



Sustainability and Modern Society



ACE
ADULT CONTINUING EDUCATION AT UCC

Adult Continuing Education
Seminar Series

Science, Complexity & Spirituality

- ❖ Dr Edmond Byrne
Dept. of Process & Chemical Engineering, UCC
- ❖ Dr Ger Mullally
Dept. of Sociology, UCC
- ❖ Dr Denise Gabuzda
Dept. of Physics, UCC



Sustainability and Modern Society



Science, Complexity & Spirituality



- ☐ Complexity theory: opportunity for science, religion and a sustainability informed ethic?
Edmond Byrne
- ☐ Complexity in Modern Culture
Ger Mullally
- ☐ Science, Complexity & Spirituality: A Quaker Perspective
Denise Gabuzda



Sustainability and Modern Society



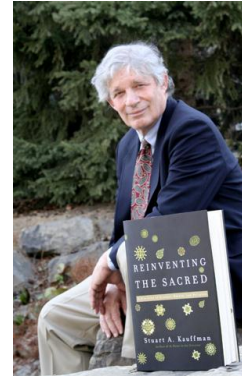
"All of us, whether we are **secular** or of **faith**, lack a **global ethic**.

In part this is as a result of the split, fostered by **reductionism**, between the world of **fact** and the world of **values**. We lack a shared worldwide framework of values that spans our traditions and our **responsibilities to all of life, one another and the planet**.

Secular humanists believe in fairness and the love of family and friends, and we place our faith in democracy.

Our diverse **religions** have their diverse beliefs. But in the industrialised world **all of us** are largely **reduced to consumers**."

S. Kauffman (2008)



Stuart Kauffman,
biologist & complexity
theorist



Sustainability and Modern Society



"All of us, whether we are **secular** or of **faith**, lack a **global ethic**.

In part this is as a result of the split, fostered by **reductionism**, between the world of **fact** and the world of **values**. We lack a shared worldwide framework of values that spans our traditions and our **responsibilities to all of life, one another and the planet**.

Can complexity theory provide a
opportune platform upon which to build a
sustainability informed '**global ethic**'
on our constrained planet?

Secular humanists believe in fairness and the love of family and friends, and we place our faith in democracy.

Our diverse **religions** have their diverse beliefs. But in the industrialised world **all of us** are largely **reduced to consumers**."

S. Kauffman (2008)



Stuart Kauffman,
biologist & complexity
theorist



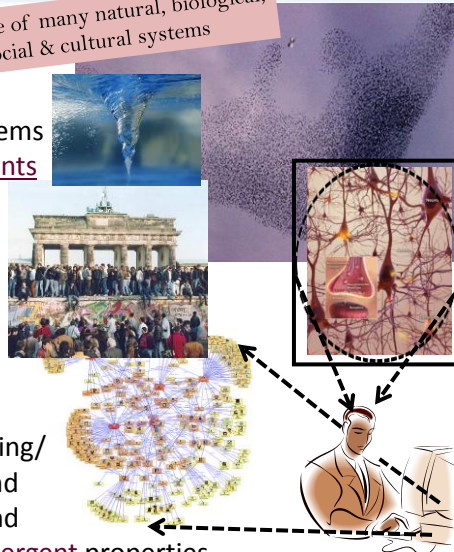
Sustainability and Modern Society



Complex Systems..

A feature of many natural, biological, social & cultural systems

..dynamic open (thermodynamically) nonequilibrium dissipative adaptive systems comprising a large number of nodes/agents (promoting diversity) exhibiting a large number of connections (promoting resilience) while subject to bifurcation/ tipping points, displaying non-linear and indeterministic behaviour, governed neither by exclusively reductionist bottom-up (individualistic/selfish) nor reductionist top-down (uniform/controlling/ hierarchical) drivers but by interactive and co-evolutionary combinations of each and 'propensities' and which may lead to emergent properties.



Sustainability and Modern Society



Complexity theory can inform conceptions around Sustainability:

παντα ρει

"All flows, nothing remains the same"

Heraclitus (535-475BC)



A reductionist approach where sustainability is sought in terms of finding some 'unique optimisation solution' is wholly inappropriate if one considers sustainability as an emergent property of a flourishing (complex) system. Approaches must be contingent rather than definitive and experiential knowledge is important.



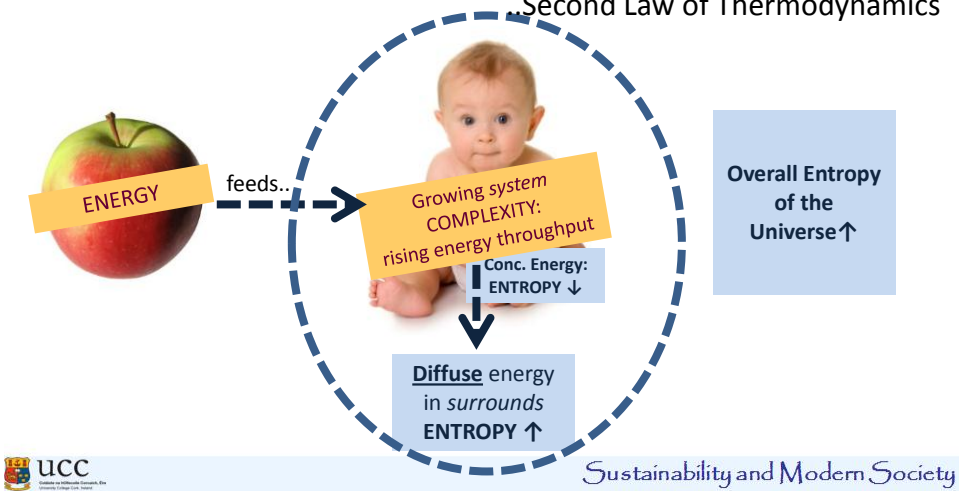
Sustainability and Modern Society



Thermodynamic basis for Complexity

'The entropy of the universe increases with any spontaneous process'

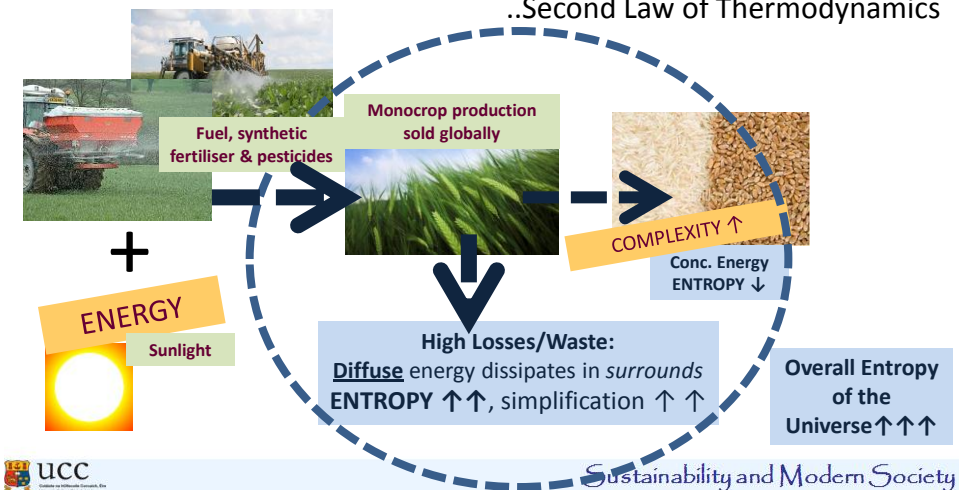
..Second Law of Thermodynamics



Thermodynamic basis for Complexity

'The entropy of the universe increases with any spontaneous process'

..Second Law of Thermodynamics

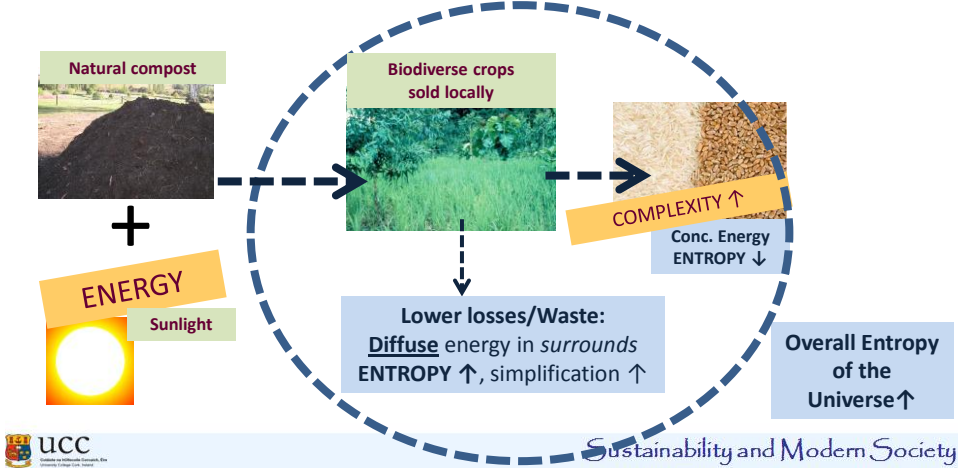




Thermodynamic basis for Complexity

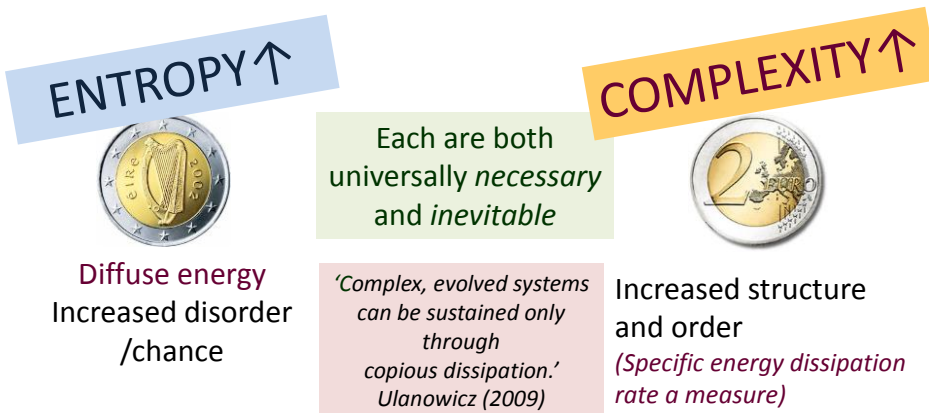
'The entropy of the universe increases with any spontaneous process'

..Second Law of Thermodynamics



Complexity and Entropy:

Complimentary opposites; 2 sides of the (2nd Law) coin



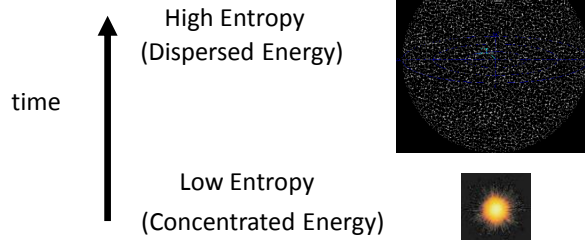


The 2nd Law & Complexity; A cosmic perspective

The second law states: entropy of the universe increases with time.

Thus energy (and mass) becomes more diffuse with time and the **universe increases in size**.

On this basis, if we go back in time, all energy and mass must have been conserved at a singular point: the standard cosmological model of **big bang** theory.



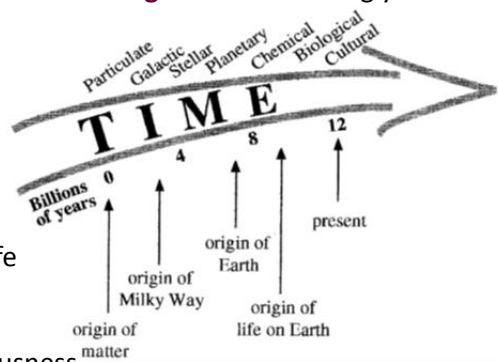
Sustainability and Modern Society



Cosmic Evolution: the 'standard model'

Over billions of years, increasing entropy under non-equilibrium thermodynamic conditions enabled the **emergence** of increasingly **complex** systems from:

- primal energy
- elementary particles
- atoms
- galaxies and stars
- heavy elements
- molecular building blocks of life
- life (biosphere)
- intelligent life - consciousness
- consciousness of consciousness
- cultured and technological society



(Harvard Astrophysicist Eric Chaisson, 2005)



Sustainability and Modern Society



Cosmic Evolution

rate of energy dissipation per unit mass (**power density** (Φ_m) erg/s/g) has been used as a measure of complexity (Chaisson, 2009, 2012):

- our sun 2 erg/s/g
- the earth's biosphere 900 erg/s/g
- animal bodies ~ 20,000 erg/s/g
- human brain (most complex natural system known) 150,000 erg/s/g
- Hunter gatherer societies (from ~300,000 yrs ago) 30,000 erg/s/g
- Agricultural society (from ~10,000 yrs ago) 100,000 erg/s/g
- Industrialised society (from ~200 yrs ago) 500,000 erg/s/g
- Developed world society today 2,000,000 erg/s/g
- SUV's 1,000,000 erg/s/g
- Boeing-747 jumbo jets 10,000,000 erg/s/g
- Silicon chips 10 billion erg/s/g



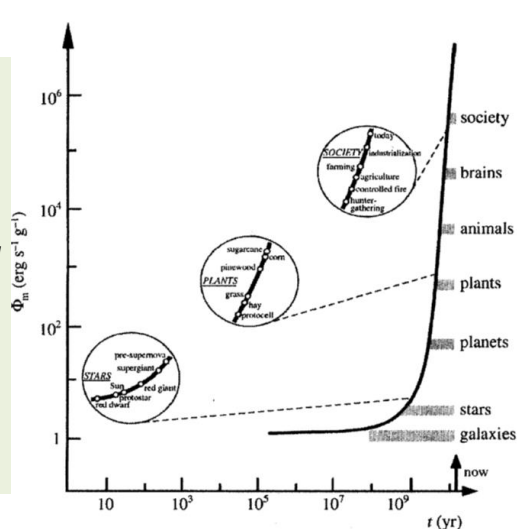
Sustainability and Modern Society



'Two Cultures' One?

'The result is a grand evolutionary synthesis bridging a wide variety of scientific specialties - **physics, astronomy, geology, chemistry, biology, anthropology**, among others and including the **humanities** - a genuine epic of vast proportions extending from the very beginning of time to the present'

Chaisson (2012)



Sustainability and Modern Society

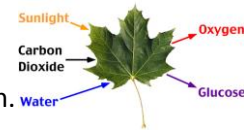


Cosmic Evolution

However, over the past 150 years, rapidly increased **complexification** has been fed by **energy binge** on fossil fuels, and an accompanying surge in **entropy** production.



This has disrupted the steady state **balance** between **photosynthesis** and **respiration** which manifests itself as both atmospheric CO₂ rise and additional heat dissipation.



*'All of this **complexification**, which has decidedly bettered the quality of human life as measured by health, education, and welfare, inevitably came—and continues to come—at the expense of greatly **increased demand** for more and enriched **energy**, which now drives us toward a fate on Earth that remains unknown.'* Chaisson (2012)



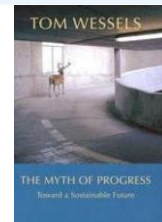
Sustainability and Modern Society



Entropy and the Biosphere

Environmental degradation is symptomatic of this **increase in entropy** and **reduction in complexity** resulting from increased energy appropriation. e.g. (Wessels):

- loss of natural **forests**/replacement with monocrop plantations
- conversion of semi arid woodlands to **desert**
- eutrophication** of aquatic environments
- depletion of the world's **fisheries**
- loss of **global diversity** and **species extinction**
- global warming & climate change**
- environmental degradation**, e.g. the BP Gulf of Mexico disaster in 2010, Canadian oilsands, Greenland oil deposits



Sustainability and Modern Society



"All of us, whether we are **secular** or of **faith**, lack a **global ethic**.

In part this is as a result of the split foot reductionism between

Can complexity theory provide a opportune platform upon which to build a sustainability informed '**global ethic**' on our constrained planet?

of the love democracy.

Our diverse **religions** have their diverse beliefs. But in the industrialised world **all of us** are largely **reduced to consumers.**" S. Kauffman (2008)



Stuart Kauffman, biologist & complexity theorist



Sustainability and Modern Society



A complexity theory based 'global ethic'?

In the face of 21stC '**Grand Challenges**' -energy, climate change, food and water:

- **Lower energy appropriation**, less socio-technical complexity (erg/s/g) → **transformation** and great social & technical **innovation**?
- **Recognising complexity** in social, techno-economic, environmental systems:
 - **Pragmatic** and **contingent** approaches to complex 'wicked' problems – **uncertainty/indeterminacy inherent** in complex systems
 - Promote **resilience** through **diversity**: e.g. *biodiversity, market diversity (in opposition to corporate uniformity/'McDonaldization')*
 - **No top-down** (market globalisation/totalitarian) or **bottom-up reductionism** (individualism) but enhanced **co-evolutionary localisation/citizenship** within an agreed sustainability informed **global ethic**
 - A global **sufficiency** ethic replacing (self interest, scarcity and competition driven) **consumer** capitalism
 - An ethic which acknowledges and embraces **meaning** and **values** in our world ahead of a reductionist approach.



Sustainability and Modern Society



Complexity, Society and Sustainability



Sustainability and Modern Society



- We cannot predict the planetary future, but we can sketch plausible possibilities. We explore the terrain of the future not to forecast what will be, but to envision what could be. Well-designed scenarios serve as prostheses for the imagination, giving breadth and specificity to our longer-term outlooks. They are thought experiments for identifying critical uncertainties, examining the dangers ahead and inspiring corrective action. Rather than prediction, the point is to enrich the visionary imagination and sharpen debate about the world we want and ways to get there (Raskin 2009. 120).



Sustainability and Modern Society



Culture of Separation: Separation of Cultures (Caraça 2012)

- The strength of separation
 - Mathematics from natural language (Galileo from the Bible)
 - Church from State (Reformation)
 - Public from Private (Trade and commerce with ocean navigation from the agrarian world)
 - Separation of truth and religions
 - Mind and matter
 - Disciplinary – natural philosophy from philosophy and the humanities
 - Objects from models
 - Ontology from epistemology
 - Space (appropriable) time (linear)
- 'Modernity provided the adequate framework for the endeavour of capitalism: a powerful engine (the modern enterprise); a search for technological inventions to fuel the engine; a progressive dematerialisation of money through financial innovations; and an interstate system that progressively expanded in the world (2012: 47).
- The transformation of society ... separations in everyday life. Industrial societies saw the inversion of the relation between the economic and the social: instead of the economy being embedded in social relations as in the past, social relations became embedded in the economic system. The economy became separated from society and, further home became separated from work
- Using new technologies finance extended the capacity of coordination at a distance (beyond political borders). Finance increased control of the economy and captured it through further dematerialisation of the monetary system



Sustainability and Modern Society



Modern Culture ...

- The Pre-eminence of Modern Culture
 - Nature (an infinite resource able to be transformed through by the knowledge of its laws);
 - Science (the legitimate way to discover the truth);
 - Universality (values and perceptions of European peoples imposed and accepted in all corners of the world); and
 - Sovereignty (each state was like an atom, indivisible and acting as a legitimate component in the interstate system).

(For a related account see Ferguson 2012 – Civilization – the Six Killer Apps of Western Power)



Sustainability and Modern Society



...and cognitive crises (Caraça 2012)

- Environment replaces nature – nature is no longer a permanent scenario, the environment a stage where actors perform – there is no author, nor a plot: the actors create their own narrative as they play, and they are responsible for the outcomes; inclusively for the deterioration of the stage.
- Science becomes knowledge (in reductive economic sense) redefined as a set of fields that together with techno-science feed the success of the new services and new economy in the globalized world 52



Sustainability and Modern Society



- Globalisation replaces universality -permanent, sacred, eternal/ historically secured protection of the citizen from the state allow the exercise of citizenship –
 - globalisation trumps rights favouring contracts that are constantly negotiated and renegotiated. 52
 - Citizens trumped by markets - People are disposable reduced to a function –producer and consumer, transformed into human resources
- Governance has substituted for sovereignty –liberalization, deregulation and privatisation
 - governments recede from economic sphere, new actors at a distance have considerable economic and social power, people and institutions feel insecure.
 - Financial capital accelerates this trend and further dis-embeds from economy



Sustainability and Modern Society



Crises and Complexity

- Efforts to protect nature from society (mitigation) and to protect society from nature (adaptation) have at their core the assumption that social conduct can alter natural processes and that natural processes can have a significant impact on social relations (Grundmann and Stehr 2010: 907).
- Normal and Post Normal Crises
 - Systemic crisis – every two generations a transformation of the technical infrastructure of production changes. Crises of structural adjustment
 - Identity crisis – breakdown of social integration: when members of society become aware of disruption and their lives of collective identities are threatened
 - Metamorphosis of crises – post normal
- All the grand challenges we face today, from climate change to life-sustainability, from innovation to city management, are complex by nature. Very simply, complexity is the impossibility of separating a system from its context, a living being from its environment, an object from its measuring instrument. Exit separation!



Sustainability and Modern Society



The Past and Present of the Future? A Futurologist and Historian ...

- 'We live an extraordinary time, a turbulent interregnum between the familiar world of the past and a very different one in the making. So far, though, we seem to be flying nearly blind toward a dubious future without benefit of roadmap or clarity of destination' (Raskin 2009: 112).
- The story of history does not have to be a grand narrative ...the content of (a historical) life-world includes not only countless daily material interactions but inevitable speculations about the meaning of it all. A crucial dimension of a life-world is its horizon. There is always an edge to it, and a constant, strong human desire to look beyond the edge (Williams 2012: 8).



Sustainability and Modern Society



... meet a nuclear physicist ...

- ...the historical life-world emerging in the early twenty first century appears to be one of lingering hopes for progress mixed with growing anxiety about intersecting crisis (ibid. 35)
 - (life world: symbolically structured space of taken-for-granted meanings in which cultural traditions, social interaction and personal identity are sustained and reproduced (Thompson 2012: 62)
- Yet the scenario of sustainability does not seem present and real ...much more plausible ... daunting and frightening... climate change, nuclear warfare, pandemics, scrambles for water and food – rather than suggesting a future apocalypse (crisis as episode or final cataclysm) but an indwelling condition, containing its own aftermath, which increasingly dominates the historical life-world (39)
- Tomorrow will be worse than today. And the markets will make sure that we know that today is all we have. Immediate consumption is the only certainty that is allowed ... for the first time in centuries (except during periods of war) we do not see the light at the end of the tunnel. We have become afraid of the future (Caraca 2012).



Sustainability and Modern Society



...and a couple of sociologists.

- Distinction between 'the future of catastrophic [climate] change to come' vs. the 'present anticipation of a catastrophic future' ... and the political and social consequences (Beck and Van Loon 2011).
- a triune (three-in-one) of interrelated crises of an interregnum, *uncertainty* and institutional disparity - sovereignty loosely tied to earlier triune of territory, state and nation (Bauman 2010)



Sustainability and Modern Society



Narratives of the Future?

- **Pathways to the Future– (Raskin 2009)**
- Three broad channels radiate from the present into the imagined future: worlds of incremental adjustment, worlds of catastrophic discontinuity, and worlds of progressive transformation.
 - An archetypal triad - evolution, decline, and progression
 - *Conventional Worlds, Barbarization, and Great Transitions*
- **Conventional Worlds**
 - a gradual process of technical innovation and social learning.
 - technological innovation to reconcile growth with ecological limits
 - Policy Reform variant -initiatives to align the economy with the social goal of reducing poverty and the environmental goal of sustainability.



Sustainability and Modern Society



- **Barbarization**
 - the world drifts toward general crisis, and civilization erodes
 - fortress worlds - authoritarian global apartheid
 - Breakdown variants, by contrast, such forces cannot counter or even inhibit chaos and conflict.
- **Great Transitions**
 - worlds that transcend reform to embrace new values and revise the aims of global development.
 - 'small-is-beautiful' variants
 - New Sustainability Paradigm, sees globalization not only as a threat but also as an opportunity to construct new categories of consciousness – global citizenship, humanity-as-whole, the wider web of life, and the well-being of future generations – alongside a global institutional architecture for balancing pluralism with unity.



Sustainability and Modern Society



- **Sensing and Ending: Narratives of the Life-world (Williams 2012:)**

- Adapting Kermode's theory of fiction, human storylines typically have three alternatives: salvation, endless cycles, destruction
- Salvation in Christianity and other faiths, progress in secular versions towards which history is moving
- Everlasting cycles, generation after generation, learns from, imitates and repeats the previous ones durable but not immortal – in a world where progress seems to generate crisis – sustainability has a role to play
- Destruction in religion as apocalypse, in secular versions convergent, culminating crisis – no longer imminent but immanent



Theoretical Paths and Path Theories (Tiberius 2011)

- Possible, Probable, Preferable and Preventable *Futures* (Tiberius 2011: 10)
 - Positive Futures (Possible and Probable)
 - Normative Futures (Preferable and Preventable)
 - ‘Planned Path Emergence’ suggests that the ‘future as will be’ and the future that ‘should be’ cannot be separated dichotomously
- Path theories can extend theoretical language
 - Path Dependence, Path Breaking, Path Creation





- Path dependence theory deals with critical events in combination with self-reinforcing processes that affect or even effect subsequent developments and lead to a stable state (lock-in). With path breaking, ways are discussed to unlock paths. Finally, path creation denotes attempts to shape a path according to the actor's or actors' will. In such, path theories reflect different ontological positions on drivers and restraints of change and persistence (Tiberius 2011:10).



- On Path Creation:
 - For Garud & Karnøe (2001), the main requirement is *mindfulness*, which "implies the ability to dis-embed from existing structures defining relevance and also an ability to mobilize a collective despite resistance and inertia that path creation efforts will likely encounter" (p.2). For them, dis-embedding is mainly a cognitive task which involves de-framing, dis-crediting and unlearning (ibid. 16)
 - (Not creation without limits, but respecting emergence and randomness)



- Which pathways are pursued and which are not is in large part a question of governance: a politics of narratives and pathways shaped by power relations and institutions (Leach, Scoones and Stirling 2010: 65)
- the framing of the global problem, issues of inequality and justice, possible organisational responses, legal underpinnings, global economic pre-conditions and consequences all exacerbate *uncertainty* (Beck and Van Loon 2011)
- Since the 1980s, the threads of global connectivity have been lengthening, strengthening, and thickening in every domain of human activity (Anderson, 2001). Yet, discussion of planet-scale phenomena has proceeded in largely parallel discourses, all introduced by the modifier “global”: economy, corporations, finance, environment, communication, governance, civil society culture, terrorism...



Sustainability and Modern Society



- ...‘taking a long historical view reveals their common genesis. They are best perceived as separate manifestations of a larger world historic process: the emergence of an integral global social-ecological system. The many forms of “globalization” are rising like the saplings of a young forest rooted in a common substratum, their crowns tangling as they grow’ (Raskin 2009: 114-5).
- With *planned path emergence*, a middle course was suggested. Congruent to the prevailing view in futures literature that the idea of shaping the future should dominate over the conception of a predetermined future that can be attempted to be predicted, restrictive indeterminism in general and planned path emergence in particular focus on the voluntaristic perspective (choice), yet simultaneously accept restrictions and random events (Tiberius 2011: 19).



Sustainability and Modern Society



Science, Spirituality & Sustainability: A Quaker Perspective

Denise Gabuzda
Physics Department, UCC
Cork Quaker Meeting



Sustainability and Modern Society



Origins of Quakerism

- “Religious Society of Friends” founded in 1650’s by George Fox and assorted likeminded “seekers”
- Arose from foment of civil war and religious dissent in mid-1600’s in England
- Central basis is belief in ability of each person to directly make contact with the Divine, “that of God in everyone”, leading to various “testimonies” about how we should live:
Equality, Truth, Integrity, Peace, Simplicity
- Rejected need for clergy and written doctrine or creed, Sunday masses/services became Meetings held mostly in silence, with occasional spontaneous vocal ministry



Sustainability and Modern Society



Quakerism and Science

- Quakerism seems to have produced (or attracted) scientists out of proportion to its size
- Famous Quaker scientists include

John Dalton, Luke Howard, Thomas Hodgkin, Joseph Lister, Arthur Eddington, Kathleen Lonsdale, Jocelyn Bell Burnell and many others



Sustainability and Modern Society



Possible reasons for Quakerism–science connection:

- Scientific studies viewed as “practical” by early Quakers
- Quakers were excluded from Oxford and Cambridge as religious “dissenters”; many studied at universities in Scotland or Europe that were more likely to have developed programmes in the sciences
- Avoidance of strict dogma and lack of clergy gave Quakers a greater flexibility in response to science
- Physical Universe as God’s creation (interpreted in various ways) removes conflict between science and religion — studying the physical universe is both a scientific and spiritual endeavour



Sustainability and Modern Society



- Link between Quaker testimony to searching for Truth and scientific process of searching for “truer” descriptions of nature
- Quaker view that Truth and our relationship to the Spirit can be discovered “experientially” parallels idea of discovering laws of Nature experimentally
- Physicist Silvanus P. Thompson (1851-1916) suggested that Quakerism, with its emphasis on the Inner Light, could find a natural ally in science.
- "In both Quakerism and science you must be completely ready to revise what you hold to be the truth; you always hold things provisionally, and you are always open to revising them." — S.Jocelyn Bell Burnell



Sustainability and Modern Society



Quakerism and Sustainability

Historical thread of environmental concern present since 18th century, most clearly and eloquently expressed by the American Quaker John Woolman (1720–1772):

“... to say we love God as unseen and at the same time exercise cruelty toward the least creature ... is a contradiction in itself”

“The produce of the earth is a gift from our gracious creator to the inhabitants, and to impoverish the Earth now to support outward greatness appears to be an injury to the succeeding age.”



Sustainability and Modern Society



Sustainability now viewed by increasing numbers of Quakers as a spiritual issue, closely tied to the Quaker Testimonies:

Integrity — treating all living things with Integrity, better understanding of interconnections between all living things

Equality — that of God in every living thing; severe weather, climate/ecosystem disruption hit poorest hardest, increasing inequality among people worldwide

Simplicity — aiming to live more simply, resisting draw of consumerism and materialism, which damage our spiritual health and well being



Sustainability and Modern Society



Peace — roots of war and conflict often tied to scarcity of natural resources; pollution, urban development, unchecked use of fossil fuels, climate disruption are leading to a new series of “resource wars” or “climate wars”

Social Justice — society and ecosystems on which we depend can each be healthy and in balance only when the other is too; exploiting the environment also means exploiting people

⇒ Being a Quaker means being an environmentalist

⇒ Sustainability is fundamentally a spiritual issue



Sustainability and Modern Society



Awareness of environmental sustainability as a Quaker concern is spreading among Quakers worldwide

- “Quaker Earthcare Witness” established in the US in 1987, to support and link American Quakers concerned about environmental issues
- “Living Witness Project: Quakers for Sustainability” established in 2002; Britain Yearly Meeting adopted the goal of becoming a low-carbon, sustainable community in 2011
- “EcoQuakers Ireland” founded within Ireland Yearly Meeting in 2008, now an official Committee of IYM
- Environmental statements issued by increasing number of Quaker Yearly Meetings around the world



Sustainability and Modern Society



Sustainability as a Spiritual Issue

- Valid more generally in a much wider spiritual/religious context (both Western and Eastern; usually inherent to indigenous religions)
- Makes it possible to start from a positive place: actions are based on desire to live more ethically, in harmony with Nature (“God’s creation”), rather than being based on fear
- Idea that physical, mental, spiritual health/well-being are damaged by excessive materialism/consumerism, disregard for the rights of exploited people, disregard for the environment
- Links to wide range of inter-connected issues and ideas currently being explored in various disciplines



Sustainability and Modern Society



- Interaction between spiritual/ethical and political (the Law of Mother Earth passed by the Bolivian government)
- Increasing level of inequality in society and the vast array of problems this leads to ("The Spirit Level" by Richard Wilkinson and Kate Pickett)
- Growing realization of importance of sense of community for our overall well-being, ties in with vision of neighbourhood-based communities, use of community-based transport etc.
- Need for a new economic system using measures of well-being in society (e.g. UNICEF index of child well-being) rather than GNP as measures of success



Sustainability and Modern Society



Law of Mother Earth Passed by the Bolivian Government

- Grants all Nature equal rights to humans
- Will establish 11 new rights for Nature, including the right to life and to exist; the right to continue vital cycles and processes free from human alteration; the right to pure water and clean air; the right to balance; the right not to be polluted; and the right to not have cellular structure modified or genetically altered.
- Will also enshrine the right of nature "to not be affected by mega-infrastructure and development projects that affect the balance of ecosystems and the local inhabitant communities".



Sustainability and Modern Society



- Interaction between spiritual/ethical and political (the Law of Mother Earth passed by the Bolivian government)
- Increasing level of inequality in society and the vast array of problems this leads to ("The Spirit Level" by Richard Wilkinson and Kate Pickett)
- Growing realization of importance of sense of community for our overall well-being, ties in with vision of neighbourhood-based communities, use of community-based transport etc.
- Need for a new economic system using measures of well-being in society (e.g. UNICEF index of child well-being) rather than GNP as measures of success

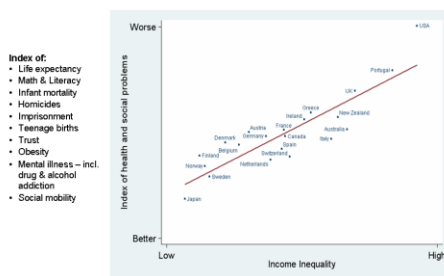


Sustainability and Modern Society



The Spirit Level — Inequality and Social Problems

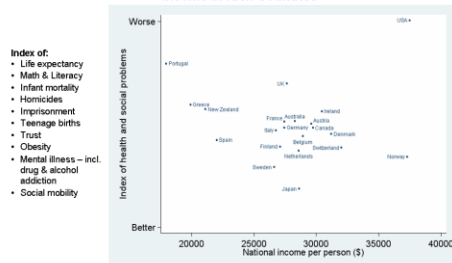
Health and Social Problems are Worse in More Unequal Countries



Source: Wilkinson & Pickett, The Spirit Level (2009)

www.equalitytrust.org.uk

Health and Social Problems are not Related to Average Income in Rich Countries



Source: Wilkinson & Pickett, The Spirit Level (2009)

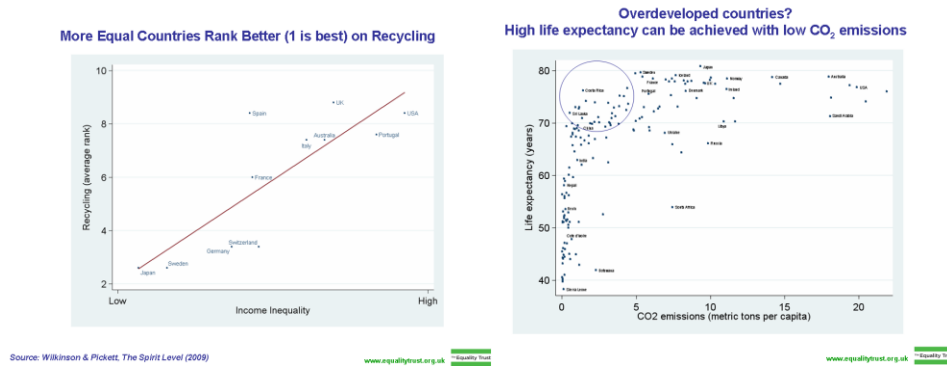
www.equalitytrust.org.uk



Sustainability and Modern Society



The Spirit Level — A Link between Equality and Sustainability?



Read “The Spirit Level” by Wilkinson & Pickett

(Note: Richard Wilkinson’s brother Martin is a Quaker!)



Sustainability and Modern Society



- Interaction between spiritual/ethical and political (the Law of Mother Earth passed by the Bolivian government)
- Increasing level of inequality in society and the vast array of problems this leads to (“The Spirit Level” by Richard Wilkinson and Kate Pickett)
- Growing realization of importance of sense of community for our overall well-being; ties in with vision of neighbourhood-based communities, use of community-based transport etc.
- Need for a new economic system using measures of well-being in society (e.g. UNICEF index of child well-being) rather than GNP as measures of success



Sustainability and Modern Society



- Interaction between spiritual/ethical and political (the Law of Mother Earth passed by the Bolivian government)
- Increasing level of inequality in society and the vast array of problems this leads to ("The Spirit Level" by Richard Wilkinson and Kate Pickett)
- Growing realization of importance of sense of community for our overall well-being, ties in with vision of neighbourhood-based communities, use of community-based transport etc.
- Need for a new economic system using measures of well-being in society (e.g. UNICEF index of child well-being) rather than GNP as measures of success



Summary/Springboard

There need not be a conflict between spiritual and scientific approaches to environmental concern.

Adding a spiritual dimension to the scientific, sociological, and economic arguments for environmental concern highlights the revolution that can be brought about by caring for the Earth:

Living in a way that is sustainable and respects the environment can help us lead more spiritually fulfilled, balanced, healthier and happier lives.

This can facilitate a shift from the required changes seeming impossible to our embracing this change with enthusiasm and joy.





Complexity theory: Enabling shared space for science, religion and a global ethic?

*'Newton's laws led to a **transformation** in **religious belief**. Much of educated Europe shifted its belief from a **theistic God** who intervened in the running of the universe, for example to answer a prayer, to a **deistic God** who created the universe, set the initial conditions and boundary conditions, and allowed Newton's laws to unfold deterministically.'*

S. Kauffman (Reinventing the Sacred, 2008)



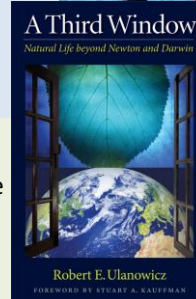
Sustainability and Modern Society



Informing a broader ethic: Uncertainty & Creativity

U. Maryland process ecologist, Robert Ulanowicz (A Third Window, 2009):

*'The [Newtonian] mechanical worldview has led to the **division of society** into what C.P. Snow has called "**Two Cultures**", a bifurcation that Goethe before him had so deeply mourned. ..Under the **ecological assumptions**, however, higher-level functions and systems can now be accorded **agency** that has been denied them under the Newtonian stricture of closure. ..although the postmodern revolution has not stripped science of all its special attributes, it did **open the world's eyes to the role that belief plays** in the enterprise.'*



Ulanowicz suggests that Prigogine's '**radical uncertainty**', inherent in the new scientific paradigm, facilitates a **common space** which can be shared by secularists and theists which can allow **similar conclusions** to be drawn from **different perspectives** while encouraging mutual '**metaphysical patience**'.



Sustainability and Modern Society



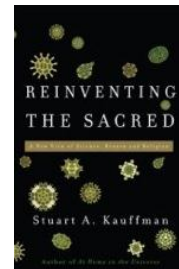
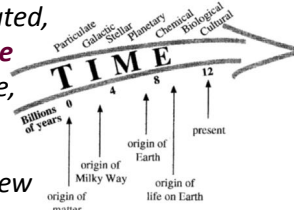
Informing a broader ethic: Creativity & Uncertainty

'If Darwinian preadaptations cannot be finitely predated, we move not only **beyond reductionism** to **emergence** ...[but] we will find ceaseless **creativity** in the universe, biosphere and human life.

..The **creativity in nature is God enough**. From that new **sacred**, we can hope to invent a **global ethic** to orient our lives, and our **emerging global civilization**.

..part of the **global ethic** that must evolve should include a good bit of Quaker thought: we know so little of the universe that **humility** is wise'

Theoretical Biologist Stuart Kauffman (U Vermont),
Reinventing the Sacred (2008)



Sustainability and Modern Society



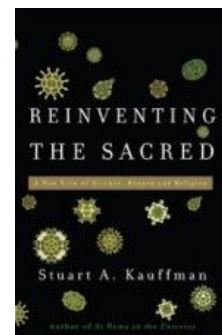
Informing a broader ethic: Creativity

'If we **reinvent the sacred** to mean the wonder of the **creativity** in the universe, biosphere, human history, and culture, are we not inevitably invited to **honor all of life and the planet** that sustains it?

As we unleash the **vast extinction** the accompanies our **global ecological footprint**, we are **destroying the creativity** in the biosphere that we should rightly honor.

This diversity we should say is **God's work** – not a supernatural Creator God, but the natural **God that is the creativity in nature**. We are in fact, **one with all of life**.'

Stuart Kauffman, Reinventing the Sacred (2008)



Sustainability and Modern Society



Informing a broader ethic: Creativity

..**God is creativity**, not one of the creatures (though deeply involved with the creatures). Thinking of God in this way means that God must be understood as ultimately **mystery**, beyond human comprehension

..**clearly to be thought of as the ultimate source and ground of all our human realities, values and meanings (including all Christian values and meanings).'**

Gordon Kaufman, Professor of Theology, Harvard (2004)



Sustainability and Modern Society

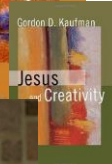
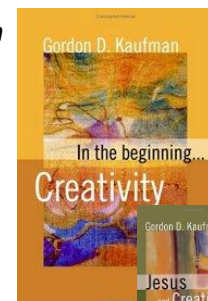


Informing a broader ethic: Creativity

'Today the **most important religious issue** ..has to do with the conditions that make all **life** – including human life – possible: we are **destroying** them, and it is we who must find a way to reverse the **ecologically destructive momentums** we have brought into being.

..**And we may no longer claim that Christians have a corner on the solution to it, nor do Buddhists, or Jews or the adherents of any other religion. What is now required is the reordering of the whole of human life around the globe in an ecologically responsible manner – something heretofore never contemplated by any of our great religious (or secular) traditions.'**

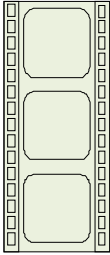
Gordon Kaufman (In the beginning ..Creativity, 2004)



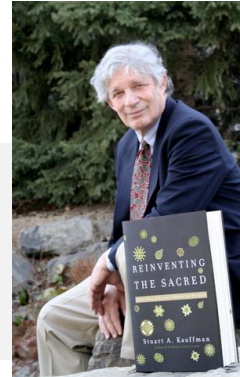
Sustainability and Modern Society



Informing a broader ethic: Creativity



- Stuart Kauffman on science, reductionism and a global ethic
<http://www.youtube.com/watch?v=8I5mYDUARY4>



See also, for example: http://www.i-sis.org.uk/Lives_of_Meaning.php



Sustainability and Modern Society



Informing a broader ethic: Connectedness & Values

*'Can we remain **indifferent** before the **problems** associated with such realities as climate change, desertification, the deterioration and loss of productivity in vast agricultural areas, the pollution of rivers and aquifers, the loss of biodiversity, the increase of natural catastrophes and the deforestation of equatorial and tropical regions?*

*Humanity needs a **profound cultural renewal**; it needs to rediscover those values which can serve as the solid basis for building a brighter future for all. Our present crises – be they economic, food-related, environmental or social – are ultimately also **moral** crises, and all of them are **interrelated**. They require us to rethink the path which we are travelling **together**.'*

Pope Benedict XVI (2010)



Sustainability and Modern Society



Informing a broader ethic: Process over reductionist Selfishness



East-Asian philosophical/Buddhist tradition

Dōgen (道元) (1200-53):

When you truly see **impermanence**,
egocentric mind does not arise,
neither does desire for fame and profit.

(courtesy of Prof. Graham Parkes
—see "Philosophy & Art" presentation)



Sustainability and Modern Society



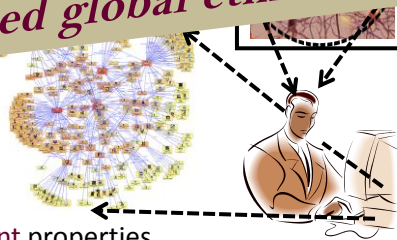
Complex Systems..

..dynamic **open** (thermodynamically)
nonequilibrium **adaptive** systems
comprising a **large** number of



Is it not **essential** that the immense **social**,
economic and **ecological complexity** of our
constrained plant is **recognised** in building a
sustainability informed global ethic?

(individualistic/selfish) nor
reductionist **top-down** (uniform/controlling/
hierarchical) drivers *but* by **interactive** and
co-evolutionary combinations of each and
'propensities' and which may lead to **emergent** properties.



Sustainability and Modern Society



Reflective exercise:

- ❖ Are spiritual and scientific views of sustainability in concert or in conflict?
- ❖ Why do they differ or reinforce each other?