

Using the lever of leadership to drive environmental change: Ten tips for practitioners

Dr André Taylor

André Taylor Consulting, andre@andretaylor.com.au

Abstract

This paper provides guidance to environmental practitioners on how to more efficiently drive processes of change to deliver sustainable outcomes. It introduces the concept of leadership, describes several important forms of environmental leadership, and presents evidence that leadership is a critical factor in driving environmental change. It then draws on recent research involving emergent environmental leaders ('champions') to highlight ten tips that sustainability practitioners could use to build valuable aspects of leadership capacity. These tips represent tools that sustainability practitioners could use to become more effective at exerting influence, particularly across managerial levels and organisational boundaries. The paper also uses a white-water rafting metaphor to help explain the challenging context typically faced by sustainability practitioners, the relevance of leadership to this context, and the importance of building specific leadership skills to successfully exercise influence in complex, uncertain and unstable environments.

Introduction

Sustainability practitioners have the challenging task of navigating through environments often characterised by complexity, uncertainty, periods of rapid change, multiple stakeholders and an abundance of 'wicked problems'¹ (see Rittel & Webber, 1973). At the same time, such practitioners are seeking to exercise influence and promote change. Such change may occur at the level of a project (e.g. a pilot project), an organisation (e.g. a cultural change program) or institution (e.g. adoption of a new vision for the way natural resources are managed). In addition, such change usually involves a range of stakeholders from across managerial and organisational boundaries, who may have different perspectives, skill sets, priorities and values.

Extending a metaphor by Olsson *et al.* (2006), the context described above is similar to that faced by a white-water rafting guide. The river represents the environment a sustainability practitioner must navigate. There are periods of relative stability (flat reaches of the river) and periods of rapid change with significant risks and opportunities (rapids). The greatest challenges are faced during periods of substantial change (rapids), when sustainability practitioners (white-water rafters) want to be proactive and work with others to use 'windows of opportunity' (Kingdon, 1995) to exert influence. Such periods may be driven by environmental crises, new legislation, new funding opportunities, organisational restructuring, political changes or social changes (e.g. rapid population growth). A range of abilities are needed to work effectively in such environments. This paper explores such abilities.

A contemporary definition of 'leadership' is a *process of influence* that involves articulating a shared vision of the future, aligning resources (e.g. people and projects) to this vision, and motivating and inspiring others to achieve this vision for mutual benefit (see Kotter, 1998; Rost, 1993). From this perspective, leadership is at the heart of processes that seek to deliver change. This is particularly the case for those processes that cross organisational boundaries and the people driving the change have no formal authority to direct others. Using the white-water rafting metaphor, leadership is equivalent to the *process* of successfully navigating the river, including 'reading the water', developing a strategy to negotiate the rapids and executing this strategy as a team.

¹ Such problems are characterised by the following features: difficult to clearly define 'the problem'; many interdependencies and are often multi-causal; attempt to address them often leads to unforeseen circumstances; unstable / dynamic; no obvious / agreed solution; socially complex; cross jurisdictional boundaries; require behavioural change; and a history of chronic policy failure (Commonwealth of Australia, 2007).

This paper aims to provide practical guidance to environmental practitioners on how to manage dimensions of leadership to drive processes of change and deliver more sustainable outcomes. It begins by highlighting some important forms of environmental leadership before building the case that leadership is a critical phenomenon in processes of environmental change. It then draws on recent research investigating emergent environmental leaders ('champions' or 'key change agents') to suggest ten tips that sustainability practitioners could use to build individual and group-based leadership capacity in order to more effectively deliver change. It concludes by returning to the white-water rafting metaphor to emphasise the significance of leadership knowledge and skills to today's professionals who have the challenging task of promoting change to deliver a more sustainable future.

Background

This section presents three key reasons why leadership is an important factor in driving environmental change. It then highlights some important forms of environmental leadership as well as particular leadership skills that are relevant to environmental leaders.

The importance of leadership to environmental practitioners

The first reason why leadership is an important phenomenon in efforts to promote environmental change relates to context. The complex, uncertain and unstable context that commonly surrounds environmental practitioners places a premium on leadership in general, particular forms of leadership, and specific leadership attributes (e.g. skills). The need for greater leadership capacity was advanced by Gordon and Berry (2006) who stated in relation to environmental leadership:

... complex problems and rapidly changing solutions require more leadership from everyone in an organisation. Leadership skills that were appropriate to the few [i.e. executives] are now necessities for the many (p. 90).

The second reason is that a substantial body of evidence indicates that effective leadership processes and leaders are central to many successful examples of environmental change. For example, *emergent* leaders (e.g. champions) often play a critical role in driving environmental change at the level of projects, organisations and broader institutions (see Brouwer *et al.*, 2009; Brown & Clarke, 2007; Olsson *et al.*, 2006; Penning-Rowsell *et al.*, 2006). Such evidence is particularly strong in the water industry where the valuable role that champions play in the transition to 'water sensitive cities' (see Brown *et al.*, 2009) has now been recognised by academics (see Brown *et al.*, 2006; Mitchell, 2004; Taylor, 2009), industry practitioners (see Edwards *et al.*, 2006; Keath & White, 2006) and politicians (see Commonwealth of Australia, 2002). To illustrate, an Australian Senate inquiry investigated the management of urban water (Commonwealth of Australia, 2002) and concluded that:

The Committee has seen that some of the most successful programs around Australia have been driven by the knowledge and commitment of one individual ... someone with the personal commitment to drive long-term change ... leadership is a key element in these examples of best practice ... the challenge is to find ways to institutionalise the champion phenomena (p. 236).

The third reason is that leadership skills, such as the ability to build and articulate shared visions, align resources, and motivate and inspire others, are core competencies for facilitating change. This point is emphasised by Kotter (2006) who stated:

Producing change is about 80% leadership ... and 20% management... In most change efforts, those percentages are reversed. We continue to produce great managers; we need to develop great leaders (p. 14).

The key point here is that organisations and institutions that are embarking on a major process of change need high levels of leadership capacity across managerial levels and organisational boundaries, but often, this capacity is in short supply. This is particularly the case where the change process marks the transition from a period of relative stability where 'management' behaviours like planning, budgeting, staffing and directing flourished. The mismatch between the levels of leadership capacity that are needed and the levels that are typically available is one explanation for why so many

major organisational change programs fail. The literature indicates that such failure rates typically range from 50 to 85% (see Beer & Nohria, 2000; Kotter, 1998; Pascale *et al.*, 1997; Stebel, 1996).

Forms of environmental leadership

Certain forms of leadership are commonly seen in relation to environmental leaders. Understanding these forms can help developing leaders to identify opportunities to more effectively drive change. Relevant conceptual models and theories can assist this process. To illustrate, two common forms of environmental leadership are now described.

First, researchers examining how corporations become more sustainable have found that transformative change is frequently driven by a cadre of leaders, including emergent leaders or 'change agents', that span managerial levels and organisational units (see Benn *et al.*, 2005, 2006a,b; Dunphy *et al.*, 2007). This form of leadership involves leaders exerting influence from the top-down and the bottom-up. This is illustrated in the following quote from a regional President of BP Australasia (Benn *et al.*, 2006a, p. 163):

Leadership comes from the passion of the change agents and identifying who those people are becomes very important. Building a network of committed leaders at all levels is a first step to change. Only when there is a critical mass does change take place. ... Leadership from below can work, but the layers above need to become 'surrounded' in order for the most intransigent to move. It is far better to have leaders near the top of the organisation, linked to enthusiasts throughout, driving change.

Second, research investigating processes of environmental leadership that are driven by champions at a project level in Australian water agencies has identified three phases to such process (see Taylor, 2008; Taylor *et al.*, in press). During the *Initiation* phase, sustainable projects and policies are triggered by 'project champions' (see Howell & Higgins, 1990; Howell *et al.*, 2005; Maidique, 1980). At this stage they frequently use transformational leadership behaviours (see Avolio, 2005; Bass, 1985), such as questioning the status quo and suggesting alternative visions for projects. Throughout the challenging *Endorsement* phase they often work in tandem with 'executive champions' (see Maidique, 1980) to present initiatives to senior, formal leaders. They also build advocacy coalitions and use windows of opportunity to gain endorsement. During the *Implementation* phase they often contribute to multi-disciplinary, cross-boundary project teams involving many SUWM leaders and high levels of collaboration. They often facilitate these teams and coordinate group-based leadership activities. All three phases are assisted by executive leaders who create a safe environment for innovation, learning, risk-taking and collaboration, albeit in different ways. This important form of leadership by executives is known as enabling leadership (see Uhl-Bien *et al.*, 2007).

Environmental leadership skills

Particular leadership skills are needed for the contexts that sustainability professionals typically work within (see Taylor, 2009). For example, the ability to use transformational leadership behaviours (see Bass, 1985) is commonly associated with environmental leaders (see Danter *et al.*, 2000; Egri & Herman, 2000; Portugal & Yukl, 1994; Smith & Sarros, 2004). It is also a skill set associated with leaders who act as change agents (see Ashkanasy & Tse, 2000; Schein, 1992) and 'champions of innovations' (see Howell & Higgins, 1990; Howell *et al.*, 2005). Specific examples of transformational leadership behaviours that are frequently used by project champions within Australian water agencies to promote more sustainable practices include: questioning the status quo; articulating visions for sustainable projects / initiatives; expressing enthusiasm and confidence; communicating clearly and frequently; and persisting under adversity (see Taylor, 2008, 2009 & 2010).

Many challenges in the environmental sector can be classified as complex challenges or 'wicked problems' (see Commonwealth of Australia, 2007). Complexity leadership researchers suggest that such problems are best suited to particular forms of leadership (e.g. enabling leadership by senior leaders) and leaders with particular skills. Such skills include the ability to engage in advanced forms of social networking, interpret change, coordinate group-based leadership activities and undertake systems thinking (see Marion & Uhl-Bien, 2001; Plowman *et al.*, 2007; Uhl-Bien *et al.*, 2007).

Ten tips for practitioners

The following ten tips for sustainability practitioners have been developed following research investigating emergent environmental leaders at the project and executive level in Australian water agencies who work together to foster more sustainable approaches (see Taylor, 2008, 2009 & 2010). This research also examined attributes of environmental leaders *per se*, as well as proven management strategies to build leadership capacity.

1. Become an excellent social networker

Effective environmental leaders are usually outstanding social networkers. Environmental leaders often need to work across organisational boundaries, build high levels of personal power, build advocacy coalitions, scan their work environment for opportunities and risks, and coordinate their activities with other leaders. All of these activities rely on well-designed and maintained social networks.

Research investigating emergent environmental leaders in the Australian water industry has highlighted the importance of using the 'strong tie' strategy (Granovetter, 1973), working in tandem with more senior leaders, and the ability to engage in strategic social networking (Ibarra & Hunter, 2007). Strong ties are solid, mutually beneficial relationships built over time that either party can use to gain significant levels of assistance. Strategic networking focuses on achieving the long-term, strategic goals of one's organisation, and is regarded as the most challenging form of leadership networking.

Strategies to become an exemplary social networker include learning relevant techniques (e.g. from well-researched publications, trainers, coaches and/or mentors), and developing and implementing a focused 'networking plan' (see Grayson & Baldwin, 2007) so that time invested in networking is used efficiently. Developing environmental leaders can also observe and learn from daily experiences relating to networking strategies and techniques.

2. Become familiar with theories and models relating to leadership and change management

Leadership is a complex phenomenon. There are a large number of leadership theories and models (see Avolio *et al.*, 2009; Northouse, 2004; Yukl, 1989), which provide different 'lenses' through which a particular form of leadership can be viewed. Similarly, there are numerous models of change management processes (e.g. Doppelt, 2003; Jones *et al.*, 2006; Kotter, 1995). Collectively, these represent a set of tools that developing environmental leaders can use to understand their role in group-based leadership processes and the importance of context. They can also be used to identify opportunities for improvement such as skills that need to be developed and when to use specific leadership behaviours.

An example of how various leadership theories and models can be used to understand a particular form of environmental leadership is provided in Taylor *et al.* (in press). In this example, transformational (Bass, 1985), distributed (Gibb, 1954) and complexity (Uhl-Bien *et al.*, 2007) leadership theories help environmental practitioners to understand how project and executive champions drive new projects and policies to deliver more sustainable outcomes within Australian water agencies. This understanding is needed to develop customised leadership development initiatives.

3. Develop an appropriate mix of technical, management and leadership skills

The environmental leaders studied by the author typically started their career undertaking technical roles that required specific skills. Their tertiary education prepared them well for such roles. As their careers developed, they also developed strong management skills, such as the ability to manage

projects, budgets and human resources. These skills became more valuable in 'middle management'. A broad range of professional development opportunities typically exists to help managers build these skills (e.g. traditional MBAs and short courses).

The next 'layer' of skills relate to leadership. Such skills include tactics to exert influence, social networking skills, and the ability to build shared visions, align resources, as well as motivate and inspire others. For the environmental leaders studied by the author, these skills were developed through experience (i.e. the opportunity to use them), often with guidance from mentors. In some cases, leadership development programs also helped to build these skills.

This sequence of developing technical, management and leadership skills is typical, and suggests a skill development hierarchy exists. Some researchers also suggest a window of opportunity may exist within the context of developing leaders within organisations (see Adair, 2005). From this perspective, it may take developing leaders several years to firstly build technical and management skills, different types of knowledge, useful social networks and personal power. It may also take several years to move into roles where they have plenty of challenging opportunities to practice using leadership skills. Later in their careers, however, leadership behaviours and styles often become more difficult to change (Adair, 2005).

4. Gather a diverse range of experiences

The 'openness to experience' personality characteristic (see Judge *et al.*, 2002) is usually a strongly developed trait amongst emergent environmental leaders. This trait helps these leaders to participate in a diverse range of experiences, such as extensive travel, occupying a range of professional roles, as well as working in different industries, organisations and locations. These experiences can help to build many significant leadership attributes, such as the ability to communicate with a wide range of people, broad social networks, and self-confidence from overcoming a range of challenges. Other potential benefits include a very good general knowledge (e.g. of their industry and/or organisation), a more strategic and systems view of how aspects of their work relate, and experience from trying to exert influence in a wide range of contexts.

5. Learn how to use windows of opportunity to effect change

One of the attributes that was most strongly developed amongst the more senior and experienced environmental leaders studied by the author was their ability to anticipate, plan for, find and use windows of opportunity to drive change. For example, a crisis may generate an opportunity to advance a bold environmental initiative, as long as the initiative is well-developed and appropriately framed. These leaders were also good at 'venue shopping' (Huitema & Meijerink, 2008), which means identifying forums where they could successfully exert influence. Several of these leaders learnt these skills from mentors and other more experienced leaders.

6. Invest time in cross-boundary teams and networks

A feature of the most successful environmental 'project champions' studied by the author was their ability to form and manage high performing, cross-boundary teams. For example, one of these leaders was very effective in promoting sustainable forms of urban water management and worked in a local government agency. One of the keys to their success was an informal, cross-boundary team of people who represented the different functional units of the organisation, shared similar values, trusted each other, and frequently collaborated on major projects and policies. Establishing and managing such teams, including building trust between members, requires an investment in time and a broad range of skills (see Kanaga & Browning, 2003; Kanaga & Kossler, 2001).

Social networks are as important to leaders as formal lines of reporting are to managers. As previously mentioned, social networking is a critical skill for emergent environmental leaders who rely on personal power to exercise influence across organisational boundaries and managerial levels. In addition, environmental leaders are known to develop 'shadow networks' during processes of change

in governance systems (see Olsson *et al.*, 2006). These networks help to “prepare a system to change by exploring alternative system configurations” (Olsson *et al.*, 2006, p. 1). They also help to identify possible visions for the future and strategies to achieve such visions.

7. Learn how to use the ‘enabling leadership’ style for complex environmental challenges

The concept of enabling leadership is part of Complexity Leadership Theory (Uhl-Bien *et al.*, 2007). This theory argues that particular leadership behaviours are needed to address complex challenges as these challenges are associated with unpredictable events (Plowman *et al.*, 2007) and traditional forms of focused, top-down leadership are usually ineffective (Schneider & Somers, 2006). Specifically, proponents of this theory have posited that three entangled forms of leadership are needed in organisations to address complex challenges (Uhl-Bien *et al.*, 2007). Only one form, enabling leadership, will be discussed here.

Enabling leadership refers to the activities of leaders, such as executive champions, who create environments where high levels of interpersonal interaction can occur. During such interaction many leaders from across organisational boundaries come together to innovate, experiment, learn, resolve task-related conflict and collaborate to solve elements of complex challenges.

Behaviours used by enabling leaders include encouraging destabilisation of the status quo (Plowman *et al.*, 2007), task-related conflict (Uhl-Bien *et al.*, 2007; Van Velsor, 2008), forums for frequent discussion (Snowden & Boone, 2007), innovation (Snowden & Boone, 2007; Uhl-Bien *et al.*, 2007), cross-boundary social networks (Van Velsor, 2008), systems thinking (Marion & Uhl-Bien, 2001) and information sharing (Uhl-Bien *et al.*, 2007). They also coordinate leadership activities and provide resources for less senior leaders to interact (Uhl-Bien *et al.*, 2007), as well as help to interpret change (Plowman *et al.*, 2007). In addition, they manage the tension that typically occurs between the new ideas that flow from bottom-up, emergent leadership processes and the established practices that are reinforced by top-down, formal leadership (Uhl-Bien *et al.*, 2007). Proponents of this theory have suggested enabling leadership suits senior leaders who are patient, comfortable with uncertainty, open to new ideas, proficient at systems thinking, and have a propensity to enable rather than control change (Marion & Uhl-Bien, 2001; Plowman *et al.*, 2007; Snowden & Boone, 2007).

8. Build and use an ‘individual leadership development plan’

Professor John Adair argues that “no individual leader should ever *depend* upon an organisation to school him or her in leadership” (Adair, 2005, p. 164). This view reflects that leadership development is a challenging lifelong journey (Avolio, 2005), few organisations are equipped to do this properly (Adair, 2005) and few leaders would spend their entire careers in the one organisation. This view also leads to the conclusion that leaders should take personal responsibility for managing their development over their careers (Van Velsor & Drath, 2004). Consequently, good leadership development programs guide leaders through a process of building personalised plans that help them to *continue* to develop well beyond the life of the program (see Arsenault, 2003; Guthrie & King, 2004; Van Velsor *et al.*, 2004).

9. Learn from mentors

One of the attributes that was associated with the most effective environmental champions studied by the author was that mentors were highly influential to their development as leaders. Mentors helped them to build political, relational, strategic, normative (value-based) and contextual knowledge. Mentors also helped them to use windows of opportunity to drive change, build strategic networks (e.g. with executives and politicians) and influence senior staff and politicians.

Strategies to benefit from mentoring include choosing mentors who are best equipped to help with specific development needs (as outlined in a leader’s individual leadership development plan), and setting up formal mentoring arrangements (e.g. to agree on roles, objectives, meeting frequency, review period, etc.). In addition, it is best to choose mentors who are in another branch, department or

organisation (rather than one's manager / executive manager) to avoid conflicts of interest or allegations of favouritism.

10. Help to develop the next generation of environmental leaders

Leaders grow leaders (Hurt & Homan, 2005). There is evidence to support this claim. For example, there is strong empirical evidence to indicate that leaders who frequently use transformational leadership behaviours are typically associated with positive organisational outcomes, such as extra effort from colleagues, in a wide range of organisational contexts (see Avolio *et al.*, 2009; DeGroot *et al.*, 2000; Lowe *et al.*, 1996). One group of transformational leadership behaviours is known as 'individual consideration' and includes behaviours such as, teaching, coaching, mentoring, and helping others to develop their strengths. Thus, effective leaders within organisations frequently engage in coaching and mentoring activities, and help others to achieve their potential. These leadership behaviours, like all others, can be taught and learnt.

Conclusions

This paper has highlighted ten tips that sustainability practitioners could use to strengthen leadership capacity and more effectively drive change. It has also explained why leadership is an important factor in driving environmental change, and described some common forms of environmental leadership that can trigger and accelerate change.

In the introduction to this paper, a white-water rafting metaphor was used to better understand the context that faces many sustainability practitioners and the challenge of exercising influence in a complex, uncertain and unstable environment. The tips highlighted in this paper can also be related to this metaphor. For example, an exemplary white-water rafting guide would invest time in working with his / her team of paddlers to optimise their performance (cross-boundary team), know when a rapid is safe to run (window of opportunity), and would have built his / her skills from running many rivers under a wide range of conditions (diverse experiences). Such a guide would also learn from more experienced paddlers (mentors / networks), and have formally learnt a range of skills from paddling techniques (technical skills), planning a safe trip (management skills) and motivating and inspiring his / her team to put in extra effort when needed (leadership skills). He / she would also take time to teach and guide others (helping the next generation).

In conclusion, this paper acknowledges the significant and complex challenges that currently face environmental practitioners, and those that lie ahead. Many forms of institutional capacity will be needed to address these challenges. Central to such capacity is the ability of future environmental leaders to skilfully initiate and drive processes of change. As such, this paper shares and supports the view of Gordon and Berry (2007) that

... there is no more urgent task than to encourage and nurture the next generation of environmental leaders. The most important message we have to offer is that environmental leadership consists largely of learned skills and styles and that learning needs to begin early and last a lifetime (p. 148).

References

- Adair, J. (2005). *How to grow leaders*. London, England: Kogan Page.
- Arsenault, P. (2003). Leadership assessment and development. In R. Riggio, & S. Orr (Eds.), *Improving leadership in nonprofit organizations* (pp. 252-266). San Francisco, California: Jossey-Bass.
- Ashkanasy, N., & Tse, B. (2000). Transformational leadership as management of emotion: A conceptual review. In N. Ashkanasy, C. Härtel, & W. Zerbe (Eds.), *Emotions in the workplace: Research, theory, and practice* (pp. 221–235). Westport, Connecticut: Quorum Books.
- Avolio, B. (2005). *Leadership development in balance: Made / born*. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Avolio, B., Walumbwa, F., & Weber, T. (2009). Leadership: Current theories, research, and future directions. *Annual Review of Psychology*, 60, 421-449.
- Bass, B. (1985). *Leadership and performance beyond expectations*. New York, New York: Free Press.

- Beer, M., & Nohria, N. (2000). Cracking the code of change. *Harvard Business Review*, May-June, 133-141.
- Benn, S., Dunphy, D., & Griffiths, A. (2006a). Enabling change for corporate sustainability: An integrated perspective. *Australasian Journal of Environmental Management*, 13, 156-165.
- Benn, S., Dunphy, D., & Griffiths, A. (2006b). Integrating human and ecological factors. In D. Marinova (Ed.), *Handbook of environmental technology management in business practices* (pp. 222-241). Cheltenham, England: Edward Elgar.
- Benn, S., Griffiths, A., & Dunphy, D. (2005). Changing corporate culture to an environmental ethos. In R. Staib (Ed.), *Environmental management and decision-making for business* (pp. 180-191). Hampshire, England: Palgrave Macmillan.
- Brouwer, S., Huitema, D., & Biermann, F. (2009). Towards adaptive management: The strategies of policy entrepreneurs to direct policy change. *Proceedings of the 2009 Amsterdam Conference on the Human Dimensions of Global Environmental Change*, 2-4 December 2009, Amsterdam, The Netherlands.
- Brown, R., & Clarke, J. (2007). *Transition to water sensitive urban design: The story of Melbourne, Australia*. Melbourne, Victoria: Facility for Advancing Water Biofiltration and National Urban Water Governance Program, Monash University.
- Brown, R., Keath, N., & Wong, T. (2009). Urban water management in cities: Historical, current and future regimes. *Water Science & Technology*, 59(5), 847-855.
- Brown, R., Mouritz, M., & Taylor, A. (2006). Institutional capacity. In T. Wong (Ed.), *Australian runoff quality - a guide to water sensitive urban design* (pp. 5-1 – 5-20). Melbourne, Victoria: Engineers Australia.
- Commonwealth of Australia (2002). *Inquiry into Australian management of urban water*. Canberra, Australian Capital Territory: Commonwealth Australia.
- Commonwealth of Australia (2007). *Tackling wicked problems: A public policy perspective*. Canberra, Australian Capital Territory: Commonwealth Australia.
- Danter, K., Griest, D., Mullins, G., & Norland, E. (2000). Organizational change as a component of ecosystem management. *Society and Natural Resources*, 13, 537-547.
- DeGroot, T., Kiker, D., & Cross, T. (2000). A meta-analysis to review organizational outcomes related to charismatic leadership. *Canadian Journal of Administrative Sciences*, 17, 356-371.
- Doppelt, B. (2003). *Leading change towards sustainability. A change-management go at will business, government and civil society*. Sheffield, England: Greenleaf Publishing.
- Dunphy, D., Griffiths, A., & Benn, S. (2007). *Organizational change for corporate sustainability*. Second edition. London, England: Routledge.
- Edwards, P., Holt, P., & Francey, M. (2006). WSUD in local government - implementation guidelines, institutional change and creating an enabling environment for WSUD adoption. *Proceedings of the Seventh International Conference on Urban Drainage Modelling and the Fourth International Conference on Water Sensitive Urban Design*, 2-7 April 2006, Melbourne, Australia.
- Egri, C., & Herman, S. (2000). Leadership in the North American environmental sector: Values, leadership styles, and contexts of environmental leaders and their organizations. *Academy of Management Journal*, 43(4), 571-604.
- Gibb, C. (1954). Leadership. In G. Lindzey (Ed.), *Handbook of social psychology* (Vol. 2, pp. 877–917). Reading, Massachusetts: Addison-Wesley.
- Gordon, J., & Berry, J. (2006). *Environmental leadership equals essential leadership*. New Haven, Connecticut: Yale University Press.
- Granovetter, M. (1973). The strength of weak ties. *American Journal of Sociology*, 78, 1360– 1380.
- Grayson, C., & Baldwin, D. (2007). *Leadership networking: Connect, collaborate, create*. An Ideas into Action Guidebook. Greensboro, North Carolina: Center for Creative Leadership.
- Guthrie, V., & King, S. (2004). Feedback-intensive programs. In C. McCauley, & E. Van Velsor (Eds.), *The Center for Creative Leadership handbook of leadership development* (pp. 25-57). Second edition. San Francisco, California: Jossey-Bass.
- Howell, J., & Higgins, C. (1990). Champions of technological innovation. *Administrative Science Quarterly*, 35, 317-341.
- Howell, J., Shea, C., & Higgins, C. (2005). Champions of product innovations: Defining, developing, and validating a measure of champion behavior. *Journal of Business Venturing*, 20, 641-661.
- Huitema, D., & Meijerink, S. (2008). *Understanding and managing water transitions: A policy science perspective*. Draft book chapter. Amsterdam, Netherlands: Vrije Universiteit.
- Hurt, A., & Homan, S. (2005). Growing leaders. *Industrial and Commercial Training*, 37(3), 120-123.
- Ibarra, H., & Hunter, M. (2007). How leaders build and use networks. *Harvard Business Review*, 85(1), 40-47.
- Jones, Q., Dunphy, D., Fishman, R., Larné, M., & Canter, C. (2006). *In great company: Unlocking the secrets of cultural transformation*. Sydney, New South Wales: Human Synergistics Australia.
- Judge, T., Bono, J., Ilies, R., & Gerhardt, M. (2002). Personality and leadership: A qualitative and quantitative review. *Journal of Applied Psychology*, 87(4), 765-780.
- Kanaga, K., & Browning, H. (2003). *Maintaining team performance*. An Ideas into Action Guidebook. Greensboro, North Carolina: Center for Creative Leadership.
- Kanaga, K., & Kossler, M. (2001). *How to form a team: Five keys to high performance*. An Ideas into Action Guidebook. Greensboro, North Carolina: Center for Creative Leadership.
- Keath, N., & White, J. (2006). Building the capacity of local government and industry professionals in sustainable urban water management. *Proceedings of the Seventh International Conference on Urban Drainage Modelling and the Fourth International Conference on Water Sensitive Urban Design*, 2-7 April 2006, Melbourne, Australia.
- Kingdon, J. (1995). *Agendas, alternatives and public policies*. Second Edition. New York, New York: Harper Collins.
- Kotter, J. (1988). *The leadership factor*. New York, New York: Free Press.
- Kotter, J. (1995). Leading change: Why transformation efforts fail. *Harvard Business Review*, March-April, 59-67.

- Kotter, J. (1998). Winning at change. *Leader to Leader*, 10(Fall 1998), 27-33.
- Kotter, J. (2006). Transformation: Master three tasks. *Leadership Excellence*, 23(1), 14.
- Lowe, K., Kroeck, K., & Sivasubramaniam, N. (1996). Effectiveness correlates of transformational and transactional leadership: A meta-analytic review of the MLQ literature. *The Leadership Quarterly*, 7(3), 385-425.
- Maidique, M. (1980). Entrepreneurs, champions, and technological innovation. *Sloan Management Review*, 21(2), 59-76.
- Marion, R., & Uhl-Bien, M. (2001). Leadership in complex organizations. *The Leadership Quarterly*, 12, 389-418.
- Mitchell, G. (2004). *Integrated urban water management. A review of current Australian practice*. Melbourne, Victoria: Australian Water Association and CSIRO.
- Northouse, P. (2004). *Leadership theory and practice*. London, England: Sage.
- Olsson, P., Guderson, L., Carpenter, S., Ryan, P., Lebel, L., Folke, C., & Holling, C. (2006). Shooting the rapids: Navigating transitions to adaptive governance of social-ecological systems. *Ecology and Society* 11(1), 1-21.
- Pascale, R., Millemann, M., & Gioja, L. (1997). Changing the way we change. *Harvard Business Review*, November-December, 127-139.
- Penning-Rowsell, E., Johnson, C., & Tunstall, S. (2006). 'Signals' from pre-crisis discourse: Lessons from UK flooding for global environmental policy change? *Global Environmental Change*, 16(2006), 323-339.
- Plowman, D., Thomas, S., Beck, T., Baker, L., Kulkarni, M., & Travis, D. (2007). The role of leadership in emergent, self-organization. *The Leadership Quarterly*, 18, 341-356.
- Portugal, E., & Yukl, G. (1994). Perspectives on environmental leadership. *The Leadership Quarterly*, 5(3/4), 271-276.
- Rittel, H., & Webber, M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, 4(1973), 155-169.
- Rost, J. (1993). Leadership development in the new millennium. *The Journal of Leadership Studies*, 1(1), 92-110.
- Schein, E. (1992). *Organizational culture and leadership*. Second edition. San Francisco, California: Jossey-Bass.
- Schneider, M., & Somers, M. (2006). Organizations as complex adaptive systems: Implications of Complexity Theory for leadership research. *The Leadership Quarterly*, 17, 351-365.
- Smith, A., & Sarros, J. (2004). Environmental leadership: Baseline surveys and lessons from Australia's leaders. *Australasian Journal of Environmental Management*, 11(2), 164-175.
- Snowden, D., & Boone, M. (2007). A leader's framework for decision making. *Harvard Business Review*, November 2007, 1-8.
- Stebel, P. (1996). Why do employees resist change? *Harvard Business Review*, May-June, 86-92.
- Taylor, A. (2008). *Leadership in sustainable urban water management: An investigation of the champion phenomenon*. Industry report. Melbourne, Victoria: National Urban Water Governance Program, Monash University. Retrieved November 10, 2008, from www.urbanwatergovernance.com.
- Taylor, A. (2009). Sustainable urban water management: Understanding and fostering champions of change. *Water Science and Technology*, 59(5), 883-891.
- Taylor, A. (2010). *Sustainable urban water management: The champion phenomenon*. PhD eThesis. National Urban Water Governance Program, Monash University, Victoria, Melbourne.
- Taylor, A., Cocklin, C., Brown, R., & Wilson-Evered, E. (in press, accepted 15 February 2010). An investigation of champion-driven leadership processes. *The Leadership Quarterly*.
- Uhl-Bien, M., Marion, R., & McKelvey, B. (2007). Complexity leadership theory: Shifting leadership from the industrial age to the knowledge era. *The Leadership Quarterly*, 18(2007), 289-318.
- Van Velsor, E. (2008). A complexity perspective on leadership development. In M. Uhl-Bien & R. Marion (Eds.), *Complexity leadership, part 1: Conceptual foundations* (pp. 333-346). Charlotte, North Carolina: Information Age Publishing Inc.
- Van Velsor, E., & Drath, W. (2004). A lifelong developmental perspective on leader development. In C. McCauley, & E. Van Velsor (Eds.), *The Center for Creative Leadership handbook of leadership development* (pp. 383-414). Second edition. San Francisco, California: Jossey-Bass.
- Van Velsor, E., Moxley, R., & Bunker, K. (2004). The leader development process. In C. McCauley, & E. Van Velsor (Eds.), *The Center for Creative Leadership handbook of leadership development* (pp. 204-233). Second edition. San Francisco, California: Jossey-Bass.
- Yukl, G. (1989). Managerial leadership: A review of theory and research. *Journal of Management*, 15(2), 251-289.