

Chapman University

## Chapman University Digital Commons

---

Education Faculty Articles and Research

Attallah College of Educational Studies

---

11-24-2020

### **Contextualizing our Leadership Education Approach to Complex Problem Solving: Shifting Paradigms and Evolving Knowledge: Priority 5 of the National Leadership Education Research Agenda 2020–2025**

Rian Satterwhite

Ariel Sarid

Carolyn M. Cunningham

Elizabeth Goryunova

Heather M. Crandall

*See next page for additional authors*

Follow this and additional works at: [https://digitalcommons.chapman.edu/education\\_articles](https://digitalcommons.chapman.edu/education_articles)



Part of the [Curriculum and Social Inquiry Commons](#), [Educational Leadership Commons](#), and the [International and Comparative Education Commons](#)

---

---

# Contextualizing our Leadership Education Approach to Complex Problem Solving: Shifting Paradigms and Evolving Knowledge: Priority 5 of the National Leadership Education Research Agenda 2020–2025

## Comments

This is the accepted version of the following article:

Satterwhite, R., Sarid, A., Cunningham, C.M., Goryunova, E., Crandall, H.M., Morrison, J.L., Sheridan, K. and Miller, M. (2020). Contextualizing our leadership education approach to complex problem solving: Shifting paradigms and evolving knowledge: Priority 5 of the National Leadership Education Research Agenda 2020–2025. *Journal of Leadership Studies*, 14, 63-71.

which has been published in final form at <https://doi.org/10.1002/jls.21717>. This article may be used for non-commercial purposes in accordance with [Wiley Terms and Conditions for Self-Archiving](#).

## Copyright

University of Phoenix

## Authors

Rian Satterwhite, Ariel Sarid, Carolyn M. Cunningham, Elizabeth Goryunova, Heather M. Crandall, James L. Morrison, Kate Sheridan, and Whitney McIntyre Miller

---

## **2020-2025 National Leadership Education Research Agenda**

### *Priority 5 - Understanding & addressing complex problems*

#### **Problem/Impetus**

Complex problems characterized by uncertainty, interconnectedness, poorly defined goals, and high risk are not new to the human experience. Yet we are increasingly faced with multifaceted and pervasive global challenges, and leadership education must adapt accordingly. These complex problems transcend national borders and frequently require a collective, adaptive, and iterative learning response. Complex problems such as failure to act on climate change, unemployment, food crises, national (and global) governance failures, pandemics, cyberattacks, and involuntary migration are interrelated challenges that require paradigm shifts in our responses and in our leadership (Global Risk Report, 2020).

Solving complex problems requires continuous learning — asking the right questions rather than rushing in with answers borrowed from contexts that do not translate (Grint, 2005; 2008; 2010). Failure to operate in this way results in challenges ranging from actions not matching the urgency of data, lack of awareness of the broader context, operating from false assumptions that become hard to dislodge, and holding to an initial plan despite poor evidence or support (Ramnarayan & Schaub, 1997). Complex problem solving requires iterative knowledge acquisition and application, and a structure that will support adaptive planning and response. Dörner & Funke (2017) assert that, “Creative combinations of knowledge and a broad set of strategies are needed. The problem-solving process combines cognitive, emotional, and motivational aspects, particularly in high-stakes situations. Complex problems usually involve knowledge-rich requirements and collaboration among different persons” (p. 6).

Flexibility, continuous learning, and the ability to question core assumptions are fundamental capacities that leadership education should be striving to nurture in learners. We can gain much by examining ways in which our current systems - and systems of thinking - do not serve our goals. Important and underutilized sources of knowledge for addressing these complex global problems are rooted in indigenous and non-western perspectives as well as within nature. As we seek to bring diverse sources of wisdom and resources to bear, we would be well served by centering and uplifting these sources of knowledge. The success and wellbeing of our interdependent world is contingent upon our ability to adapt our individual and collective thinking, behavior, and relationships to effectively resolve, mitigate, or adapt to the complex problems that we face. The ability to transgress and, at times, disrupt boundaries is also crucial.

A number of organizations, including but not limited to, the United Nations, the World Bank, the World Economic Forum, the European Commission, and the Gates Foundation, are focused on developing solutions for complex and interlinked issues that defy traditional categorization. A common element linking most of these diverse subjects is sustainability. For instance, the 2030 Agenda for Sustainable Development adopted by the United Nations member states, identifies 17 goals related to economic growth, social inclusion, and environmental protection as a shared blueprint for global partnership to build peace and prosperity for people and the planet, now and into the future (UN, 2015). According to UNESCO, the realization of the 2030 Agenda for Sustainable Development relies on the leadership and contribution of informed citizens, including in the areas of peace promotion, conflict prevention, inclusion, and social cohesion (UNESCO, 2019).

Shriberg (2012) asserts that sustainability leadership *is* 21st century leadership. In this spirit, we submit that sustainability is *an exemplar and representative complex problem*; it is

both a purpose and method, a process and outcome, and it incorporates a crucial duality of deconstruction (critique) and reconstruction (hope and action). Sustainability as both purpose and method bridges and integrates multiple discourses within leadership: theory and practice; technical and social; adaptive and positional; leader and follower; ethical and practical; collective and individual.

Embracing a sustainability leadership approach prepares us to tackle other complex problems. It advances a transferable set of concepts, competencies, and skills applicable to a range of complex challenges. We assert that ten interrelated learning areas emerge from the literature exploring sustainability, complex problems, and leadership:

- Centering the biosphere as a fundamental context of leadership; integrating/reconciling anthropocentric and ecocentric ethics (Evans, 2011; Redekop, 2010; Redekop et al., 2018; Satterwhite, 2010, 2018; Schein, 2017)
- Collaborating across boundaries (e.g., Senge et al., 2008)
- Developing systems literacy, and by extension understanding leadership to be the capacity of a system or community (Satterwhite, 2010; Senge, 2006; Senge et al., 2008; see also: Capra & Luisi, 2014; Meadows, 2008; communal, relational, and distributed leadership)
- Employing critical social theory (Redekop et al., 2018; Western, 2013; see also: Collinson, 2020; Dugan, 2017; Preskill & Brookfield, 2009)
- Expanding our time horizons (i.e., inter-temporality) (Satterwhite et al., 2016)
- Increasing comfort with uncertainty and shifting contexts (Heifetz, 1994; Sheridan et al., 2019)
- Learning from nature (Allen, 2019; Allen et al., 1998; Redekop et al., 2018)

- Moving from reactive problem solving to co-creating our desired future (Senge, 2006; Senge et al., 2008; Scharmer & Kaufer, 2013; see also: Kuenkel, 2016)
- Nurturing adaptive capacity in our systems and communities (Heifetz, 2006)
- Revisiting, centering, and learning from indigenous and non-western traditions (Andrews, 2018; see also: Bordas, 2012; Chin et al., 2018; Maragia, 2006; Redekop et al., 2018)

These learning areas are immediately relevant to addressing complex problems. To further scaffold this approach, we argue that centering sustainability in leadership education yields the following core principles: 1) *Leadership education and development must focus equally on individual and systems capacity building*, 2) *Leaders must model active learning, act as co-educators, and operate with an open mind from a place of inquisitive learning* and 3) *Leaders must question and actively dismantle assumptions and structures that stifle justice and sustainability*. These principles represent a paradigm shift - a fundamental reordering - in how leadership education is conceived of, researched, and practiced. Leadership education - anchored in sustainability, grounded in these principles and constructed through the use of the ten learning areas - can become a powerful contributor to the development of informed global citizen leaders with agency and capacity to effectively understand and address complex challenges.

### **Methodologies**

Leadership scholars and practitioners must expand ways of examining and understanding complex problems. While qualitative work has built a more nuanced understanding of complex leadership challenges, and mixed methods provide a more multifaceted view, these only begin to cover some of the intricacies of complex leadership questions, and are ultimately unsatisfactory,

by themselves, when centering sustainability in leadership. To understand and address complex leadership challenges, we must expand our methodological toolkits.

**Advocacy/Activism Methodologies:** It is essential that diverse voices, ideas, and worldviews are heard and included. Doing so requires that we root the work in power and privilege analysis. This also challenges us to move the acquisition of knowledge from a transaction between researcher and participant to a co-creation of knowledge. Practices such as indigenous methodology (Kovach, 2010); culturally-responsive methodology (Berryman et al., 2013); community-based participatory research, including asset-mapping and other community-led observation practices (Johnson, 2017; Stoecker, 2013); and action research (Patton, 2002; Saldana & Omasta, 2018) can help inform and expand this shift in practice towards advocacy and activism research.

Methodologies must also be responsive to the reality that social media connect us globally. These digital media create networked public spheres that have potential for mobilization (Castells, 2015), opening access to diverse perspectives and marginalized voices. Hashtag activism, for example, organizes information from disparate counterpublics creating new meanings and ways of interacting with information (Crandall & Cunningham, 2016). Additionally, social network analysis connects communities and allows for data collection to inform decision-making.

Further, scholars and practitioners need to consider how to disrupt norms of existing systems to adapt to the uncertainties communities face. Engaging with methodologies from new social movement scholarship (Foust et al., 2017) can develop leadership skills and competences required to meet emergent, complex challenges.

**Big Data and Visual Methodologies:** Visual methodologies can also broaden ways of understanding and approaching complex problems. The visual operates affectively (Brunner & DeLuca, 2016) and images can move people to action. Leadership in this context requires knowledge of how different groups of people understand and value sustainability, so methods about meaning making and issues of power and identity are useful (Asen, 2000; Brouwer, 2006; Fraser, 1990; Warner, 2002).

Emerging visual methodologies for sustainability leadership must include data visualization, which are tools of persuasion to help leaders communicate the complexity of problems (Herring et al., 2016; Newell et al., 2016). Big data and artificial intelligence may allow leaders to comprehend complex problems and form responses (Parry et al., 2016). How data is perceived and presented, such as through visual or arts-based methods (Cahnmann-Taylor & Siegesmund, 2008; Leavy, 2015), may also help enlist a broader audience to engage complex leadership challenges.

It is important to note that relying on change to be driven primarily by technology may result in severe ethical challenges. Relying on machine learning - such as artificial intelligence - over individual behavior when initiating solutions may result in a misplacement of values as to the worthiness of human input into the decision-making process. Thus, balancing human discernment with technological capacity is both a value and an area requiring additional research.

**New Materialism Methodologies:** New materialism, or object-oriented ontology, is an additional emerging postmodern area of study relevant to understanding complex problems such as sustainability because it values the non-human. New materialism views matter as active, and as such, it has influence (Sencindiver, 2017, para. 1). Leadership scholars may do well to expand assumptions of agency and influence to include the human and non-human alike.

## **Outcomes**

Sustainability is closely linked to community capacity building (Goodman et al., 1998), and both hinge on partnerships between academics and community advocates in order to design feasible solutions to complex societal issues. In this spirit, leadership education scholars must advance the theory *and* practice of leadership towards the following fundamental outcomes:

**1. Interdisciplinary Sustainability Leadership Curriculum.** Substantial scholarly work has identified core competencies and created a coherent education framework for a sustainable future (Sheridan et al, 2019; Wiek et al., 2011). The proposed deliberately interdisciplinary approach - a convergence of science and social intelligence (Hawken, 2008) - enables the development of leaders, and leaderful systems, capable of collectively addressing the complex challenges of a dynamic global environment, while centering social justice and environmental sustainability. Yet research outcomes for advancing effective leadership have, to this point, been primarily developed and assessed based on Western values. According to Kellerman (2018), the world cannot advance civilization by promoting or elevating people to significant leadership roles primarily based on alignment with social structures typically associated with neoliberal Western values such as privilege, money, title, or charisma. Eagly and Chin (2010) suggest that cultural, social, and economic diversity as well as different types of societies require new forms of scholarship.

We propose three pillars of a future curriculum advancing sustainability as a core facet of leadership, complimentary to the aforementioned principles and learning areas:

Nurturing a global citizenship mindset including care for the world, inter-temporality, and inclusion: Improving upon partial, fragmented, and limited assumptions in favor of knowledge-based, community-grounded, holistic, and ethical decision-making processes.

Enhance social perspective-taking as a foundational outcome of leadership education curricula (Dugan et al., 2014).

Focus on horizontal and vertical development: Design experiences to enhance knowledge, skills, and competencies, as well as the capacity for complex meaning making (see Cook-Greuter, 2004; Petrie, 2011, 2014, 2015). Societal perspectives and customs related to tolerance, openness, power, ethics, etc., differ within multicultural and multiethnic organizations. A balanced approach to these perspectives should inform the behavior of future leaders, thus strengthening their capacity to bring about feasible change.

Developing complex problem-solving skills: Effective and inclusive complex problem solving — spurred by systems thinking that involves a creative combination of knowledge (such as specific problem domain expertise, technology, and artificial intelligence), broad strategies (such as consensus building & multidisciplinary approaches), and collaboration (facilitated in a team environment).

**2. Publications of innovative research** on leadership education that centers sustainability in books and scholarly journals.

**3. Newly developed global interdisciplinary sustainability leadership forum** (with affiliated scholarly journal) for scholars, educators, leaders, and community advocates to share innovative research and evidence-based practices. Partnership with existing forums actively shaping policy and practice for sustainable development and its leadership (such as The World Business Council for Sustainable Development, WBCSD).

**4. Partnerships with major global entities** recognized for a multi-sector approach and focus, with sustainability, systems change, and justice as central tenets of the partnership. This

will include international governmental and non-governmental organizations as well as private foundations. Such partnerships will enable leadership scholars to draw upon these organizations' existing resources and field expertise to identify and implement effective sustainable leadership strategies for complex problem-solving in a continually changing global environment, as well as actively engage in pursuit of multi-institutional grant opportunities.

**5. Partnerships with representatives of the global community:** recognizing and nurturing a growing network of civil society organizations that come together in a systemic, distributed, and grass-roots approach to solving sustainability and social justice issues (see: Hawken, 2008).

### **Future considerations**

Leadership education centering sustainability will have a profound impact on how leadership is enacted, communities develop, organizations operate, and education evolves. Ultimately, it will prepare learners, communities, and organizations to develop, engage, and apply new knowledge and new ways of thinking to better understand and address complex problems. Within this paradigm, leaders will act as educators, brokers-of-learning, and facilitators of meaningful learning processes within and among social networks, organizations, and society at large. This mindset can be defined through cognitive, affective, and behavioral outcomes.

**Cognitive:** Sustainability leadership requires awareness of the direct and indirect effects of globalization on organizations and communities. This global citizenship mindset will demand greater diversity of thought and a deeper knowledge base to understand global issues and crises, the effects of digital culture, and global economics. Leadership will become more flexible and adaptive (Yukl & Mahsud, 2010), expressed by cognitive complexity and openness to learning,

systems-thinking, increased social intelligence, and critical self-awareness, allowing leaders to effectively develop emergent responses based on feedback within complex adaptive systems. *Knowing* is characterized by the deeply embedded (and embodied) wisdom of natural systems, joined with the co-creation of new knowledge within communities and systems. Leaders will also gain knowledge in the fields of ethical theory, social justice, and design theories. An expanded and increasingly complex value-system will also be critical areas of knowledge.

**Affective:** Sustainability leadership presupposes an enhanced critical social consciousness, which concerns not only awareness to issues of marginalization, discrimination, and human suffering (an ethic of care and social justice), but necessarily involves a positive (rather than despairing) and proactive (rather than merely responsive) approach. It empowers individuals to collectively transform communities and organizations for the better. Change is often an emotional process, and leadership researchers must examine emotionality in greater depth as individuals learn to live amongst global complex problems. The interwoven patterns of social, environmental, and economic injustice will become a critical context through and for which leadership is enacted. Leaders and communities will think in dilemmatic terms, exhibit empathy for the circumstances of others, build resilience, and prioritize collaboration in order to develop more holistic responses.

**Behavioral** Leaders will engage in organizational and community capacity-building and shared decision-making, so that leadership is consistently a responsibility and capacity of groups or systems, rather than the domain of a select few. Leaders will become adept at balancing technology as a tool for understanding and driving change, with the fundamentally ethical and ecological aspects of complex global challenges.

A sustainability leadership framework has the potential to transform society by effecting deep (i.e., systemic) and equitable change, enabling new futures to be envisioned and enacted, empowering and activating citizenship in new ways, and addressing global challenges. Sustainability leadership calls for a more transdisciplinary approach to both the preparation of leaders and practice of leadership, as well as the framing of complex problems through integrative and co-dependent lenses.

Sustainability leadership calls leadership scholars and educators to address emerging themes and employ methodologies consistent with these themes. It calls higher education institutions to integrate sustainability leadership themes in various disciplines, particularly connecting leadership education to educational studies. It calls scholars and researchers to create new forums for presenting research and for exchanging ideas. It calls leadership development programs to incorporate sustainability leadership as a central mindset. It calls for reorienting our worldview to perceive global economic, environmental, and human systems not as competing and discrete but complementary and co-dependent. It calls for us to lean into the ambiguity, knowledge gaps, and uncomfortable complexity that characterize sustainability leadership. It calls for these things in order to effectively prepare leaders to shape organizations, institutions, communities, and society in ways that center human and environmental prospering that is rooted in the wisdom of our shared history and ensures a sustainable future for generations to come.

## References

- Allen, K. (2019). *Leading from the roots: Nature-inspired leadership lessons for today's world*. Morgan James.
- Allen, K., Stelzner, S., & Wielkiewicz, R. (1999). The ecology of leadership: Adapting to the challenges of a changing world. *Journal of Leadership & Organizational Studies*, 5(2), 62-82. <https://journals.sagepub.com/doi/pdf/10.1177/107179199900500207>
- Andrews, S. (2018). We don't conquer mountains, we understand them: Embedding indigenous education in Australian outdoor education. In B. Redekop, D. Gallagher, & R. Satterwhite (Eds.), *Innovation in environmental leadership: Critical perspectives* (pp.198-212). Routledge.
- Asen, R. (2000). Seeking the "Counter" in Counterpublics. *Communication Theory*, 10(4), 424–446. <https://doi.org/10.1111/j.1468-2885.2000.tb00201.x>
- Berryman, M., SooHoo, S., & Nevin, A. (Eds.). (2013). *Culturally responsive methodologies*. Emerald Group Publishing.
- Bordas, J. (2012). *Salsa, soul, & spirit: Leadership for a multicultural age*. Berrett-Koehler Publishers.
- Brouwer, D. C. (2006). Communication as counterpublic. In J. St. John, G. J. Shepherd, & T. Striplhas (Eds.), *Communication as...: Perspectives on Theory* (pp. 171-177). SAGE Publishing.
- Brunner, E. A. & DeLuca, K. M. (2016). The argumentative force of image networks: Greenpeace's panmediated global detox campaign. *Argumentation and Advocacy*, 52(4), 281-299. <https://doi.org/10.1080/00028533.2016.11821875>

- Cahnmann-Taylor, M., & Siegesmund, R. (Eds.). (2008). *Arts-based research in education: foundations for practice*. Routledge.
- Capra, F. & Luisi, P. L. (2014). *The systems view of life: A unifying vision*. Cambridge University Press.
- Castells, M. (2015). *Networks of outrage and hope: Social movements in the internet age* (2nd ed.). Polity Press.
- Chin, J. L., Trimble, J. E., & Garcia, J. E. (Eds.) (2018). *Global and culturally diverse leaders and leadership: New directions and challenges for business, education and society*. Emerald Publishing.
- Collinson, D. L. (2020). 'Only Connect!': Exploring the critical dialectical turn in leadership studies. *Organization Theory, 1*, 1-22.
- Cook-Greuter, S. R. (2004). Making the case for a developmental perspective. *Industrial and Commercial Training, 36*(7), 275-281. DOI:10.1108/00197850410563902
- Crandall, H., & Cunningham, C. M. (2016). Media ecology and hashtag activism: #Kaleidoscope. *Explorations in Media Ecology, 15*(1), 21-32.  
[https://doi.org/10.1386/eme.15.1.21\\_1](https://doi.org/10.1386/eme.15.1.21_1)
- Dörner, D. & Funke, J. (2017) Complex problem solving: What is it and what it is not. *Frontiers in Psychology, 8*, 1-11. <https://doi.org/10.3389/fpsyg.2017.01153>
- Dugan, J. (2017). *Leadership theory: Cultivating critical perspectives*. Jossey-Bass.
- Dugan, J. P., Bohle, C. W., Woelker, L. R., & Cooney, M. A. (2014). The role of social perspective-taking in developing students' leadership capacities. *Journal of Student Affairs Research and Practice, 51*(1), 1-15. <http://dx.doi.org/10.1515/jsarp-2014-0001>

- Eagly, A. H., & Chin, J. L. (2010). Diversity and leadership in a changing world. *American Psychologist*, 65, 216-224.
- Evans, T. (2011). Leadership without domination? Toward restoring the human and natural world. *Journal of Sustainability Education*, 2(March), 1-16.  
<http://www.jsedimensions.org/wordpress/wp-content/uploads/2011/03/Evans2011.pdf>
- Foust, C. M., Pason, A., & Zittlow Rogness, K. (Eds.) (2017). *What Democracy Looks Like: The Rhetoric of Social Movements and Counterpublics*. University of Alabama Press.
- Fraser, N. (1990). Rethinking the public sphere: A contribution to the critique of actually existing democracy. *Social Text*, 25, 56-80. <https://www.jstor.org/stable/466240>
- The global risks report 2020*. (2020). World Economic Forum.  
<https://www.weforum.org/reports/the-global-risks-report-2020>
- Goodman, R. M., Speers, M. A., McLeroy, K., Fawcett, S., Kegler, M., Parker, E., Smith, S. R., Sterling, T.D., & Wallerstein, N. (1998). Identifying and defining the dimensions of community capacity to provide a basis for measurement. *Health Education & Behaviour*, 25(3), 258–278. <https://journals.sagepub.com/doi/pdf/10.1177/109019819802500303>
- Grint, K. (2005). Problems, problems, problems: The social construction of ‘leadership.’ *Human Relations*, 58(11), 1467-1494. doi: 10.1177/0018726705061314
- Grint, K. (2008). Wicked problems and clumsy solutions: The role of leadership. *Clinical Leader*, 1(2), 11-25.
- Grint, K. (2010). *Leadership: A very short introduction*. Oxford Press.
- Hawken, P. (2008). *Blessed unrest*. Penguin Books.
- Heifetz, R. (1994). *Leadership without easy answers*. Harvard University Press.

- Heifetz, R. (2006). Anchoring leadership in the work of adaptive progress. In F. Hesselbein & M. Goldsmith (Eds.), *The leader of the future 2: Visions, strategies, and practices for the new era* (pp. 73–84). Jossey-Bass.
- Johnson, L. R. (2017). *Community-based qualitative research: Approaches for education and the social sciences*. SAGE Publishing.
- Kellerman, B. (2018). *Professionalizing leadership*. Oxford University Press.
- Kovach, M. (2010). Conversational methods in indigenous research. *First peoples child and family review*, 5(1) 40-48.  
[http://web.b.ebscohost.com/ehost/detail/detail?vid=4&sid=107ca079-01dd-483d-b200-872bc9ed2d75%40pdc-v-  
sessmgr06&bdata=JnNpdGU9ZWwhvc3QtbGl2ZQ%3d%3d#AN=51457227&db=sih](http://web.b.ebscohost.com/ehost/detail/detail?vid=4&sid=107ca079-01dd-483d-b200-872bc9ed2d75%40pdc-v-<br/>sessmgr06&bdata=JnNpdGU9ZWwhvc3QtbGl2ZQ%3d%3d#AN=51457227&db=sih)
- Kuenkel, P. (2016). *The Art of leading collectively: Co-creating a sustainable, socially just future*. Chelsea Green Publishing.
- Leavy, P. (2015). *Method meets art: Arts-based research practice* (2nd ed.). The Guilford Press.
- Maragia, B. (2006). The indigenous sustainability paradox and the quest for sustainability in post-colonial societies: Is indigenous knowledge all that is needed? *Georgetown International Environmental Law Review*, 18, 197-247.  
<https://heinonline.org/HOL/P?h=hein.journals/gintenlr18&i=205>
- Meadows, D. (2008). *Thinking in systems: A primer*. Chelsea Green.
- Newell, R., Dale, A., & Winters, C. (2016). A picture is worth a thousand data points: Exploring visualizations as tools for connecting the public to climate change research. *Cogent Social Sciences*, 2(1), 1201885. <https://doi.org/10.1080/23311886.2016.1201885>

- Parry, K., Cohen, M., & Bhattacharya, S. (2016). Rise of the machines: A critical consideration of automated leadership decision making in organizations. *Group & Organization Management, 41*(5), 571–594. <https://doi.org/10.1177/1059601116643442>
- Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). SAGE Publishing.
- Petrie, N. (2011). *Future trends in leadership development*. Center for Creative Leadership. <http://insights.ccl.org/wp-content/uploads/2015/04/futureTrends.pdf>
- Petrie, N. (2014). Vertical leadership development - Part 1: Developing leaders for a complex world. Center for Creative Leadership. <https://www.ccl.org/wp-content/uploads/2015/04/VerticalLeadersPart1.pdf>
- Petrie, N. (2015). The How-to of vertical leadership development - Part 2: 30 experts, 3 conditions, and 15 approaches. Center for Creative Leadership. <https://www.ccl.org/wp-content/uploads/2015/04/verticalLeadersPart2.pdf>
- Preskill, S. & Brookfield, S. D. (2009). *Learning as a way of leading: Lessons from the struggle for social justice*. Jossey-Bass.
- Ramnarayan, S. & Schaub, S. S. H. (1997). Trappings of expertise and the pursuit of failure. *Simulation & Gaming, 28*(1), 28-43. <https://doi.org/10.1177/1046878197281004>
- Redekop, B. (Ed.). (2010). *Leadership for environmental sustainability*. Routledge.
- Redekop, B., Gallagher, D., & Satterwhite, R. (Eds.). (2018). *Innovation in environmental leadership: Critical perspectives*. Routledge.
- Saldana, J. & Omasta, M. (2018). *Qualitative research: Analyzing life*. SAGE Publishing.
- Satterwhite, R. (2010). Deep systems leadership: A model for the 21st century. In B. Redekop (Ed.), *Leadership for environmental sustainability* (pp. 230-247). Routledge.

- Satterwhite, R. (2018). A case for universal contexts: Intersections of the biosphere, systems, and justice using a critical constructionist lens. In B. Redekop, D. R. Gallagher, & R. Satterwhite (Eds.), *Innovation in environmental leadership: Critical perspectives* (pp. 32-47). Routledge.
- Satterwhite, R., Sheridan, K., & McIntyre Miller, W. (2016). Rediscovering deep time: Sustainability and the need to re-engage with multiple dimensions of time in leadership studies. *Journal of Leadership Studies*, 9(4), 47-53. <https://doi.org/10.1002/jls.21426>
- Scharmer, O., & Kaufer, K. (2013). *Leading from the emerging future: From ego-system to eco-system economies*. Berrett-Koehler.
- Schein, S. (2017). *A new psychology for sustainability leadership: The hidden power of ecological worldviews*. Greenleaf Publishing.
- Sencindiver, S. Y. (2017). New Materialism. In E. O'Brien (Ed.), *Oxford bibliographies: literary and critical theory*. Oxford University Press.  
<https://doi.org/10.1093/obo/9780190221911-0016>
- Senge, P. (2006). Systems citizenship: the leadership mandate for this millennium. In F. Hesselbein & M. Goldsmith (Eds.), *The leader of the future 2: Visions, strategies, and practices for the new era* (pp. 31-46). Jossey-Bass.
- Senge, P., Smith, B., Kruschwitz, N., Laur, J., & Schley, L. (2008). *The necessary revolution: How individuals and organizations are working together to create a sustainable world*. Doubleday.
- Sheridan, K., Satterwhite, R., & McIntyre Miller, W. (2019). Developing leaders in place: Graduate leadership education for a sustainable and peaceful future. In K. L. Kremers, A. S. Liepins, & A. M. York (Eds.), *Developing change agents: Innovative practices for*

*sustainability leadership*. University of Minnesota Libraries Publishing.

<https://open.lib.umn.edu/changeagents/chapter/developing-leaders-in-place/>

Shriberg, M. (2012). Sustainability leadership as 21st century leadership. In D. Gallagher (Ed.), *Environmental leadership: A reference handbook* (pp. 469-478). SAGE Publishing.

Stoecker, R. (2013). *Research methods for community change: A project-based approach* (2nd ed.). SAGE Publishing.

UNESCO Institute for Lifelong Learning. (2019). *Addressing global citizenship education in adult learning and education; Summary Report*, Hamburg. (ISBN 13: 978-9282012345)

United Nations. (2015). *Transforming Our World: The 2030 Agenda for Sustainable Development*.

<https://sustainabledevelopment.un.org/post2015/transformingourworld/publication>

United Nations. (2019). *The Sustainable Development Goals Report 2019*. UN, New York.

<https://doi.org/10.18356/55eb9109-en>.

Warner, M. (2002). Publics and Counterpublics. *Public Culture* 14(1), 49-90.

<https://www.muse.jhu.edu/article/26277>.

Western, S. (2013). *Leadership: A critical text* (2nd ed.). SAGE Publishing.

Wiek, A., Withycombe, L., & Redman, C. L. (2011). Key competencies in sustainability: a reference framework for academic program development. *Sustainability Science*, 6(2),

203–218. <https://doi.org/10.1007/s11625-011-0132-6>

Yukl, G., & Mahsud, R. (2010). Why flexible and adaptive leadership is essential. *Consulting Psychology Journal: practice and research*, 62(2), 81-93.

<https://doi.org/10.1037/a0019835>