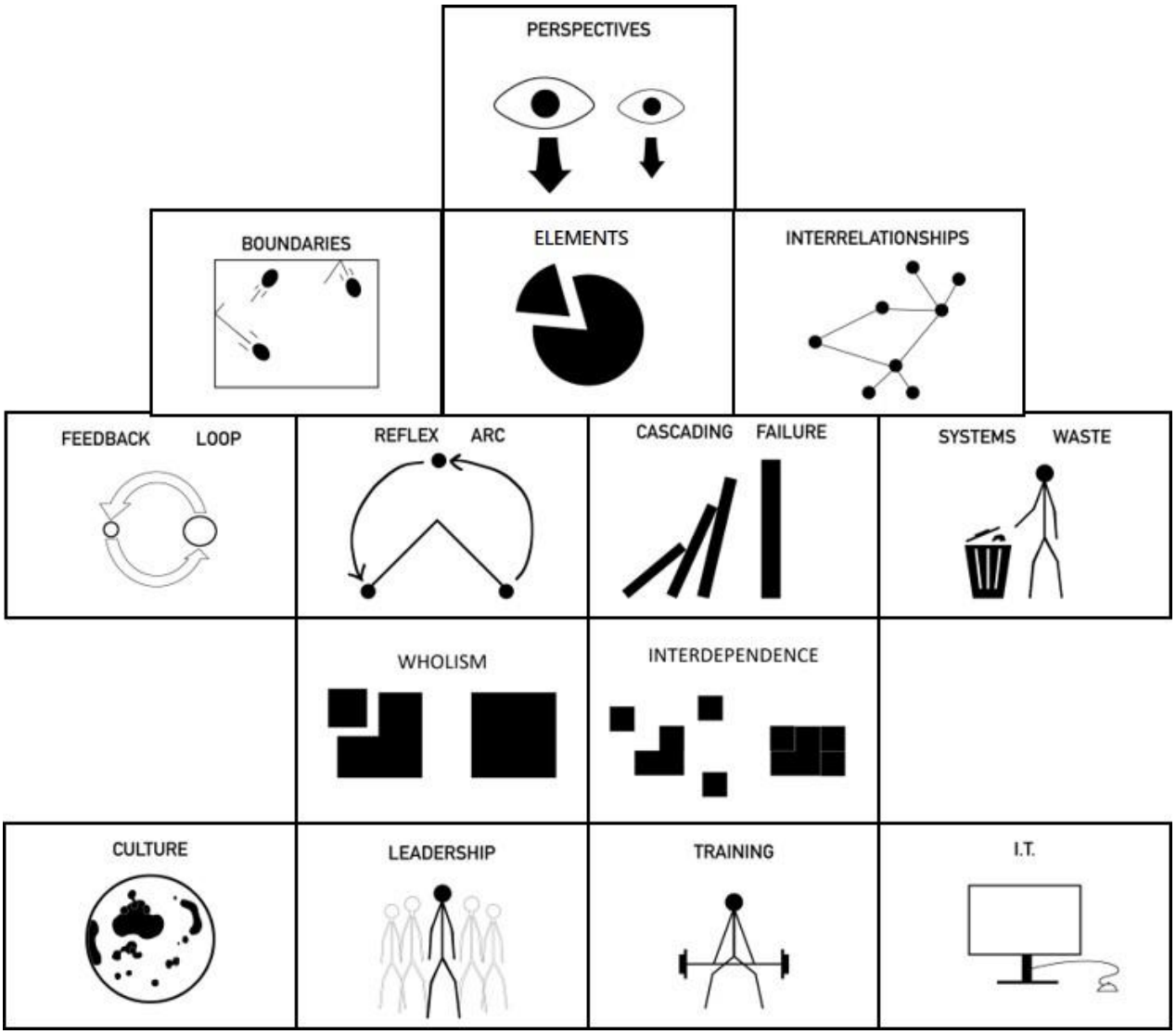
Systems Thinking 5



Contents

Welcome

This is our fifth communication! This newsletter took a little longer to get out, but with lockdowns we knew people were not going anywhere.

In **'Classic Theory Discussion'** we have a look at:

a. Some work completed by Donella Meadows using systems theory in 1972.
b. A new book (last year) written by Ray Ison and Ed Straw about transforming government through systems thinking

In the **'ideas'** section we consider what is science, what is not science, and is science ever really science, and then to help you get over all that we provide some therapy on toast.

In considering how **systems thinking** can be used **in evaluations**, we combine toast with the idea of creating space junk. Finally, in '**Controversy Corner'** we learn why Donella Meadows should have the last word.

As per the previous newsletters, we will gradually post elements of this newsletter over the coming period onto the "Systems Thinking and Evaluation" LinkedIn group. If you have not joined already, you can go to the following link and request to join. https://www.linkedin.com/groups/10508364/.

As always, a big thanks to **Julie Elliott**. She continually has interesting ideas and contributions.

Brian
Lewe
Ralph

PS. GREAT NEWS
Lewe is going to give a talk!
On **March 25th at 7pm Sydney time** Dr Lewe Atkinson and Linda Ginger will present the following topic:

"Think Like a System Act Like an Entrepreneur"

Zoom at
https://utsmeet.zoom.us/j/3282155789

ANZ SYS
The Austalia and New Zealand Systems Society including South Africa, India and Oceania
https://anzsys.org/

This is a free event, just zoom in.

Classic Theory Discussion

These are the foundation ideas from general systems theory. We have some interesting titbits from the time vault of Ms Donella Meadows. We also have one new book using a development approach of systems thinking as a framework to look at new ways of thinking about government.

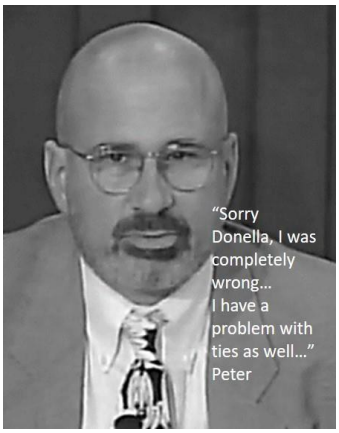
A. What Donella said…bits

"There are no separate systems. The world is a continuum. Where to draw a boundary around a system depends on the purpose of the discussion."[1]

Donella Meadows, who died unexpectedly in 2001, was an important systems thinker. One of her most famous works was lead author for 'The Limits of Growth' produced in conjunction with Jorgen Randers, Dennis Meadows and William Behrens (and a team of scientists).

An estimate is 30 million copies of the book have been purchased, and it has been published in 30 languages.

Not bad for a print run…!



This report, commissioned by The Club of Rome, was the first-time systems theory and computer modelling had been combined. They examined the five basic factors that determine and, in their interactions, ultimately limit growth on this planet. These were population increase, agricultural production, non-renewable resource depletion, industrial output, and pollution generation.

The reviews were ecstatic. **Peter Passell** and two co-authors described it as "an empty and misleading work ... best summarized ... as a rediscovery of the oldest maxim of computer science: Garbage In, Garbage Out" (2 April 1972, the *New York Times*)[2]. We provide the full review in Controversy Corner below.

As is usual with great movies, there have been two sequels since then:

1. "The Limits of Growth: The 30-Year Update" by Donella Meadows, Jorgen Randers, Dennis Meadows
2. "*2052: A Global Forecast for the Next Forty Years"* by Jorgen Randers

Resources:

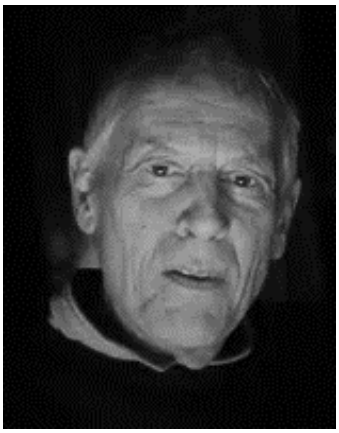
- Report and the Club of Rome - *https://www.clubofrome.org/publication/the-limits-to-growth/*
- A short outline of System Dynamics (12 minutes) *System Dynamics*
- Donella Meadows explaining the use of system dynamics in relation to causal loop diagrams – concepts of overshoot and collapse (62 minutes) - *Systems: Overshoot and Collapse*

[1] Donella Meadows (2008). "Thinking in Systems: A Primer", p.97, Chelsea Green Publishing

[2] https://www.nytimes.com/1972/04/02/archives/the-limits-to-growth-a-report-for-the-club-of-romes-project-on-the.html

B. The Hidden Power of Systems Thinking

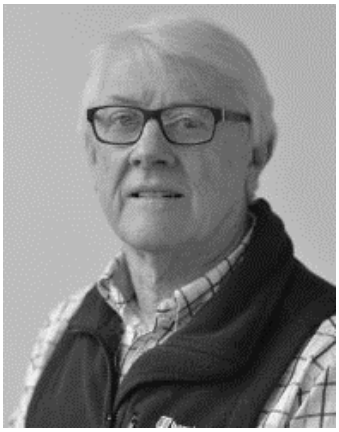
"The Hidden Power of Systems Thinking" by Ray Ison and Ed Straw was published in 2020, so it is reasonably hot off the press. This book is about considering public policy using a system thinking lens. They look at the causes of good and bad government and the economic and political malaise, particularly around climate change.



Ed Straw

Ed had a traditional boarding school English education. He developed a view that authority should be earnt rather than taken or acquired (really weird in England). He was taught by the amazing systems theorist, Stafford Beer, at the Manchester Business School

He was a consultant and partner with PWC (1982 – 2008), Global and UK Boards Director, European Head of Media, and Director of Quality.
He became a leading consultant to governments under Mrs Thatcher and Tony Blair, advising on public sector reform. As an expert on the design of organisations, he sat on the devolved Scottish Executive's 'Efficient Government' Expert Panel.



Ray Ison

Grew up close to the central west town of Bathurst. He has strong connections to farming background and an openness to the landscape. What is not to like about Ray?!! (this is newsletter authors bias…)

He said he used to, and still does, ask lots of 'why' questions. He is particularly interested in humans' interactions with the biophysical world – homosapiens struggle not to be exploitative.

He is an adjunct professor at UTS in Sydney in Sustainable Futures, and a Professor of Systems at the Open University (UK). He has written a few books, most notably "Systems Practice: How to Act" and generally seems like a really nice person.

Framing:

Ray and Ed frame this book by considering what it means to be living in "The Anthropocene". This period on earth is distinguished by the increasingly dominant impact that human activity is having upon the Earth's geology, ecosystems, and atmosphere. This is a somewhat controversial framing, because apparently '…cenes', or the definitions of Earth's time scale, are the responsibility of the International Union of Geological Sciences (IUGS). They say we are in the Holocene, which began 11,700 years ago after the last major ice age. They also say they have looked at the rock strata, and a new epoch is not upon us. It could be that they just can't remember the last naming ceremony.

The view of Ed and Ray fits with the philosophical view of Habermas. In crude terms humans have two fundamental cognitive interests, and a third interest in the analysis of power:

1. **Technical** – goals achieved through prediction and control
2. **Practical** – ensuring mutual understanding
3. **Emancipatory** – the above can be subverted by preventing open and free discussion. This comes from power relations that prevent the pursuing of interest or destiny.

Resources

- Ed Straw has completed a series of podcasts when you can listen to the ideas behind "The Hidden Power of Systems Theory" https://www.edstraw.com/category/blog/

- This book was published as part of a SYSTEMS THINKING series edited by Professor Gerald Midgley. Professor Gerald Midgley is the Professor of Systems Thinking at the University of Hull…Business School. He has had over 300 papers published on Systems Thinking, so he thinks a lot about systems – or otherwise 300 peer assessments have been slightly skew whiff (we do not discount this possibility!). If you want to go to his talk to the Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO) on the 3 October, 2014 "**An Introduction to Systems Thinking"** this is the link: https://youtu.be/yYyTUs9ipmc.

- Here is a Sydney University explanation about the central concepts of Habermas (approx. 7mins): https://youtu.be/1PzTyNe4tP4

Ideas

A. Science and Not Science

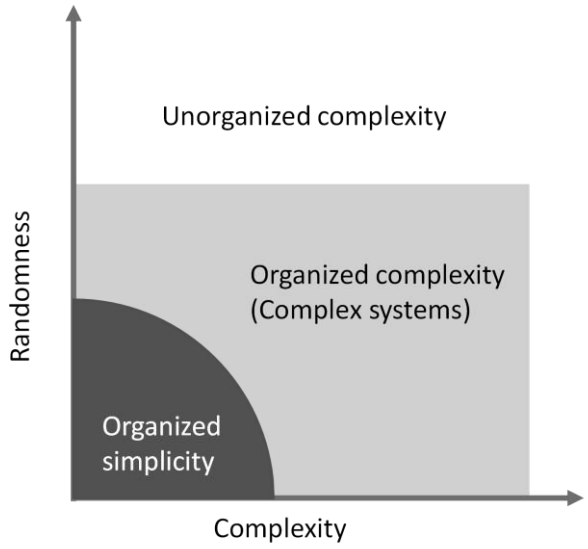
The following synthesis of ideas was put together by Michael Jackson[3] using numerous authors. If you are interested, check out his book. We have curated these ideas based on our experience in working with many organisations that see their primary mission as being 'guided by the science'.

> *"…the traditional scientific method has been successful in fields characterized by quantitative and logical problems where its mathematical tools can gain purchase. In the seventeenth, eighteenth, and nineteenth centuries it was able to tackle problems of organized simplicity involving a very small number of objects related in predictable ways (simple, deterministic)."*[4]

For systems and complexity thinkers, this is the area of machines or mechanisms. You can use classical mathematical tools of calculus and differential equations. How good is that?

> *"In the late nineteenth century, with the advent of statistical mechanics, science was able to broaden its scope to problems of unorganized complexity consisting of huge numbers of components exhibiting a high degree of unpredictability (complex, random). This is a region of aggregates, of gasses and populations"*

This is totally "unorganised complexity". Statistics and probability theory and the equations of thermodynamics were the new cool tools on the block. This meant science was great at organized simplicity, and unorganised complexity…there was just a grey area. This is the bit below statistical probability, but too complex for a reductionist approach (certainty in cause-and-effect attribution).



Unfortunately, this grey area seems to be where most of the problems in the real world inhabit. So should we not engage in any decision making when we can't be guided by the science?

Let us give you our real-world example. In two paragraphs:

[3] Jackson, Michael C "Critical Systems Thinking and the Management of Complexity" Wiley, Kindle edition, 2019.
[4] Weaver, W. (2003). Science and complexity. In: Systems Thinking (ed. F.E. Emery), 377–385. London: Sage.

1. Damming the river systems in the south east of Australia (the Murray Darling System specifically) created irrigation which produces most of Australia's food production - which is very good. This seems okay until native fish, wetlands and bird populations began to deteriorate. Science tells us this bit. Things in this area are not good, and this is very measurable.

2. It is theorized dams that created the irrigation opportunities reversed and disrupted the natural water flows. High flows at the end of winter and spring, now become high flows in summer (good irrigating time), and low flows in winter. It becomes very controlled. These flows create a monoculture of algae, which affects the entire food chain. Native fish which are not suited to these conditions so European Carp take over (it may have also been a plot by the European Economic Community). However, it could also be the disruption of dams to spawning conditions and fish migration. It may also be the cold-water pollution from releasing flows from the bottom of dams. The solutions envisaged are water to wetlands and more variable flows in line with natural variations. Also, let's fix those shivering fish if possible.

So far, science (to the prescribed levels) inhabits the first paragraph in this description. Systems analysis inhabits the second, including the reason for implementing the solutions presently evolving for the last twenty plus years. The use of systems theory continues to enable science to produce the much-needed evidence.

As we know, in the social science area it gets just as, if not more, murky. How many programs can reach acceptable certainty in outcomes based on strict statistical methods? How many decisions have to be made about millions of dollars of expenditure without the degree of certainty required to +/- 5%? Or with the requisite controlled experimentation?

> *"Once we reach the social level, a world of symbols, values, social entities, and cultures emerges. Humans are, through language, both symbol - dominated and symbol - creating beings; they are conditioned by structures and cultures but essential to their preservation and transformation."*

As Klir (2001) [5]notes, science can address only the extremes of the scales of complexity and randomness and the great majority of real-world problems are located somewhere in between.

[5] Klir, G.J. (2001). Facets of Systems Science , 2e. New York: Kluwer/Plenum, Cited in Jackson, M.(2003), op.cit. p. 69

B. Gestalt, therapy and how to make toast

Gestalt:

"*an organized whole that is perceived as more than the sum of its parts"*

Gestalt Therapy:

This therapy concentrates on the individuals experience at the present time. One of the pillars of gestalt is the 'phenomenological method' which has three steps[6]:

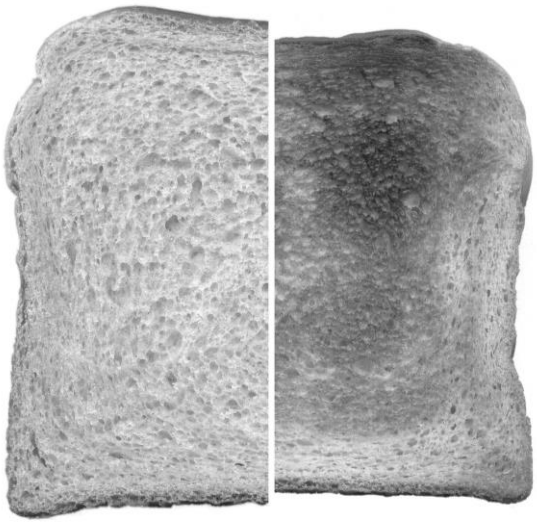
1. The rule of **epoch** - sets aside one's initial biases and prejudices to suspend expectations and assumptions
2. The rule of **description** – people need to be occupied with describing instead of explaining
3. The rule of **horizontalization** - each item of description has equal value or significance

The phenomenological method is not unique to gestalt therapy. If you like more steps, you can also use Colaizzi's method[7]. This method has seven steps - a good way to show that you have thought about it more (virtue signalling!), but not necessary more helpful. Essentially the concern is about revealing the essence, the essential structure of what is under investigation.

This is familiar to realist evaluators, who are always on about finding hidden generative mechanisms for any situation. This, of course, brings us to making toast. See the link below (9 min. video):

Tom Wujec: Got a wicked problem? First, tell me how you make toast

Tom Wujec gives a simple exercise that makes visible people's private mental models on how they think something works. The toast illustration, following the phenomenological method, shows a way to develop a systems model that unifies the diversity of everyone's point of view.



Just so you know, the last Thursday of February every year is **National Toast Day**. But what does this mean? (see Systems Theory and Evaluation below)

[6] Spinelli, E (2005) The interpreted world, an introduction to phenomenological psychology, 2nd Edtion, London, UK Sage Publications

[7] - Morrow, R., Rodriguez, A. and King, N. (2015). Colaizzi's descriptive phenomenological method. The Psychologist, 28(8), 643-644.

Systems Theory and Evaluation

A. Making Toast and SET

Not everyone gets to make toast. This requires a setup with all the key stakeholders present at the same time. What is the essence of this process?

The critical first step in Systems Evaluation Theory (SET) is understanding what a system looks like and how it is supposed to operate (what is the gestalt?).

> *"SET's process for defining a system can be likened to that of building an interlocking jigsaw puzzle. You begin by first building the border (i.e., boundary) and then fill in the pieces (i.e., elements) to solve how they interlock (i.e., interrelationships)."* [8]

The process of doing this means incorporating everyone's perspective in a non-judgemental way. So how does this work out in practice:

a. Create a common understanding of purpose,

b. Create a common understanding of the boundaries.

c. Create a 'straw person' idea of the system being used through inception interviews and any other relevant material you can get your hands on. Present your view and develop it through critiques as you go along. Present a final system view at an appropriate time that incorporates a view everyone can agree upon.

See …easy!!!!

[8] Renger, R., Renger, J., Renger, J, Hart, G & Hawkins (2020) Comparing and Contrasting a Program versus System Approach to Evaluation: The Example of a Cardiac Care System", Canadian Journal of Program Evaluation, 35.2, Fall, pp. 240-257, doi: 10.3138/cjpe.68127

B. Existing Government Evaluations are Space Junk

What Ray and Ed said[9]:

> *"A word here on evaluation, as practised in government. It might be seen as sufficient for reliable feedback. It is a practice that took hold in the US in the 1960s and was taken up subsequently by Europeans and other governments, and by aid agencies…"*
>
> *"Evaluations are usually commissioned by those commissioning the original work, whose interests are not always well served by finding that their program has not worked, or has been operationalised poorly, or was misconceived in the first place. Funders hold the power, and the evaluators bend to their wishes. Financial audits of companies can suffer from a similar malfunction in operation, at root a governance flaw.*
>
> *Thus, evaluations as currently practised are not cybernetic – circular, causal chains that move from action to sensing to comparison with the desired purpose, and again to action. They just do the sensing and sometimes the comparison if the purpose is clear, and then become space junk suspended above the earth, interesting to look at on a clear night if you happen to glace up but of no active relevance to life down below."*

To all you evaluators out there, let's hope you can be space junk in a Tesla Roadster.

[9] Ison, R & Straw, E. (2020) "The Hidden Power of Systems Thinking: Governance in a Climate Emergency" Routledge Systems Thinking Series, New York, P.217

Controversy Corner

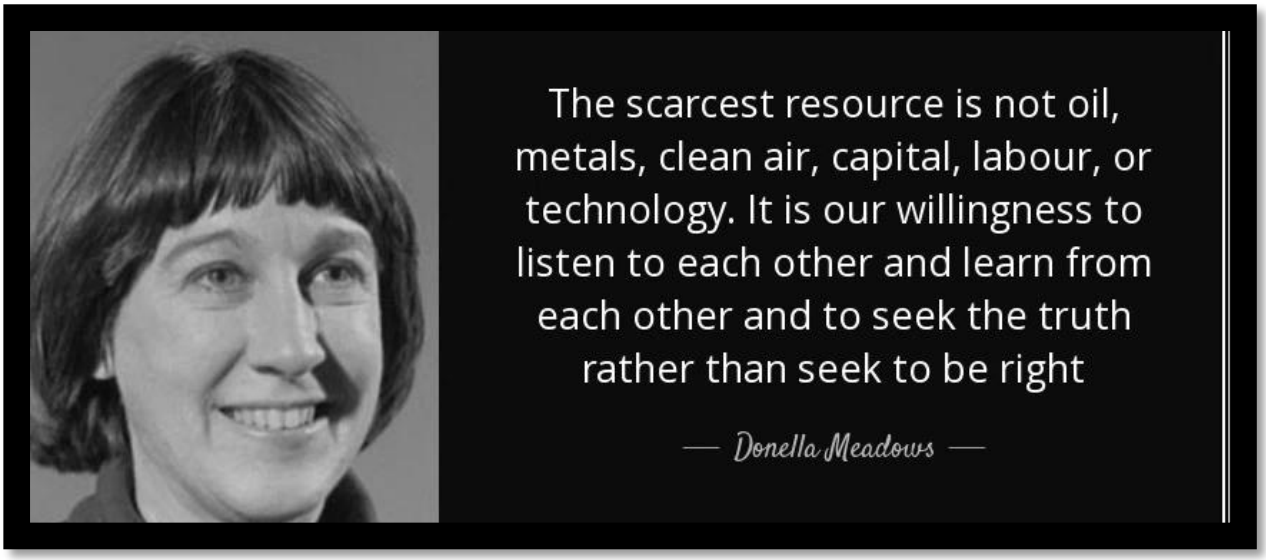
How to be a dill, and make it known to everyone? This would be to publish in the New York Times on certain predictions contained in 'The Limits of Growth'. Let's look at what was said in some more detail.

Peter Passell published this opinion in the New York Times on the "Limits of Growth":

> *"The Limits to Growth," in our view, is an empty and misleading work. Its imposing apparatus of computer technology and systems jargon conceals a kind of intellectual Rube Goldberg device[10]—one which takes arbitrary assumptions, shakes them up and comes out with arbitrary conclusions that have the ring of science. "Limits" pretends to a degree of certainty so exaggerated as to obscure the few modest (and unoriginal) insights that it genuinely contains. Less than pseudoscience and little more than polemical fiction, "The Limits to Growth" is best summarized not as a rediscovery of the laws of nature but as a rediscovery of the oldest maxim of computer science: Garbage In, Garbage Out."*

In 2008, Graham Turner at the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in Australia published a paper called *"A Comparison of 'The Limits to Growth' with Thirty Years of Reality"*[11]. It found the data to be congruent with one of the book's three scenarios—that of "business as usual". In 2009, *American Scientist* published an article noting "the values predicted by the limits-to-growth model and actual data for 2008 are very close." Graham further updated in 2014.[12]

This is a quote from Donella Meadows:



Obviously, Mr Passell and friends were completely wrong, and we should never listen to anything they have said again.

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[10] This expression relates to any kind of confusing or overly complicated system

[11] Graham M Turner, 2008. "**A Comparison of the Limits to Growth with Thirty Years of Reality**," Socio-Economics and the Environment in Discussion (SEED) Working Paper Series 2008-09, CSIRO Sustainable Ecosystems.

[12] Turner, G. (2014) 'Is Global Collapse Imminent?', MSSI Research Paper No. 4, Melbourne Sustainable Society Institute, The University of Melbourne. ISBN: 978 0 7340 4940 7

Contribution Team

Please note: we are not a closed shop. Any great contributions are welcome! For this newsletter, contributions just have to fit within the four general headings:
Classic (new&old), Ideas, Systems Theory and evaluation, and Controversy!!!

i. Julie(Elliott)

Julie is best known as Executive Producer on the zombie apocalypse movie "Me and My Mates Vs the Zombie Apocalypse" (2014).

Julie Elliott is also a PhD student at the School of Media and Communication, RMIT University. Her research project is 'Developing Complexity-congruent evaluation theory and practice.'

Contact: julie.jcelliott@gmail.com

ii. Lewe (Atkinson)

Lewe likes to wear Hawaiian shirts and play the banjo.

Lewe is also the powerhouse behind Haines Centre for Strategic Management (Brisbane). He lives and breathes systems thinking – and is always working towards the practical application of system thinking principles to business (and government) sustainability.
Contact: lewis@hainescentreasia.com

iii. Ralph (Renger)

Ralph's daughters refer to him as 'the arrow' because of his hair style.

Ralph has published over seventy articles in academic journals, and taught systems for more years than he can remember. For the last thirty years he has presented to conferences around the world.

Contact: ralph@justevaluation.com

iv. Brian (Keogh)

Brian has recently found out his name is most well-known as a dog's name because of bravery during WW11. The book '**The Amazing Adventures Of Bing The Parachuting Dog"** was published in 2012 (they changed Brian's name to Bing!!!)

He has a company 'Cobalt59' (www.cobalt59.com.au) with a lovely person called Julieanne. They work in the environmental and arts arenas - and he likes working with the people above.
Contact: brian@cobalt59.com.au