Steps toward a General Systems Transdiscipline

In accordance with the new vision outlined above, we believe that progress can best be made by focussing on the development of:

- a **General Systems Worldview (GSW)** that is informed by our best scientific knowledge, by new discoveries in systems science, by advances in general systems research, and by the debate about the unity of science and the plurality of perspectives employed in systems thinking and practice;
- a **General Systems Theory (GST*)** that includes:
  - an ontology of systems that can be used to describe systems and classify them in an unambiguous way;
  - models that characterize the kinds of processes that support the evolution, expression or degradation of systemic behaviours;
  - models of the mechanisms that underpin systemic evolution or systemic behaviour;
- **General Systems Methodologies (GSMs)** that can leverage GST* under the guidance of the GSW to:
  - extend and refine GST*, the GSW and the methods of GSR;
  - discover new Theoretical Systemics, i.e. specialised theories about kinds of systemic structures, processes, behaviours, etc., or enhance existing ones;
  - discover new Methodological Systemics, i.e. specialised methods for systemic research, design, engineering, management, education etc., or enhance existing ones;
  - support exploratory science in all areas of scientific inquiry;
- a **General Systems Transdiscipline (GSTD)** that employs the GSMs to address the looming and present crises facing human civilization; and to contribute to the building of a thriving future world.

We encourage general systems researchers to meet, connect, discuss and report on progress towards the establishment of GSTD, whether by creating new opportunities or via existing fora e.g.:

- Special Integration Groups (SIGs) of the ISSS;
- Discussion Groups and Workshops of INCOSE's Systems Science Working Group;
- Symposia of the EMCSR;
- Conversations of the IFSR;
- Groups, Symposia and Workshops of the BCSSS;
- www.facebook.com/GeneralSystemsResearch.

Call to Action

We call on all who support the vision for a better tomorrow facilitated by GSTD to:

- **sign the Manifesto** to indicate your support, and recommend it to others who might support the vision and objectives of the general systems research community;
- support or undertake efforts to **raise awareness** of the need for and potential of GST* and GSTD;
- support or undertake efforts to **improve institutional support** for research towards the development and application of GST* and a GSTD;
- support or undertake efforts to **raise funding** for research towards the development and application of GST* and a GSTD;
- encourage or **undertake research** towards the development of GST* and a GSTD and towards strengthening its foundations and credibility;
- participate or encourage others to **participate** in institutional and societal initiatives and activities in support of the development and application of GST* and a GSTD;
- support the building and effectiveness of the community of general systems researchers by using the GSR Facebook page to **engage** with general systems researchers, including notifying the community of relevant events, discussion groups, funding opportunities, presentations, workshops and publications. The Facebook page is at: www.facebook.com/GeneralSystemsResearch.

*Please sign
the Manifesto at:*

www.systemology.org/manifesto.html

Meet us and discuss the Manifesto at ISSS 2015!

David   Jennifer   Julie   Stefan

Manifesto for General Systems Transdisciplinarity

David Rousseau PhD BEng FRSA
Jennifer Wilby PhD MPH MSc BA
Julie Billingham BSc(Hons)
Stefan Blachfellner MA BA

Centre for Systems Philosophy

International Society for the Systems Sciences

Bertalanffy Centre for the Study of Systems Science

BCSSS

Systems Science Working Group

INCOSE
International Council on Systems Engineering

IFSR · International Federation for Systems Research

Centre for Systems Studies

UNIVERSITY OF Hull

**Manifesto Launch at ISSS 2015
Berlin, Germany, August 4**

A World on the Edge

Our world and our society are in trouble. Nature's systems are complex and interconnected, yet our knowledge resides in disciplinary silos. As a result, our human activities tend to originate from within these siloed domains, and as they become increasingly impactful, the risk of unforeseen consequences becomes ever stronger. The interdependent systems we rely on for our survival and our welfare are in danger, sometimes even due to the actions we take to try to protect ourselves and our planet.

This looming crisis was foreseen and forewarned a half-century ago by the founders of General Systems Research (GSR): Ludwig von Bertalanffy, Kenneth Boulding, Anatol Rapoport and Ralph Gerard. The "Bertalanffy Circle" shared an ambition to develop a systems transdiscipline, grounded in a General Systems Theory (GST), that would help overcome academic fragmentation and that could be leveraged to build a systemically healthy world that promotes personal dignity, human welfare, international cooperation and environmental stewardship. They saw this as an urgently needed response to impending human, social and environmental calamities[1-6].

Since the 1950s, systems researchers have developed dozens of specialized theories centred on specific systemic behaviours and structures. However, a powerful and integrating systems transdiscipline remains elusive[7–9]. Furthermore, with specialization has come a divergence of worldviews and discourse domains[10–13], resulting in a fragmentation that undermines our ability to muster integrated responses to our present challenges. This fragmentation cannot be overcome while we do not have a unifying theory for the systems field.

Historically, disciplinary fields have only become scientifically and technically powerful once their unifying theory starts to take shape. Theories such as those of Darwin, Mendeleev and Newton transformed their respective disciplines by unifying hitherto fragmented areas of study under a common conceptual and explanatory framework, and by rapidly opening up new avenues of scientific discovery.

In the case of the systems disciplinary field the unifying theory would be a GST in the sense of a theory that encapsulates the universal principles underlying systemic behaviours and structures (we call this theory GST*, pronounced "g-s-t-star, to differentiate it from other uses of the term "GST"). Without such a unifying theory providing for an integrated approach the empirical complexity of the world may always subvert our attempts to achieve thrivability.

However the challenge for the systems field is that so far we have only fragments of a GST*, and research towards GST* and the General Systems Transdiscipline (GSTD) it would empower does not have sufficient individual, financial and institutional support for rapid progress to be possible[14,15].

A Renewed Vision
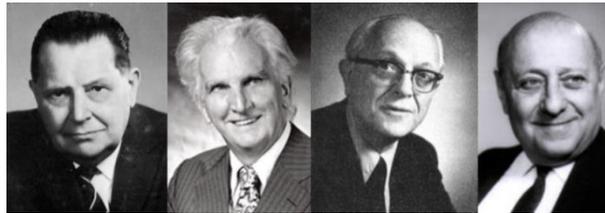
The Bertalanffy Circle envisioned that a GSTD could be developed and used to support interdisciplinary communication and cooperation, to facilitate scientific discoveries in disciplines that lack exact theories, to promote the unity of knowledge, to help to bridge the divide between the object-oriented and the subject-oriented disciplines without reducing either to the other, and to contribute to the building of a "better world" [16–19].

Although progress towards this vision has been slow, we believe that the conditions have turned in favour of breakthrough progress towards a GSTD in the immediate future:

- Recent times have seen an important growth in academic credibility of the moderate naturalism and critical realism implicit in the Bertalanffy Circle's vision[20–27];

- Researchers have made compelling arguments that a GST* is in principle a feasible prospect given such philosophical views[28,29], that it would be productive rather than so general as to be trivial[28–31], and they have presented concrete ideas about the form a GST* might take[32–34];

- Systems-oriented societies and institutes have recently demonstrated an active interest in developing a GST*/GSTD[35];

- Individual researchers have identified a variety of approaches to the issue of developing a GST*, thus increasing the likelihood of breakthrough discoveries and synergistic progress[29,33,34,36–39].

We, the authors of this Manifesto, believe that the discovery and development of a General Systems Transdiscipline is both possible and important, so we have been striving to outline a vision and research agenda for how progress might made by a research community working towards this common goal. Initially, we abstracted the structure and dynamics of a discipline, and used this to show what would be involved and contained in a "systemological" discipline[31,40]. We also explored the nature of transdisciplines, to understand what would additionally characterize a general systems transdiscipline[41,42]. We argue that this disciplinary structure provides a framework for organizing the collective efforts of the GSR community. In addition, we realized that progress towards discovering a GST* is intimately linked with progress towards articulating a General Systems Worldview (GSW), and that this provides a potentially powerful new route towards a GST*[29,43]. We hold that these foundations will facilitate collaboration towards realizing the vision of the founders, and call upon general systems researchers to join in our collective efforts.

The AKG Model of a Discipline
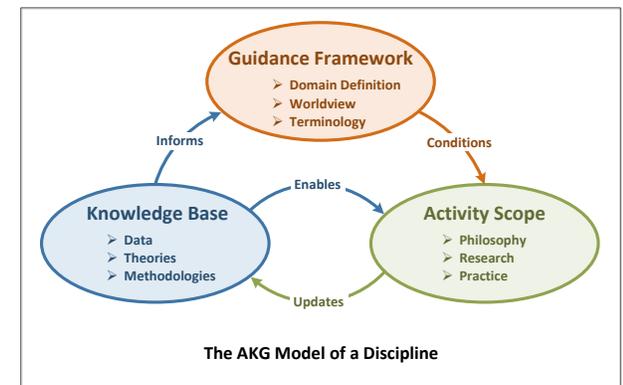
References: please see www.systemology.org/manifesto.html