Transformative Learning in Sustainable Education

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Abstract

Designers and educators have a unique role to play in the creation of sustainable futures due to our ability to help people envision new realities, develop new cognitive skills for dealing with complexity and create the social capacity to act on the basis of new knowledge. This paper will describe the theory and practice of transformative learning. Transformative learning aims to build the agency to put new knowledge into practice. Beyond the mere dissemination of information, transformative learning engages participants in dialogical and experiential learning processes with the aim of creating deep learning. Due to the fact that problems with regards to sustainability are both complex and deeply entrenched into our culture, these transformative learning processes are essential for the pedagogy associated with sustainability and ecological literacy. This paper introduces transformative learning and offers a short case study of a ‘Teach-in’ for ecological literacy in design education.

Key words
Sustainability, ecological literacy, transformative learning, epistemology, critical pedagogy, design education
Introduction

Designers and educators have a unique role to play in the creation of sustainable futures due to our ability to help people envision new realities, develop new cognitive skills for dealing with complexity and create the social capacity to act on the basis of new knowledge. This paper will describe the theory and practice of transformative learning and develop the proposition that this pedagogic practice has the potential to transcend the notorious value/action gap that divides our awareness of environmental threats from our capacity to take appropriate action. The paper is based on the practice based doctoral research ‘The Visual Communication of Ecological Literacy’ which uses multimodal design to as part of epistemic or transformative learning processes. Beyond the mere dissemination of information, this work aims to engage participants in dialogic and experiential learning processes toward deep learning experiences by challenging epistemological assumptions. Because the problems concerned with sustainability are both very complex and deeply entrenched into our culture, these deep processes are essential for the learning associated with ecological literacy. Transformative learning is a pedagogic practice developed in consciousness-raising and women’s education in the 1970s. This pedagogy contributed to the massive shift in power relations for women in the twentieth century. The same strategies can now be used to confront contemporary challenges in regard to human relations with the natural world.

Epistemological Error

Alfred Korzybski famously stated “the map is not the territory”. This simple aphorism reminds us that our ideas about reality are not the same as reality itself. In the seminal book Steps to an Ecology of Mind communications theorist and anthropologist Gregory Bateson explained that the dominant map of reality is a poor reflection of reality itself; “most of us are governed by epistemologies we know to be wrong” (Bateon 1972: 493). Epistemological error is a pivotal concept in the construction of the ecologically integrated paradigm that is now emerging as a basis for systemic understanding of current conditions. Ecological thinkers propose that converging economic, social and ecological crises reflects a dysfunctional understanding of reality and basic epistemological error. Reductive modes of understanding are incapable of describing complex ecological, social or economic systems. Problems arise as our perceptual and cognitive modes of thought perpetuate epistemological error, error that is deeply entrenched in contemporary theory and practice. Communication designers and educators have the potential to address these collective misunderstandings through experiential and multi-sensory communication, informed by critical pedagogy. We can move beyond our accustomed way of seeing and thinking using conceptual tools that will allow a new way of seeing and understanding to emerge. New cognitive capacities can be learned, but the processes through which new abilities are developed remain a severe challenge.

Our understanding of reality leads to a particular type of practice in business, finance, culture, education and politics. The notion that the current understanding of reality (or epistemology) is a poor reflection of reality has been described in detail by cultural commentators in multiple fields (Bertalanffry 1969, Bateson 1972, Shiva 1988, Orr 1992, Capra 1997, Spretnak 1997, Sterling 2001, Plumwood 2002, Barabasi 2002, Meadows 2008, McGilchrist 2009). Our way of knowing determines that we are incapable of perceiving systemic interconnections between our problems. Stephen Sterling explains that “the dominant Western epistemology, or knowledge system, is no longer adequate to cope with the world that it itself has partly created” (Sterling 2002: 3). Sterling states that this shift involves moving from
“mechanism, which has dominated Western thinking for over three hundred years to a new organism; from the machine metaphor to the systemic metaphor of ecology” (Sterling 2002: 8). The shift to sustainability requires a shift in epistemological assumptions. This shift can be understood using Bateson's and Sterling theory of learning and communication levels that will be introduced in the next section.

Gregory Bateson explains that the “massive aggregation to man and his ecological system arise out of efforts in our habits of thought at deep and partly unconscious levels” (Bateson 1972: 495). Human consciousness evolved toward instrumental ends to serve human desires, without taking into account our embeddedness within larger ecological systems. The reductive focus is ultimately self-defeating. Our inability to perceive ourselves as embedded within ecological systems is the result of a system of erroneous thought; “There is an ecology of bad ideas, just as there is an ecology of weeds” (Bateson 1972: 492). Epistemological error is not necessarily a serious problem “up until the point at which you create around yourself a universe in which that error becomes immanent in monstrous changes of the universe that you have now created and try to live in” (Bateson 1972: 493). Epistemological error in a technologically advanced society is lethal.

Levels of Learning and Communication

A key to resolving this dilemma is developing a better understanding of how communications and learning works. Gregory Bateson described a framework of learning in The Logical Categories of Learning and Communication in 1964 and developed this work further in 1971 (Bateson 1972: 279). Bateson explains that learning is a communicational phenomenon and that both learning and communication occur at different levels. Bateson’s framework for learning distinguishes between levels of abstraction. These ideas have proved valuable for subsequent communication theorists and educators. Stephen Sterling’s interpretation of Bateson’s work maps the four levels of learning in a trajectory from no learning to deep learning. Sterling describes a four-stage process in sustainability education:

Levels of Learning and Communication (Stephen Sterling, 2001)

- No change (no learning: ignorance, denial, tokenism)
- Accommodation (1st order - adaptation and maintenance)
- Reformation (2nd order learning - critically reflective adaptation)
- Transformation (3rd order learning - creative re-visioning) (Sterling 2001: 78)

Epistemic learning occurs in the higher orders of learning where review of basic premises occurs. Sterling maintains that for sustainability to become possible, third order epistemic or transformative learning must occur (Sterling 2001: 79). This third order learning is necessary such that systemic understanding becomes commonplace and the capacity for embedding ecologically positive practices into structurally unsustainable systems becomes possible. Education for sustainability must transcend the traditional transmissive learning approach (first order learning) because information alone does not necessarily lead to change (Sterling 2001). He explains that; “not only does it not work, but too much environmental information (particularly relating to the various global crises) can be disempowering, without a deeper and broader learning process taking place” (Sterling 2001: 19). Environmental communications and education require deeper engagement processes than mere dissemination of information; both communication theorists (Crompton 2010) and educators (Sterling 2001, Kahn 2010) ascribe to this basic precept. The next section explains how transformative learning theory and practice facilitates epistemic learning for sustainability and ecological literacy.
Transformative Learning

Transformative learning (TL) engages an ecological view of education that is relational, holistic, participatory and practical. Transformative learning involves becoming aware of one’s assumptions in order to address issues from a critical perspective and take action on the basis of new knowledge. While transformative learning is a process with the potential to transcend the notorious value/action gap that divides our awareness of environmental threats from our capacity to take appropriate action, it remains a severe challenge due to the fact that individuals are often intensely threatened by the prospect of re-examining accepted norms of beliefs and behaviour. Transformational learning is complete when an individual is able to act according to beliefs he or she has validated through critical reflection. The journey to a place of agency is by no means an assured outcome. As the consequences of not addressing basic premises become more obvious (i.e. the ecological crisis continues to become more severe and irreversible), perhaps the journey through TL will start to appear like the more benign option.

Endeavors to create conditions that will develop an awareness of context and power, of political consciousness and the potential for social action have at least a fifty-year trajectory in adult education. Transformative learning involves a process of increasing an individual learner’s capacity for change. Attempts to design processes of transformative learning might not always succeed, but there is evidence of progress in over 150 doctoral dissertations and hundreds of scholarly papers that map the territory (Kitchenham 2008: 120). Jack Mezirow’s Ten Phases of Transformational Learning was first published in 1978. Mezirow’s transformative learning theory is based on extensive research in a 1975 American nationwide study of consciousness-raising in women education, a study that sought to explain the unprecedented presence of women in higher education (Mezirow 2009: 19).

Mezirow identified phases most often encountered during the learning processes women experienced as part of their empowerment process. These experiences resulted in profound shifts in women’s capacity to take action on the basis of their new beliefs. Along with the women’s movement in adult education, Jack Mezirow was influenced by Thomas Kuhn’s work on ‘paradigms’ (1962), Paulo Freire’s concept of ‘conscientisation’ (1970), and Habermas ‘domains of learning’ (1971) (Kitchenham 2008; Mezirow 2009). Mezirow describes transformative learning as a process of “becoming critically aware of one’s own tacit assumptions and expectations and those of others and assessing their relevance for making an interpretation” (Mezirow and Associates 2000: 4). This process is informed by a critical awareness of contextual, biographical, historical and cultural aspects of our collective beliefs and feelings in regard the problems under examination. Transformative learning “enables us to recognize, re assess, and modify the structures of assumptions and expectations that frame our tacit points of view and influence our thinking, beliefs, attitudes and actions” (Mezirow 2009: 18). Through critical reflection we learn to “act on our own purposes, values, feelings, and meanings rather than those we uncritically assimilated from others” (Mezirow 2000: 8). Learners develops greater agency as they become more emotionally capable of change. The results are evidenced in reflective discourse and in ultimately in action.

A goal of transformative learning is perspective transformation. Educational researchers suggest that perspective transformation is often the result of a disorienting dilemma triggered by a life crisis or major life transition (Mezirow 2009). Bateson, in an exploration of the processes used by Alcoholics Anonymous, described the event of “hitting bottom” that is seen as an essential catalyst for addicts to start a process of change within the AA method (Bateson 1972: 312). Perspective transformation can also result from an accumulation of transformations over a period of time, such as interventions within education. Perspective transformation enables a
revision of our taken for granted ‘frames of reference’. A frame of reference is the manner in which we make meaning; it reflects a cultural paradigm. Frames of reference are both ‘habits of mind’ (socio-linguistic, moral, epistemic, philosophical, aesthetic) and the resulting points of view (Mezirow 2000: 17). Frames of reference are significant for designers and educators because they describe the basis on which learners make sense of communications.

Transformative learning is a difficult process because the prospect of re-examining accepted norms of behaviour, beliefs and frames of reference can be frightening. Mezirow describes transformative learning as “often an intensely threatening emotional experience in which we have to become aware of both the assumptions undergirding our ideas and those supporting our emotional reactions to the need to change” (Mezirow 2000: 7). Transformative learning can challenge our sense of self and our identity; “who we are and what we value are closed associated. So questions raised regarding one’s values are apt to be viewed as a personal attack” (Mezirow 2000: 18). The impasse within education for sustainability is found in this deadlock. The result is that we continue to add new theories onto dysfunctional frames of reference rather than do the much harder work of re-examining our problematic basic assumptions. Epistemological error is then perpetuated through communications and education.

Sterling suggests that transformative learning might only be possible for a minority of learners but even this might be adequate to provoke a transition towards sustainability. Sterling explains; “short of social or ecological catastrophe, transformative learning is unlikely to occur beyond a ‘significant minority’ but this might be sufficient to help generate wider second order learning, a questioning of values, in any particular learning context” (Sterling 2003: 22). Bateson also suggests that higher-level learning is “difficult and rare” (Bateson 1972: 302). Arguably, if ecologically literacy hit a critical mass, less severe and demanding learning could effectively disseminate sustainable practice on a wider level.

**Ten Phases of Transformational Learning**

Mezirow’s *Ten Phases of Transformational Learning* (1978) identified these phases as most often encountered during transformative learning processes:

- **Mezirow’s Ten Phases of Transformative Learning**
  1. A disorienting dilemma
  2. Self-examination
  3. A critical assessment of assumptions
  4. Recognition of a connection between one’s discontent and the process of transformation
  5. Exploration of options for new roles, relationships and actions
  6. Planning a course of action
  7. Acquiring knowledge and skills for implementing one’s plans
  8. Provisional trying of new roles
  9. Building competence and self-confidence in new roles and relationships
  10. A reintegration into one’s life on the basis of conditions dictated by one’s new perspective. (Mezirow 2009: 19)

Within my practice-based research I have used these phases as I guide to design transformative learning processes. Modified for the purposes of sustainable design education, the ten steps are described below:
Ten Phases of TL for Sustainable Design Education
1. Confrontation with data regarding the environmental crises.
2. Self-examination of personal attitudes in regards to environmental crisis.
3. A critical assessment of assumptions and basic premises.
4. Recognition of discontent and possibilities for transformation.
5. Exploration of sustainability in a social learning context.
6. Planning a learning process for sustainability literacy.
7. Acquiring new knowledge and skills needed in new sustainable industries.
8. Developing new sustainable methods of working and living.
9. Building confidence to actively promote sustainability.
10. Reintegration into one’s life based on ecologically literate perspective.

Using these ten phases as a guide, I designed transformational learning processes as part of an action research processes. Recognizing that within environmental communication and education, practice is constrained by the systems within which it is embedded (these being the broader educational system, and this within the larger social system), communicators and educators need to work to towards transforming institutions and communities while facilitating personal learning experiences. This process is based on the concept that learning will need to happen on multiple levels; i.e. personal, institutional and within the wider social order, for sustainability to become emergent.

A Case Study: The Teach-in

The 2012 Imperative Teach-in was launched in the first phase of my doctoral research as an action research project that aimed to create change in the process of doing research. The teach-in was produced by EcoLabs with the help of grants from the Network for Social Change and the CETLD at the University of Brighton. The explicit goal was to embed ecological and sustainability literacy in design education. The Teach-in itself took place on the October 10th 2009 in a large lecture theatre at the Victoria and Albert Museum (V&A) in London. The Teach-in attempted to engage students with real problems within their own universities as part of a transformative learning process.
In preparation for the event, a panel of twelve lecturers from six different universities served as advisors and developed the Teach-in content collaboratively over a series of meetings. At these meeting we first established some general goals for the Teach-in by answering three questions (answers posted on the Teach-in Ning website: http://teach-in.ning.com/profiles/blogs/brainstorm-what-would-design).

Q1: What would design education look like in a sustainable world?
Q2: What do we need to do to get from here to there?
Q3: What is the best thing the teach-in could do to help this process?

Figure 3: Answers to questions.

These meetings were organized horizontally using consensus processes for the decision-making, explicitly attempting to bring activists strategies into an academic context to elicit greater engagement. We chose Aldo Leopold’s ‘Land Ethic’ as a key text and identified other concepts which were later written up as the ‘2012 Imperative’ document. Speakers were chosen on the basis identified objectives.

The Teach-in was advertised widely as a student conference and 275 people attended the event. These were mostly groups of design students from half a dozen local universities. Meanwhile the entire event was broadcast live online at various universities where organized mass viewings were arranged. All design disciplines were represented in the organizing committee and/or the audience: architecture, product design, fashion design, service design and communication design. The project explicitly aimed to work beyond traditional disciplinary silos and open the scope of design problems and possible solutions.

Figure 4 and 5: Small group discussions.
The event itself took place in an auditorium and also in an outside space where small group discussions took place. The day started with presentations on climate change, ecological literacy, and ecological economics. Between speakers, John Thackara engaged the audience in discussion.

Graphics communicated dominant themes and these were incorporated into handouts and presentations. Visuals aimed to help learners consider the implications of interconnected and interdependent systems, as well as develop an understanding of the ecological limits.

Figure 6: Good design triangle in flower.

Figure 7: Triangle of embedded systems with labels.
Various speakers introduced the notion of paradigm shift towards a whole systems perspective. The conceptual and practical implications of this shift were explored. Presentations were interspersed with small group discussions and exercises designed to initiate critical reflection. Discussion space demonstrated how feelings of despair regarding ecological crisis are shared. Large group discussions made space for some of these reactions to be articulated.

Towards the end of the day, two proposals were presented:

1- The **2012 Imperative** aimed to embed ecological literacy into the curriculum. The document was based on Aldo Leopold’s *Land Ethic* as guidance for an ethical and ecologically informed orientation to design education.

2 - A *Ten-Step Checklist* aimed to initiate carbon reduction programs at local institutions. Institutions were encouraged to sign up to a programme to reducing carbon emissions by 10% in 2010. Time was allocated for small group discussions on these action points.

These initiatives challenged participants to work towards embedding ecological and sustainability literacy into the curriculum at their own institutions while also attempting to transform university facilities to reflect good environmental practice. The Teach-in aimed to catalyze a movement for change in design education and encourage collaboration in the design of a sustainable educational paradigm. The initiatives were open to be adapted to local institutions although there are common themes such as carbon reductions that every institution needs to address. One problematic issue that became apparent was how individuals attempted to dismiss carbon reductions as not relevant for their own institution. Ecologically literacy is built on the premise that it is an ethical imperative to protect the relative stability of the climate system. We must leave ecological systems capable of supporting future generations. Failing to reduce carbon emissions locally is therefore no longer an ethically benign choice. Denial strategies come in many different guises and educators must be wary of allowing diversion tactics to circumvent agenda for transformation to sustainable levels of carbon.

A social network was established on-line to share information after the event. Videos of presentations and other resources are posted on the project website. For more information see the project websites: [http://teach-in.ning.com](http://teach-in.ning.com) and [http://www.teach-in.eco-labs.org.uk](http://www.teach-in.eco-labs.org.uk). Evaluation of the Teach-in process was accomplished by three different surveys and feedback forms distributed both before and after the event.
Feedback and emails have been received from participants throughout the project. Surveys demonstrated a strong desire amongst participants to address sustainability but also indicated that important concepts associated with sustainability literacy were unfamiliar to many participants.

While responses to the Teach-in itself were over-whelming positive, the project has obviously not been able to ‘embed ecological literacy in design education’. One event is unlikely to transform design education but repetitive and sustained attempts at transformative learning just might. Although the event failed to catalyze the required action in design education, it is possible that seeds have been sown for deeper explorations and transformations. From this first experiment four principles of transformative learning for ecological and sustainability literacy were developed.

**Transformational Learning for Sustainability Literacy**

**Trans-disciplinarity**

Transformative learning processes must be designed to cross-disciplinary boundaries to engage whole systems, integrative approach and enable understanding of connections and relationships between issues.

**Participation**

Environmental values are not fixed, but emerge out of ‘debate, discussion and challenge, as people encounter new facts, insights and judgments contributed by others’ (Owens 2000: 1145). Environmental values, like other cultural priorities, are learned attitudes. New values and behaviours cannot be disseminated if imposed from above but sustainability and ecological literacy could be realized through a substantial process of engagement using participatory processes.

**Values**

Ecology demonstrates that our actions have implications well beyond our immediate sphere of interactions. Ecological understanding reveals that widening our sphere of concern to include the natural world is a geophysical imperative for human survival over the long term. We have a responsibility to confront value systems that fail to prioritize the maintenance of ecological stability and planetary health.

**Action**

Transformative learning is complete when an individual is able to act according to beliefs he or she has validated through critical reflection. The journey to a place of agency is by no means an assured outcome but without action the learning process is incomplete. While solving a problem might be well beyond the capacity of any one individual, the goal of transformative learning is to help learners become capable of participating in a process of change. Theories about change divorced from action are worse than useless because they promote cynicism and hypocrisy. Educator Paulo Freire claims;

> an inauthentic word... results when a word is deprived of its dimension of action, reflection automatically suffers as well; as the world is changed into idle chatter, into verbalism, into an alienated and alienating 'blah'. It becomes an empty word, which cannot denounce the world, for denunciation is impossible without a commitment to transform, and there is no transformation without action (1970, 68).

Transformative learning aims to help learners develop the capacity to put new ideas into practice. This focus on action addresses the value action / gap in sustainable education. This paper proposes that transformative learning has the potential to address perceptual and epistemological errors, thereby creating a foundation for systemic understanding. Bateson called for; "a shift in our way of seeing... to affirm
the complexities and mutual integration” (Bateson and Bateson 1988:176). Communication designers and educators can help this with this shift by working with perception and cognition to address these key problems.

Conclusion

Our current way of knowing determines that we are incapable of perceiving systemic interconnections and therefore ill prepared to deal with the complexity presented by converging ecological, social and economic problems. Supporting a worldview that describes our complex interdependency with the natural world, a whole systems and ecological paradigm is necessary to underpin effective practice across disciplines. Ideas presented in this paper resonate with the deep ecology approach originated by ecophilosopher Arne Naess. The term ‘deep ecology’ refers to a movement engaged in deeper questioning of “every economic and political policy in public…It asks ‘why’ insistently and consistently” (Naess 1985: 195). Harold Glasser explains that the ‘depth’ metaphor refers to the level of problematizing towards all “practices, politics, values and assumptions that propel the ecological crisis” (Glasser 1985: 205). The deep ecology approach is focused on praxis. This work is relevant for designers who are also engaged with practice and whose work impacts the environment. Communication design is uniquely placed at the intersection of disciplines to help facilitate learning processes. Innovative processes combine communicative and pedagogic practices. Transformative learning has developed over the past thirty years and now offers a comprehensive toolkit and conceptual framework to inform a transformation in design to support sustainable practice.

Bridging the value / action gap is a challenge for sustainability communicators, designers and educators. There remains a great distance between accepting something as an intellectual truth and perceiving, thinking and acting according to this position. David Orr states:

The study of environmental problems is an exercise in despair unless regarded as only the preface to the study, design and implementation of solutions. The concept of sustainability implies a radical change in institutions and patterns we have come to accept as normal (Orr 1992: 94).

Orr holds that apathy can be bred by institutional practices that fail to act according to sustainable principles; “students learn that it is sufficient only to learn about injustice and ecological deterioration without having to do much about them, which is to say, the lesson of hypocrisy” (Orr 1992: 104). Moral development requires educators help learners engage with real problems (Orr 1992: 105). Disengagement, rationalized through relativism can make powerful educational institutions complicit with the great tragedies unfolding in the natural world. The imperative to leave ecosystems healthy for the next generation is a biological imperative for survival and must become a normative position within academia and design. This value must be made explicit at every level and become the basic principle for prioritizing thought and action. In 1972 Bateson wrote; “The organism that destroys its environment destroys itself (Bateson 1097: 457) nearly forty years later it is about time that our actions start to reflect this basic fact.
References


