory board. Although the RVu project team was prepared for the need to collapse, split or redefine study groups due to attrition, growth, or an emerging redefinition of focus, all eight study groups proved workable for their members and completed the process. The RVu project team and advisory board also kept watch of the study group process to identify content gaps; energy and economic development issues, for example, emerged as underrepresented by study groups. RVu's expectation is that a successful study group process will be judged based on the emergence of consensus on indicators for issues that matter to a diversity of people across the region and the stimulation of further cycles of engagement, to gather citizen input on a wider range of value-based issues.

## Conclusion

This article has discussed the challenge of combining the tools of urban indicators and performance measures with sustainability as an integrative ideal of a growing number of cities. Indicators, it has been argued, can fit as part of a larger political and institutional strategy to revalue a continuous community-based struggle to learn, balancing the relative contributions of experts and citizens toward the definition of common challenges and goals within sustainable development. The process of development of RVu has been presented as a case in point, though a case still in progress.

The Regional Vancouver Urban Observatory (RVu) has been established as an action-research project to contribute to networking with sustainability-based policy and research efforts at regional through international scales, with an integrative framework for the selection of key sustainability indicators, and consolidating expert-based and citizen study group-based recommendations to generate new value-based and strategic indicators. On the question of incompleteness of the approach taken to date and outcomes expected, RVu borrows a reply from Geddes (1949, p. 135), writing of his original civic observatory:

Yet all we have so far been accumulating are but materials towards our history, studies towards our picture, drafts towards our design. Of this first exhibition it is a main success to have demonstrated its own incompleteness; our present documentation is but a beginning, and our needed comparisons with

other cities are little more than broached. For all this the practical man [sic] will now say he cannot wait, and so far rightly; though he has waited long and without complaint before. So while work begins, research should continue; and beyond this, the need arises of reconstructive imagination, and this for past, for present, and for future alike.

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