Book Reviews
Global Systems Change: Six Linked Perspectives

Reviewed by Michael Marien

Senior Principal, The Security & Sustainability Guide;
Fellow, World Academy of Art & Science

1. **A Farewell to Ice: A Report from the Arctic.** Peter Wadhams (Prof. of Ocean Physics, Cambridge University). New York: Oxford University Press, Sept 2017, 240p, $21.95pb. (First published in UK by Allen Lane, Feb 2017.)

2. **Global Green Shift: When Ceres Meets Gaia**. John A. Mathews (Prof. of Management, Macquarie University). London and New York: Anthem Press, 2017, 236p, $26.95pb.

3. **Global System Change** (Summary). Frank Dixon (former Managing Director of Research, Innovest Strategic Value Advisors). Middle Grove NY: Global System Change, 2017, 486p, $27.00pb; ebook $20.00.

4. **For Rulers: Priming Political Leaders for Saving Humanity from Itself.** Yehezkel Dror (Prof. Emeritus, Hebrew University of Jerusalem). Washington: Westphalia Press, Policy Studies Organization, Aug 2017, 103p, $13.50pb.

5. **How Change Happens.** Duncan Green (Senior Strategic Advisor, Oxfam). Oxford UK: Oxford University Press, Dec 2016, 268p, $27.95 (free PDF download).

6. **Change for the Audacious: A Doer's Guide.** Steve Waddell (Boston). Boston MA: Networking Action Publishing, 2016, 222p, $24.99pb; $14.99 Kindle/PDF.

Change is everywhere in today's world—for better and for worse—seemingly leading to more calls for change. This condition is amply illustrated by six recent books on accelerating Arctic changes and the planetary system (Wadhams), necessary green changes in human systems (Mathews), the systemic changes we ought to have (Dixon), the need for new political leaders to elevate the future of humanity above state interests (Dror), a "power and systems approach" to change (Green), and large system change pathways (Waddell).

This review can only briefly point to some of the key ideas and concerns of the six authors. A lengthy review of each book would require extensive coverage, and, rather than doing so, priority is given to highlighting similarities and differences, and the excellent qualifications for each of the authors.

Three of the books are scholarly in style, albeit readable, while Dixon, Dror, and Green are more popularized, albeit with plenty of footnoting and/or bibliography. All six authors have something important to contribute.

1. Arctic Ice and Permafrost Melt

Peter Wadhams is Head of the Polar Ocean Physics Group at Cambridge, and has been a polar researcher for 47 years. He notes that the area of Arctic sea ice in summer has dwindled from >8 million sq. km. to less than half that. The summer Arctic sea ice does not have long to live: "the trend lines predict two ice-free months in 2016, three months in 2017, and five months in 2018." (p.84) Two huge effects will be unleashed by this "Arctic Death Spiral": the fraction of incoming solar radiation reflected back into space (the *albedo*) drops from 0.6 to 0.1, which "will further accelerate warming of the Arctic and of the whole planet." (p.4) Secondly, removal of the ice cover enables surface water to warm by several degrees in summer, with the heat extended down to the seabed. This thaws the surface layer of the offshore permafrost, triggering release of huge plumes of methane. Risk of an Arctic seabed methane pulse is one of the greatest immediate risks facing humanity. The threat of methane and CO_2 emissions from decaying permafrost on land is even greater, and "inexorable."

By 2100, the quantity of carbon emitted from thawing permafrost on land will be some 30 times the offshore methane pulse expected in the next decade. Thus, "a major climate warming boost from methane is inevitable." (p.130) The extra temperature rise due to methane by 2040 alone is estimated at 0.6 °C. Deniers of this trend are not only the fossil-fuel supporters, but the Intergovernmental Panel on Climate Change (IPCC), which "signally fails to give warning of the demise of Arctic ice" in its 2013 Fifth Assessment Report. (p.88) This consensus view ignores the observational data in favor of accepting models that have been shown to be false.

Chapters discuss the nature of ice, a brief history of ice on planet earth, the modern cycle of ice ages (human intervention is all too likely to produce a warming faster than the Earth has ever had), the greenhouse effect, sea ice meltback, the Arctic death spiral, the problem of an oil blowout spraying the underside of sea ice, the accelerating effects of seven types of Arctic feedbacks (the most serious is the albedo feedback), the IPCC's "complacent predictions" of sea level rise, extreme weather events in recent years, global thermohaline circulation and loss of convection in the Greenland Sea, why Antarctic sea ice is advancing despite overall warming over the Antarctic continent, remedies to reduce global warming (emission reduction, geoengineering, and carbon drawdown all have serious drawbacks), the 2015 Paris agreement ("even if fully honored, it would leave us with a warming of at least 2.7 °C"), the necessity to remove CO_2 from the atmosphere to avoid "dire consequences," and the need for geoengineering and updated nuclear power.

COMMENT. In their 2012 report to the Club of Rome, Anders Wijkman and Johan Rockström described the record pace of change in the Arctic environment as "a canary in a coal mine, warning of the danger of abrupt environmental change on a global scale." Wadhams expands on this warning with data and quantified estimates of how much and when, in what may well be the definitive explanation of Arctic warming. In forecasting climate, one does not want to overestimate or underestimate the dangers. Some may see this book as an over-the-top "alarmist" view that goes well beyond the IPCC. But the IPCC may well be at fault in not giving greater emphasis to this major driver of planetary change.

Also see **Snow, Water, Ice and Permafrost: Summary for Policymakers** (AMAP 2017, 20p PDF) from the Arctic Monitoring Assessment Program in Oslo, one of six working groups of the Arctic Council, which warns that Arctic climate is shifting to a new state, and that low-end estimates of global sea level rise by the IPCC "are underestimated." *The New York Times* (24 Aug 2017, A1, A12) provides a page one map of radically shrinking permafrost extent in Alaska from 2010 to 2050, with a companion article (A12), noting that, by one calculation, carbon emissions from thawing permafrost worldwide over the rest of the 21st century "could average about 1.5 billion tons a year, or about the same as current annual emissions from fossil-fuel burning in the United States." The article does not consider thawing offshore permafrost in the next decade, as Wadhams does, or the decline in albedo (reflectivity) that will "further accelerate" global warming.

2. Global Greening Underway

Considering Arctic warming and its impacts adds an extra boost to the climate change argument. But this is not the only reason to go green. John A. Mathews, an Australian business strategist and author of **Greening of Capitalism: How Asia is Driving the Next Great Transformation** (Stanford University Press, 2015), extends his argument in **Global Green Shift** by asserting that China is greening its energy system and its resource system by closing industrial loops and building a circular economy—not so much because of fears of global warming, but because "greening represents the only feasible way of resolving the geopolitical limits to growth" that would otherwise halt the country's industrialization. (p.xiii) China and to some extent India must find ways to feed their huge energy and resource appetite. "For these countries, it is not so much a moral choice as an economic imperative." (p.xiv) These two countries are now reclaiming their traditional place as leaders of the world economy in a profound transformation seen as the Great Convergence (in contrast to the Great Divergence that separated the "West" (Europe, North America, and Japan) from the "Rest"). "These are the countries where the problems are felt acutely and where the solutions present themselves most forcefully." (p.5)

Chapters describe why it is not all about climate change, geopolitical and environmental limits to fossil fuels, where Ceres meets Gaia (CERES denotes a Circular Economy and Renewable Energy System as counterpart to the wildness of Gaia), evolutionary dynamics, ecomodernization with Chinese characteristics (decoupling natural resource use and environmental impacts from economic growth), the sixth wave of sociotechnical transitions (steam engines, railways, electricity, the internal combustion engine, microelectronics and IT, and now the shift from fossil fuels to renewables and producing food in plant factories), renaming the "BRICS" countries as "BICS" because Russia is tied to fossil fuels and shows little inclination to change, green growth strategy for China and India, the central role of finance in the green shift (e.g. green bonds), advantages of green growth development strategies (encouraging rural employment, renewable resources available to all, catch up opportunities, a bias toward innovation), peaking and urbanizing of global population, the tech frontier of renewables, how renewables enhance energy security, rebutting arguments against renewables, recirculation of resources in the circular economy, vertical farming

initiatives, cultured meat, producing clean water from desalination and waste water, and ecocities of the future.

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COMMENT. An upbeat overview of many positive green trends, especially in Asia, which complements "Greening Capitalism, Quietly" (*Cadmus,* 3:2, May 2017, 150-166) and the hundreds of organizations identified in **The Security & Sustainability Guide.** Also see the Global Green Growth Institute (www.gggi.org) and the Green Growth Knowledge Platform (www.ggkp.org). "Green Growth" has yet to enter political discourse in the United States, perhaps also absent in Canada and parts of Europe.

The "green shift" in Asia and some other developing countries is necessary but is it sufficient, considering many potential environmental calamities in the 21st century that are not adequately addressed? Mathews does not mention possibilities of huge regional setbacks, e.g. 2017 floods in South Asia, Houston, and Florida. And his statement that "global population is expected to stabilize at around 9 billion, and decrease thereafter" (p.115) is unsupported wishful thinking. Rather, despite a slowing growth rate, world population is still likely to top 10 billion by 2050, absent any huge war or epidemic, and continue to grow to 11 billion by 2100. Thus more demand for resources and more human congestion in shrinking space that is fit to live in, due to sea level rise, desertification, and contamination.

3. Flawed Ideas and Whole Systems

Under the regressive Trump regime, hopefully short-lived, America is moving backwards, away from green energy and environment policies, as well as policies promoting human rights, human security, and national security. Trump and his plutocratic cronies ignore science and reason, a 21st century version of America's Know-Nothing Party of the mid-19th century.

In sharp contrast, rather than promote the conventional wisdoms of science and academia, Frank Dixon argues for a thorough rethinking in his unusual book, which summarizes a much larger work. His basic premise, arguably all too true, is that "The root cause of environmental and social degradation, and essentially all other major problems facing humanity, is our flawed ideas and systems." (p.1) The primary thinking problem is shortsightedness or myopia, and the solution to myopia, "to resolve major problems facing humanity and achieve sustainability and real prosperity," is to "exit the ivory tower of reductionism and begin reality-based whole system thinking." (p.2) Stated differently on the website, "To ensure the well-being of current and future generations, we must align human ideas and systems with reality and nature."

But first some explanation. Dixon has a Harvard MBA and spent many years as Managing Director of Research for Innovest Strategic Value Advisors (formerly the largest corporate sustainability research firm in the world; now a part of Morgan Stanley) where he oversaw sustainability analysis and rating of the world's 2,000 largest companies. **Global System Change: We the People Achieving True Democracy, Sustainable Economy and Total Corporate Responsibility** is merely a 486-page summary of a much larger work of 3,840 pages and some 3,500 endnotes, **Global System Change: A Whole System Approach to Achieving Sustainability and Real Prosperity** (Kindle Edition, $100). The unpaginated first four chapters and part of the fifth, however, are available at www.GlobalSystemChange. com (click "Look Inside"), and a 17-page Appendix to the summary book presents the entire Table of Contents in great detail.

Chapters in the Whole System book address system change principles, the whole system perspective, the business role in system change, raising public awareness, flawed human ideas and systems (e.g. measuring success only as economic growth, failure to incorporate externalized costs into prices, limited liability), deception techniques to mislead the public, environmental principles (e.g. assume potential threats to humanity as real unless proven otherwise, take action when reasonable risk exists, ensure trustworthy government), climate change problems and deceptions, climate solutions (e.g. accurate prices, eliminate fossil fuel subsidies, energy efficiency, reduce animal product consumption), chemical problems and deceptions, genetic engineering problems, oceans, land, nuclear problems, pandemics, food deceptions and solutions, crime, privacy, schooling higher education, psychiatric drugs, empowerment and democracy, global peace and human rights protection.

The 486-page summary book includes Chapter 7 on Empowerment and Democracy, Chapter 8 on Corporate and Financial System Change, and a long Chapter 9 on Achieving Sustainability and Real Prosperity. In brief, Dixon critiques the many forms of corporate welfare, the time value of money (a.k.a. discounting the future), the US wars on terror and drugs that focus on the supply side and ignores the demand side, money creation by banks, socializing people for consumption, the financial sector demanding ever-increasing shareholder returns, the "grossly inefficient production of animal products," the counterproductive and expensive approach to crime and justice in the US, for-profit Internet companies, forced education that degrades young people, media deceptions, inadequate testing of chemicals, rapidly rising inequality, *and much more.*

Proposals include a We the People movement to unite citizens, Socially Responsible Investing and Corporate Responsibility, collaborative system change, shifting the focus of the sustainability movement to the whole system level, increasing wisdom to emulate nature, adequate safety testing of chemicals with full disclosure, genetic engineering restrictions, ending subsidies for unhealthy foods and exports, restricted drug company marketing, teaching systems thinking, *and much more.* Total Corporate Responsibility in the book subtitle is a sustainability approach combining leading-edge CR with collaborative mid-level and high-level system change.

COMMENT. The distinctive value of these two works is a somewhat encyclopedic coverage of many problems that can and should be addressed with a whole systems approach.

Dixon is especially strong on economics, finance, business, and chemicals—areas that are too often neglected by many writers. On the downside, the 486-page summary is repetitious, and could easily be edited to half its present size or less, which is probably true for the longer work, mostly not seen. Secondly, it has little to say about the "Global System" (e.g., the United Nations has only one mention in passing, and there is no mention of its 17 Sustainable Development Goals which may be less than the thorough rethinking proposed here but potentially a big step forward; China has a couple of brief mentions in the index, Russia and Europe have none). Instead, the focus in almost entirely on the United States and its obsolete and counter-productive ideas and systems, although surely with lessons to be learned elsewhere. Finally, for better or worse, this book is overly polemical and highly idealized. It is valuable to articulate system-based critiques and "utopian" solutions. Systems thinking is surely needed, but, considering the ongoing fragmentation of academia and society in general, we can't hope for any transformation anytime soon—especially considering the many competing movements for social betterment such as The Next System Project and the New Economy Coalition. Meanwhile, sadly, the US is moving dangerously in the opposite direction under incompetent Trumpism.

"It is not science and technology that endanger humanity, but human choices or errors."

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4. Human Evolution at Stake

   A very different idealized work is provided by <u>Yehezkel Dror</u> in the form of an "urgent memo" not only to political leaders but also to "all who are worried about the future of humanity and realize that 'politics as usual' is unable to take care of it." The cascading power of science and technology is bipolar: enabling unprecedented human thriving or devastating catastrophes that could end human existence.

   But it is not science and technology that endanger humanity, but human choices or errors perhaps involving lethal viruses immune to all antidotes, super-intelligent robots, nanorobots out of control, large-scale unemployment due to advanced robots, "hard" human enhancements leading to a "post-humanity," a nuclear war making Earth uninhabitable, scarcity of essential materials, molecular engineering, and humanity-caused climate changes causing catastrophic conflicts, epidemics, and scarcities.

This **For Rulers** Memo is a compact, large-print, 103-page updated version of **Avant-Garde Politician: Leaders for a New Epoch** (Westphalia Press, 2014, 350p; reviewed in *CADMUS* 2:3, Oct 2014, 170-179), in turn prefigured by two earlier Dror books, **The Capacity to Govern: A Report to the Club of Rome** (Frank Cass, 2001) and **Israeli Statecraft: National Security Challenges and Responses** (Routledge, 2011). Brief chapters in the Memo, divided into numbered paragraphs, discuss such topics as:

−   the new era of "Anthroporegenesis" where humanity has the power to transform critical features of Earth and of human beings;

− human evolution at stake (where *Homo sapiens* may be entering a trap and unable to exit);

− the "feebleness of *raison d'humanité* when compared with what are narrowly regarded as national interests";

− existential human species choices requiring global guidance under a cluster of leaders;

− dependence on political leaders for fateful choices ("not a cause for celebration" in that most contemporary leaders "are clearly unable to cope with relatively clear crucial global issues such as climate change," and too often discount the future);

− the necessity of a growing number of *Homo sapiens* Governors (HSGs) to save humanity from itself;

− the parallel necessity of a "radically novel global order which includes decisive global governance institutions";

− survival of the human species as the measure of all things;

− the questionable mantra of "sustainability" (which has too many ambiguities about "conserving" that does not fit an epoch of radical transformations);

− deep sources of fatal dangers (e.g. the major danger of self-righteous fanatics);

− humanity-craft principles such as curbing ultra-dangerous capacities;

− neutralizing enemies of humanity trying to kill many millions;

− limiting human enhancement;

− containing creeping dangers (reducing birthrates and extreme inequality);

− reducing Hell on Earth as a priority (Syria is a tragic and paradigmatic case);

− exploring the inconceivable (human cloning, radical human enhancement, a breakthrough in fusion technologies for better and worse, easily produced "logic bombs" that distort all algorithms, etc.);

− bridging ruptures (significant crises as humanity shifts into the new epoch);

− extending individual and group self-realization opportunities (not in materialistic and hedonistic desires, but in artistic and scientific creativity and caring for others);

− transvaluation to save humanity from itself ("much of political and moral philosophy needs revision");

− laying foundations (making humanity into more of a moral-deliberative agency for fully legitimized humanity-craft choices);

− global governance (we must think globally and act globally, while recognizing the subsidiarity principle of handling issues at the lowest appropriate level);

− fuzzy gambling sophistication (a decisive quality for HSGs choosing amid deep uncertainty for high stakes);

− "dare the leap" if you feel called to become a HSG (it is very arduous in the best of cases).

"Achieving global systemic change requires rethinking economics, "a truly holistic approach," prophetic vision, and "true political leadership"."

COMMENT. At first glance, Dror's relatively brief Memo and Dixon's lengthy catalogs of whole system critiques and remedies seem to be sharply opposed in both form and content. Yet, despite differences in style, they are complementary: Dror addresses global governance, emerging science/technology disruptions, and the need for appropriate leadership, while Dixon focuses largely on economics, business, finance, chemicals, and environmental remedies. Arguably, each author addresses essential topics neglected by the other, together enabling a broader grasp of global systems change.

Also see "New Paradigm Quest" by Alexander Likhotal, former President of Green Cross International, who warns that "we are heading fast into a perfect storm of connected environmental, economic, and social challenges" (*CADMUS*, 2:4, May 2015, 43-47). He writes that the world requires transformational change to pave the way for a new development paradigm that enhances health and security, creates jobs, and safeguards the environment. Achieving this global systemic change requires rethinking economics, "a truly holistic approach," prophetic vision, and "true political leadership"—a prescription that embraces the concerns of both Dror and Dixon.

5. Making Change Happen

The four books reviewed above articulate a hunger for wide-ranging transformation, and provide some of the ideas for guiding the process. But how best to cook up the ingredients to make a palatable meal? Two very different books provide some recipes.

Duncan Green, a Senior Strategic Advisor for Oxfam and Professor in Practice at the London School of Economics, addresses his book to "activists who want to change the world," including people on the margins of society, reformers inside "the system," enlightened business people, faith groups, and other influential players. He advances a "power and systems approach" (PSA) that interweaves thought and action to place our bets intelligently. "A PSA encourages multiple strategies, rather than a single linear approach, and views failure, iteration and adaptation as expected and necessary, rather than a regrettable lapse." (p.7)

Chapter 1, "*Systems Thinking Changes Everything*," notes that a defining problem of human systems is complexity, due to the sheer number of relationships and feedback loops

among their elements. "In complex systems, change results from the interplay of many diverse and apparently unrelated factors. Those of us engaged in seeking change need to identify which elements are important and how they interact." (p.10) Change in complex systems occurs in slow steady processes and in sudden jumps, which can open the door to previously unthinkable reforms. But activists keen to change the world should look hard before they leap: "map, observe and listen to the system to identify the spaces where change is already happening and try to encourage and nurture them." (p.20) Some principles to bring about change: be flexible, seek fast and ongoing feedback, success is often accidental, undertake multiple parallel experiments, convene and broker relationships, and learn by doing.

Chapter 2, "*Power Lies at the Heart of Change,*" observes that the most evident and discussed form of power is "visible power" in the world of politics and money, and activists usually focus their efforts on those who wield this power. But they should also consider "hidden power" that goes on behind the scenes, and "invisible power" that often determines the capacity of change movements to influence visible and hidden power. Another approach is to consider power within (self-confidence), power with (collective power through organization), power to (capacity to decide), and power over (hierarchy and domination).

Other topics include why change *does not* happen (institutional resistance, questionable ideas, entrenched interests), shifts in social norms that often underpin change, how states evolve, the law as driver of change, international law, political parties as drivers of change, the media and accountability, how the international system shapes change through hard and soft power, the UN's Sustainable Development Goals (discussion on implementation is ongoing, and "could yet produce something that influences national governments"), transnational corporations as drivers and targets of change (opinions on TNCs seem to be more polarized than on any other topic), how TNCs drive change, citizen activism, leadership as central to understanding how change happens, the power of advocacy, and humility as the first lesson for activists. In sum, "thinking more deeply about how change happens should change everything." (p.254)

COMMENT. Practical wisdom, case studies, and anecdotes from an experienced advocate for change, written in an informal style. But also plenty of footnotes citing the likes of Amartya Sen, Donella Meadows, Naomi Klein, Hernando de Soto, Francis Fukuyama, Mahatma Gandhi, and many more.

6. Fostering Large Systems Change

A very different approach is taken by <u>Steve Waddell</u>, a Boston-based sociologist and author of **Societal Learning and Change** (Greenleaf Publishing, 2005), **Global Action Networks: Creating Our Future Together** (Palgrave Macmillan, 2011), and his latest, **Change for the Audacious: A Doer's Guide** (2016), which is about "Large Systems Change for a Flourishing Future" (this is on the cover and should be the book sub-title, but is not). The core concept is "societal change systems" (SCSs), which arise through a transformation, complexity, and systems thinking lens. The purpose here is to make SCSs visible and enhance their power and individual change actions by seeing them in this context.

Chapter topics:

− transforming our approach to change ("a large change is needed in the way we approach change");

− understanding complexity and types of change (incremental, reform, transformation);

− five case studies of large systems change (e.g., environmental change and the rise of the Anthropocene concept);

− large systems change pathways (how to move issues from a complex state to one that can be addressed by traditional and simple approaches);

− acting with a full spectrum of change strategies (supporting change, forcing change, co-creating change, negotiating change);

− creating societal change systems (without understanding the whole, once can undermine efforts by taking poorly-informed actions);

− organizing change initiatives (action networks, communities of practice, social innovation labs);

− growing collective action (with The Collective Leadership Compass on group formation, The Systemic Change Process Map using system dynamics mapping, analyzing development of Action Networks);

− which tools to apply and when (systems mapping, foresight and scenarios, collective action processes, social media, learning processes, assessment processes, big data collection);

− five key qualities of successful change agents (attentiveness to one's own life balance and well-being, empathy, being humble and honoring the work of others, audacity to continue once recognizing the scale of a challenge, seeing connections that are often not evident to others);

− 11 summary lessons (be transformation focused, match the tools to the tasks, hold complexity and learning as core dynamics, emphasize organizing rather than organization, etc.)

   COMMENT. Waddell's book overlaps with Duncan Green's, especially in emphasizing a systems perspective, but it is otherwise quite different in style, with numerous tables and figures, some of them overly complex for most users. The title of the book, **Change for the Audacious,** immediately invokes reference to the current Trump-led regime in the United States, which seeks audacious change in quite the opposite direction from that suggested here, but is generally inept in realizing results. Arguably, Trumpistas would benefit from a dose of humility and reflection, but reading this book—indeed, any book—will certainly not happen! One can only hope that this divisive and potentially dangerous regime will be short-lived, and that public attention can then be invested in constructive global systems change.

A FINAL COMMENT. This lengthy review covers six books. The first two are largely empirical, on the neglected Arctic system and earth system change, and on under-appreciated greening of organizations. The middle two are largely normative, on the need for a whole systems rethinking of all of our industrial-era ideas guiding society, and on the need for more leaders to think about saving humanity from itself. The final two books are on methods for taking advantage of these observations and proposals. All six books are passionate, and implicitly or explicitly advocate a "big picture" systems perspective. And all might benefit from understanding each other. [ALSO SEE "Sixteen Worldviews" (*CADMUS* 2:2, May 2014, 155-162) for further brief reviews on global systems change.]

Author contact information
Email: mmarien@twcny.rr.com