MULTI-DISCIPLINARY APPROACH IN EDUCATION DESIGN

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ABSTRACT:
Design education, especially in an undergraduate course of study, seeks to prepare students for professions and for citizenship in a world they hardly know. The studio typically provides only a surrogate experience in addressing formal and spatial problems, and is limited by time, by its geographic space, and by a dialogue that is more often than not, self-referential. It very rarely engages systemic questions of public policy, or the specific challenges of implementing at full scale ideas that are conceived through representational means. The constrained intellectual context is most poignantly seen in the urban design studios where problems are situated in the real world, and where issues outside the purview of design are found embedded in a place. Form-focused studio exercises that are necessarily a part of beginning architecture education are inadequate for exploring the indeterminacy of urban space and the complexity of human environments. When students enter an urban design studio, especially when they undertake community-based projects, they must take up the mantle of citizenship and engage in an enterprise that is fundamentally relational and grounded in experience. They need more information and more ways of knowing the world than traditionally the design disciplines can offer. This paper presents the outcomes of an experimental neighborhood-based teaching project undertaken as a collaboration among classes in architecture, landscape architecture, urban geography and the fine arts at Temple University. Although initiated through the architecture faculty’s desire to enrich its own undergraduate urban design studio, all the collaborators shared our concern about the narrowing effects of disciplinary bracketing on student learning, especially when the goal was to address real world situations.

KEYWORDS:
Design Education, Teaching Community, Multidisciplinary Approach

INTRODUCTION
Each discipline brought to the project its particular disciplinary culture - its language, methodology and areas of concern - and a shared aspiration to puzzle together these diverse perspectives around questions of making places that are meaningful, humane and sustainable. The struggles and synergies among disciplines were alternatively inspiring, annoying, challenging, rich and imperfect. But intense engagement with a community re-centered the dialogue from inside the academic context to outside, and framed a multidisciplinary way of thought. The community itself proved to be a powerful coalescing agent; the inherent layering of issues in the real-world context made it virtually impossible to remain insensible to interdependencies in life that transcend disciplinary boundaries. Here Richard Sennett’s definition of what constitutes a democratic urbanity was applicable. The Greek term for “public”, synkoikismos, means “to bring together in the same place people that need each other but worship different household gods.” This deceptively simple public-making concept became the basis for a process of learning, and a vehicle for working with the larger truths about how cities are formed and experienced [1].

Citizen-Building, Collaboration and Community - Based Learning
The idea of education as the primary means of citizen-building for a democratic society was most broadly promulgated by the pragmatic philosopher John Dewey, who believed that students’ critical thinking skills were formed through direct experience within their community. He argued that because the contexts (physical, social, historical) will necessarily shape the learning experience, they must be fully recognized and utilized as resource. (Dewey 40). The community provides the fundamental sensory experience of space and place, and sets up an empathic relation with a world into which the students will enter as citizens. While prominent in primary and secondary education, Dewey’s “learning through doing” ideology did not filter into professional design education until well into the post-war years. The Beaux Arts atelier model, with its emphasis on representation and typology rather than engagement, remained a dominant force [2].

Community Design.
In the 1960’s, ideas of community engagement spawned by Dewey became politically charged. As the institutions of democracy failed to provide basic environmental rights, design education took an advocacy role in addressing housing and urban
planning inequities. Community design emerged in Europe and the US as an adjunct practice of architecture, landscape architecture, planning and public art. Recapturing the essential democratic principle of citizen participation, the community or user became the subject, rather than the object, of design, planning policy and art. As defined by John Habraken: “Participation is advocated in whatever form by those who refuse the paternalistic model, and know that experience resides with lay people as much as with experts” [3]. the devolution of design authority from central control emerged as a tenet of cultural theory, and citizen participation soon became a basic method for design research and decision-making.

Since the 1980’s, community design has evolved from an advocacy model to one defined by entrepreneurial partnerships between community organizations and governmental and educational institutions [4]. In current partnership-based research and design centers, complementary resources of community leaders and academic institutions are recognized at the onset of the project, and managed throughout the process to mutual benefit [5]. University-based community design centers function as agents for linking community needs and academic expertise, vehicles, and as vehicles for service learning. The linkages are practical rather than exploratory.

**Interdisciplinary Learning.**

Although centers for community design generally draw on multiple disciplines to provide service for a community client, the service-learning projects situated within an undergraduate curriculum are typically discipline specific, defined as either art, design, or planning, less frequently as collaborations. [6, 7].

Boyer and Mitgang, in their report on architectural education, advocated a holistic education renewing its focus on the larger ethical purposes of architecture that gives priority to a civic esthetic, to service to the community, and to stewardship to the environment. These require an integrative approach to design in which interdisciplinary exchange was essential: Enriching the mission of architecture must also mean strengthening connections with other professions and disciplines. The college campus offers virtually endless possibilities for meaningful collaborations [8]. Yet the cultures of various disciplines, even within a college, tend to be less tractable in practice than in theory, and the imperatives of academic time and collegial structures may have a proscriptive effect on realizing the learning potential of community design as a fundamentally multidisciplinary enterprise.

Discourse in design pedagogy continues to seek richer contexts for learning. Whereas the culture of studio or classroom tends to reinforce the singular discipline-centric view, the immersion in a real place opens rather than closes the breadth of inquiry. As David Hays has said: “Explorations of real space over time introduce students to a host of qualities and concerns otherwise easily ignored []. Working within a multivalent context often forces the question of interdisciplinary, revealing economic, political and cultural issues that are often excluded from dialogue framed by the studio or classroom situation.

**Grounds for Engagement the Urban Workshop**

In the months prior to the teaching project being formed, faculty members from architecture, landscape architecture, geography and art had convened a group called the “Urban Workshop” to address through collaborative applied research and teaching, problems of city neighborhoods in the post-industrial context. The group was dedicated to the definition of place-making as a multi-layered enterprise that seeks to embody in physical space the intrinsic social rituals, historical and economic flows and natural processes that engage the locale.

We posited that if several disciplines were engaged simultaneously, working at different spatial scales and within different projected timeframes, a holistic model could emerge that would better address the multiple interests of the community. In this model, individual building or landscape design projects could be contextualized within a long-range neighborhood plan making it more vital and present; tangible art installations might speak to future speculative proposals, and these proposals might in turn address less visible political, cultural or natural systems that impact the neighborhood environment.

This proposition challenged the current redevelopment initiative being enacted in the neighborhoods adjacent to the university. Like other formerly industrial sectors American cities, North Philadelphia had been plagued with disinvestment, depopulation and vacancy over the last decades of the 20th century. As a means of addressing “under crowding”, the city government had seized upon a uniform low-density suburban development model as an easy solution to the deployment of vacant lands. Older residential areas were being subjected to a whole cloth reinvention based on extrinsic economic policy and market analysis. Clearing block upon block to achieve economies of scale that would attract developers, the neighborhoods were being stripped of their rich material heritage and social infrastructure and replaced by a new spatial product eerily untethered from space and time.

**The Norris Square Neighborhood**

North Philadelphia’s infrastructural decomposition, though extreme in the aggregate, belies the vitality and spatial diversity that exists in many of its neighborhoods. The leaders of one such community, the Norris Square Neighborhood sought out the nascent Urban Workshop and joined with us in a year-long partnership.

The Norris Square Civic Association (NSCA) had a history of citizen-driven neighborhood revitalization, and had successfully, if tenuously, resisted the strain of the current redevelopment, preferring to build...
Upon the unique spatial and cultural character of its formerly industrial urban context. At the neighborhood’s center is a magnificent park of the scale and form of Philadelphia’s historic squares. The NSCA had achieved almost mythic status by having organized a grassroots movement to successfully reclaim the Norris Square Park from the domain of drug users and dealers. This had catalyzed substantial neighborhood recovery in the environs of the square, but beyond, vacant industrial lands, deteriorating housing stock and isolated institutions needed attention. (Fig. 1)

The NSCA sought to forge stronger intra-neighborhood and extra-neighborhood connections, to reinforce the network of community educational institutions, and create more powerful expressions of the dislocated Latino culture that is dominant within the neighborhood. It was seeking a nuanced approach to neighborhood design that the Urban Workshop could offer; one that would embrace the interdependency of built-form, open space, public policy and cultural expression. The NSCA encouraged the Urban Workshop’s pedagogic initiative. They were interested in engaging as teachers and learners, and they knew also that the student work could be of direct value, providing documented research, built interventions and speculative design that could be useful in conversations with the residents of the neighborhood and with the city’s redevelopment agencies.

**Framing the Community Issues Rules Of Engagement.**

With four classes in different locations, the project was a logistically complex undertaking that we knew we must manage carefully without micro-managing. We committed ourselves to several operating principles. First, the research topics and design problems would be identified and developed through an iterative process with the community. Second, the disciplinary groups would engage in regular dialogue around shared questions and projects. Third, all our endeavors would address both the place-specific and larger systems of context, even as each discipline approached the community design with its own practice methods and knowledge-base. And fourth, pedagogy must incorporate the needs of discipline-specific requirements within the context of a larger social and ethical purpose.

The initial work of our teaching project was to establish a primary collaborative bond between “university” and “community”. The larger purpose of community-centered project compelled us to focus outwardly rather than to dwell on disciplinary differences. The Norris Square Civic Association was a very motivated partner, willing to participate actively in the teaching/learning experience. They dedicated a staff member who coordinated the project from their end, and organized residents and the Leaders of other neighborhood institutions to help us to know the Norris Square community and its neighborhood space.

**Identifying Research and Design Questions.**

The faculty chose not to pre-select a specific project or projects but rather saw the beginning of the semester as an opportunity for “problem-seeking” and “place-knowing” investigations that would promote dialogue across disciplines and with the community and would define areas for subsequent creative work. The students undertook initial neighborhood research from their own disciplinary perspectives using familiar methods and languages of expression. Art students sketched and modeled impressions of the neighborhood’s visual culture and filmed interviews with residents. Architecture students set out in neighborhood walking teams, collaged their experiences of the unfolding spatial text, and extracted and mapped patterns. Landscape architecture students documented vacant space and researched criteria for sustainable development. Geography students examined demographic trends, public policies and economic development programs. We shared and interpreted our findings in interdisciplinary sessions moderated by faculty and members of the NSCA and identified a set of questions – or problems – that had emerged from preliminary research.

- How can culture, nature and history be woven together to reinforce the neighborhood identity?
- How can disused space and buildings be re-imagined to serve and reconnect the community?
- What kinds of development will support the interests of the community and forestall gentrification?
- How can the potential of neighborhood schools and other institutional places be maximized to serve the needs of families and children?

**Interdisciplinary Process Parallel Play**

While planning the semester, the faculty had identified various theoretical models of disciplinary interaction that included work conducted in full
interdisciplinary collaborations, in parallel or in sequenced activity, and in trans-disciplinary experimentation. It became clear that the geographic separation of the departments, variations in class schedules, and the limited semester time-frame precluded structurally complex or sustained collaborations, for this round at least. We chose to work in what we called the “parallel play” mode - on self-defined projects that were steeped in a shared base of neighborhood research. Like the developmental psychology concept from which the term parallel play was borrowed, the structure was proto-collaborative, and would yield a set of coordinated, rather than explicitly interdisciplinary projects. Essential to the success of the parallel class structure was a built-in transparency facilitated by frequent cross-disciplinary exchange, allowing the students from the four disciplines to observe the different ways of knowing, the limits of their own discipline’s methodologies and self-critique.

Four Ways of Knowing Space.

How each discipline understood space and site was revealed early in the project. The geography class approached neighborhood space in terms of extrinsic economic, political and cultural forces that impact it. They broadened the collective dialogue as they were more interested than the design and art students in “areas of concern” (with particular sites as potential exemplars) than the spatial construct of a study area [9]. They began by focusing their specific research on rezoning and economic development in Empowerment Zones, of which the American Street industrial corridor was one, and on the questions surrounding gentrification as a consequence of revitalization. For both architecture and landscape architecture students, space was understood as physical reality that required in-site knowledge, but was operated on by means of representational objects. The studios were both dedicated to developing a planning context though which specific coordinated projects could be studied; Landscape Architecture looked at ecological processes that would reinstate natural processes in the urban setting, and Architecture sought to create a coherent tops of educational and community institutions. The art students were also interested in strengthening community institutional fabric and cultural identity. In their work saw no distinction between real space and creative operation: the made object was the thing. They chose two projects that were site-specific and constructed over the semester: a mural in a daycare center and a church kitchen renovation. The former dealt with space as projected imagery, and the latter in as abstract and functional. (Fig. 2)

Fig. 2: Art-making in the community spaces. a) Mural in daycare center, b) Church kitchen renovation.

Boundary Crossings.

As the student groups pursued these projects within their different ways of knowing, they were soon compelled to explore questions that pressed the boundaries of their own disciplines. Boundary-crossings – some negotiated, some confrontational, some intuitive - led to expanded awareness of the creative dimension or ethical implications of the work. These potent interactions fell roughly into three categories: cross disciplinary dialogue and critique that compared alternative approaches and scenarios; appropriation of another discipline’s process and sensibility; and layering of the work of multiple disciplines within a single project.

Cross Disciplinary Dialogue The parable of the seven blind men describing the elephant was played out in early joint presentations. Each discipline was able to see the impact of its disciplinary bias in problem-definition and the strengths and limitations of its particular methods of inquiry and representation.

Landscape versus Architecture.

The neighborhood plans generated by Landscape Architecture and Architecture demonstrated how similar studies produced different results. The landscape studio plan was paean to sustainability - a green carpet that was carefully woven within the precise frame of the site area. It was crafted with a kind of instrumental neutrality that yielded virtually all ground and no figural presence. By contrast, the architecture studio plan was about buildings and locations; students had developed a highly gestural network of institutional events that represented hoped-for connections. As such it alluded to the phenomenological goal of “thinking across” space that might engage flows outside the study area [10]. But it missed the visceral expression of a ground plane that holds the body in space and gives meaning to a concrete experience of place. Neither discipline’s concept had represented the essence of locality, so distanced was their work from the subject. (Fig. 3)
A lesson was learned by problematizing the two approaches. In the subsequent phases of design, each disciplinary group would begin to articulate cross-over questions in concrete spatial terms. Both had begun to see how the interplay of systems and constructed events offered a more dynamic and truer narrative about the inhabited environment.

**Art versus Geography and the Design Disciplines.**

While the design students were exploring neighborhood-scale spatial ideas and the geography students were investigating policy questions, the art students had already begun projects to be executed during the semester. Debate emerged around the value of tangible interventions compared to the work done as speculative projections. The art students actively engaged with teachers and children to create a mural intended to enliven a covered “outdoor” play-space in the daycare with a map and images of the flora and fauna of Puerto Rico. To the design and geography students, the work seemed limited in scope, and the predominance of unmediated, almost nostalgic imagery provided no critical frame in which to situate the work. Was it addressing important social, political or spatial problems? Or was it just simply an alluring illustration? Similarly, to the art students, the urban design proposals and policy questions seemed impossibly abstract and uniformed by the vibrancy of neighborhood culture. Would their work result in “just another study that sits on a shelf gathering dust”?

Debate between disciplinary cultures demonstrated their operational differences and revealed how each group had veered from the initial rules of engagement. The art students, pressed for time, had failed to “address both the place-specific and larger systems of context”. The geography students were looking objectively at the neighborhood as part of a typological condition and the architecture class had not fully emerged from the comfortable surrogate world of in-studio design. Both were avoiding commitment to an “iterative process with the community”.

Thoughtful discussion and course corrections took place. It took some interpretation to recognize that, in fact, context questions about cultural dislocation and place identity were being addressed in the mural. Its imagery operated outside of phenomenal space, but it evoked a destination that was part of the mental map of adults who often travel there and an important mythic place for the children of these traveling adults. Moreover, the community-situated art process had generated energy and immediacy. Seeing this, the architecture and landscape architecture students became preoccupied with engaging the neighborhood children in hands-on thinking about their place, having them map their experience in and around the neighborhood and draw and describe their dreams for their community. The process tapped a rich vein of programmatic and spatial ideas that would bring the human experience to the foreground and give color and dimension the abstract “topos of education and community” concept. (Fig. 4)
A team of geography students researching the consequence of rezoning for non-industrial use concluded that the benefit of maintaining EZ status - but with community participation in its revitalization - was the most economical strategy and would outweigh the disadvantages of its disruptive impact on the neighborhood fabric. Landscape Architecture had proposed a long-term scheme for healing the American Street with a new green corridor and bio-remediation site on the brownfield that would give way to “eco-industries” and large community parks. Architecture had proposed re-envisioning the corridor as a new place of community activity (a library, job-training center, and recreation) that healed a breach in neighborhood space and revitalized it by adding a cluster of destinations that would serve both the local and the district interests. This vision was preferred by the NSCA, because it was community-centered, and unlike the other concepts, aggressively worked the corridor into neighborhood fabric. But it was highly idealized as did not address those non-visible issues of zoning change and subsequent necessary brownfield remediation, or eventual economic impact of precluding a future industrial tax-base. The design students began to see the interconnections among land use, economic development and physical form, and discussion emerged about the changing nature of urban industry and the purposes of zoning in the 21st century. While they did not provide full answers, more questions emerged than might have in a solo discipline and without the presence of a community voice. The geography students argued further that as an unintended consequence the transformation of American Street as an amenity might further fuel gentrification. They had studied the recent rise in residential land values and criticized the community institutional corridor idea as a threat rather than an advantage to the poor residents from the area. A discussion ensued about the conundrum of dystopia versus growth in the revanchist market economy. How can the community improve its physical environment without being undermined by gentrification? Can design either stanch or quicken the flow of gentrification? How could a beautiful place (the Norris Square Park being one such example) belong in perpetuity to those who have struggled to create it? The dialogue inspired this avenue of research for Geography, and their final report proposed strategies combat gentrification, including a real estate tax freeze policy for senior citizens, creating mutual housing associations, and developing a community land trust that could put control over development in the hands of the Civic Association.

Appropriation of Extra-Disciplinary Thought

The techniques and ways of thinking unique to a certain discipline were often borrowed by another to address a problem. These were “associative” border crossings, facilitated by immersion in interdisciplinary exchange. Most visible examples were the appropriation by art of architecture’s client-centered service ethos, and the appropriation by architecture of landscape architecture’s preoccupation with site.

Art as Client-Based Service.

Originally the art students had cherished a notion about the potency of art to speak on behalf of the community and had hoped to make work that was a public expression of political, social or cultural ideas. But countervailing circumstances, including community turf battles over proposed installation sites, an exceptionally cold winter, and the short semester time frame made this conception of a very visible art impossible. So with the community leaders the students selected sites less contested and more protected inside community institutions. Once indoors, art students found that space becomes literally and phenomenally “owned” by a single entity, and they had to adopt a process much more akin to that of the professional architect than to the artist: providing a service to a client, with a deadline for completion, while maintaining a larger vision. The students worked as teams; they had to patiently explain the process, and revise according to the client’s taste; and they needed to repress their egos when things did not go as they desired. Of the two projects, the church kitchen renovation was the antithesis of “pure” art and art-making process: the object-ness and non-functionality of the work of art, and the traditional role of the artist as self-sufficient creator, were both challenged by the humble utilitarian quality of the space to which they applied their skill and vision.

Landscape Thinking In Architecture.

As the architecture students became more attuned to the flows that exist in the inhabited physical world, they began to work with ideas of change over time and continuities of space that are the grist of landscape architecture. They were able to design with understanding of the important reciprocity of indoor and outdoor space in projects that would redress the isolation of the community institutions in the Norris Square neighborhood from their human and natural contexts. And significantly, nearly half of the architectural projects that the students chose to pursue from the neighborhood plan were interventions into existing structures. These built sites were “landscapes” of on-going human activity - the material embodiment of time and the economic flows that had formed and were continuously reforming the community. As Linda Pollak has observed, for architects, the site tends to be that which the building goes in or on, whereas for a landscape architect the site becomes the work. One way to challenge the reductive conception of site in architecture [studio] is to begin with a building as a site [that] facilitates the transference of a more complex sense of site to architecture [11].

A cluster of interconnected architecture projects dealt with educational and recreational facilities – some existing some proposed. One project was the...
expansion of a typically banal 1970's middle school that was inward focused and sat bleakly in a playground fully surfaced with concrete and surrounded by chain link and razor wire. The student's proposal turned the facility inside out, transforming the central core to an open courtyard, extending the building upward and outward creating pockets of play space and a new entrance that reached out to the public. Across the street, and linked to the school's site circulation pattern, other students were proposing recreational facilities. One fragment of the complex was a natatorium, less architecture than web of partial enclosures around a series of outdoor swimming pools that brought the dynamic of light, water and activity to a barren part of the neighborhood. (Fig. 5)

A landscape way of thinking about site resulted from both the association with landscape architecture and the circumstances of being immersed in the community. Here it made little sense to separate projects from existing fabric, open buildings from space, and history from the future.

**Overlapping Projects**

We did not try to force interdisciplinary collaborations. Conversations sprang up and intersections of different disciplinary interests on specific sites produced a more complex ways of looking at the work of place-making. Most notable was the daycare center site: art students were making the mural; an architecture student was developing a design for future expansion of the building; and a landscape architecture student consulted on the proposed outdoor play space. The daycare was a recently renovated small industrial building near the center of the neighborhood. It was a source of community pride, yet it was still unfinished. The site of the mural installation was a rather grim former loading dock and garage that was being used for an “outdoor” play area. The architecture student initiated discussions with the client and discovered that in the next phase the center could expand onto property they owned to create additional classrooms and a more appropriate south-facing play-court. He got assistance from a landscape architecture student for the layout of the outdoor space. He also consulted with the art students about the weather resistance of their mural and proposed a plan for future development of the entry sequence. By removing the roof of the loading dock, the space could be could be transformed into a sunlit planted entry courtyard, a typology intrinsic to Latino culture. The mural, now outdoors, would hold a greater public presence and would become more meaningful - suggestive of the cultural layering in the neighborhood - a garden within a garden, a place within a space.

In this process the students and our community partners, could see how the overlapping of disciplines, and of conceiving of work as part of a temporal continuum could suggest a richer outcome than if presented in disciplinary isolation. The art project – just barely –completed in a semester, might have a more meaningful role as the building evolved spatially, and the promise of a future interdisciplinary collaboration was made in the reconfiguration of the building and its outdoor space. (Fig. 6)

**Beyond Four Ways of Knowing**

The parallel structure of collaboration undertaken by the Urban Workshop was successful in that it provided a loosely fitting framework allowing us to engage related but different disciplines - to appreciate the worship of Sennett’s “different household gods”. Students’ understanding of place complexity was substantially expanded through cross disciplinary dialogue, the appropriation of alternative ways of seeing and knowing, and by a layering of operations in a shared site.

But the Urban Workshop project revealed the extent to which academic work is a kind of short-hand specifically adapted to the intellectual, temporal and spatial structure of university education. The parallel structure was vulnerable to the pressures of time at the end of the semester. Paradoxically, in order to produce complete projects for presentation to each other and to the community, students began to retreat from either interdisciplinary or community engagement. In most cases the time spent on “completion” neither added value to their...
understanding, nor demonstrated new modes of expression.
There is practical and pedagogic value in the parallel structure, but a hybrid approach might better serve the goals of multidisciplinary learning and leave open more intellectual space for the community to engage and to direct outcomes. Research, design, installations or other discipline-specific investigations could be more useful to both student and community partner if brought to closure earlier in the semester. This would allow time for explicit collaborative engagement in a series of reflective small group activities requiring integration of disciplines around very well-defined community-based projects or questions that emerged from earlier parallel activities. For example, the neighborhood plans generated by landscape architecture and architecture might be revisited: how might “continuity” and “event” be integrated in an overall plan? And how would such a composite idea be represented? Or perhaps, the overlapping work at the daycare center might be explicitly developed as a phased set of operations: strategic plan, budget and timeline for implementing the proposed daycare expansion might be devised among architects, landscape architect and artists. Or, the gentrification-resistant community land trust idea might be fleshed out by geography and landscape students who would begin to identify and map vacant lands best suited for acquisition. Each of these exercises would bring purposefully assembled interdisciplinary teams of students back to the community. Armed with understanding and the tools with which to operate they could begin to make work that would have life beyond the time and space of academia.

Despite the complicated and sometimes ungainly process of engaging multiple disciplines in community-based projects, it is critically important to teaching place-making. Our culture’s saturation with disembodied images and information has diminished our ability to know with all the senses, to integrate diverse bodies of knowledge, and to construct ideas from coherent primary experience. Experientially based education can inform the whole body and mind, it can provide an empathic foundation on which ethical decisions are constructed, and set up conditions for purposeful creative thought and action [12]. Ways of knowing that might otherwise be filtered by disciplinary boundaries are called forth around the complex issues in what Merleau-Ponty calls a “lived world”. If the goal of place-making is to provide situation and orientation within spatial and temporal flux, we must be willing to enlist a broad spectrum of knowledge resources and embrace open-endedness of our enterprise.

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