

**EDITORIAL:  
SERVICE SYSTEMS, NATURAL SYSTEMS – SCIENCES IN SYNTHESIS**

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Systems scientists are distinctive in a shared interest in synthesis. Synthesis means putting things together, rather than taking them apart. Synthesis leads to emergence: properties of a whole that are not in its parts. Advancing the systems sciences should include (i) sweeping in knowledge from worlds in which systems thinking has not been formally acknowledged and/or appreciated, and (ii) synthesizing those new world views with the multitude of perspectives that have persisted in the systems community, in a way that is authentic with the systems tradition.

Systems thinking enables a basic foundation across a wide variety of domains, including (i) man-made systems in social and informatic domains, and (ii) natural systems in geographic and biological domains. Focusing on the man-made world, the past decade has seen the rise of an emerging community centered on a new science of service systems. Focusing on the natural world, the past decade has seen the evolution of the community centered on ecological resilience science advance to social-ecological systems and declaration of the anthropocene. These changes in the man-made world and the natural world should not, however, be perceived as isolated phenomena

The annual meeting of the International Society for the Systems Sciences is five-day event where members of the systems community synthesize their perspectives in intense face-to-face interaction in a different location each year. The encouragement for knowledge development takes place, however, on the scale of two years.

- For the 56th annual meeting, the journey was launched at the closing of the meeting in Hull in July 2011, with a presidential address encouraging systems thinkers to continue the development of sciences in synthesis.
- At San Jose State University in July 2012, plenary speakers were paired in dialectics, each presenting a position. Those speakers were then joined on stage with discussants about ways in which their ideas could be synthesized. Then, leaders of the Special Integration Group coalesced the audience into breakout discussions, with findings to be reported by end of day. These findings were summarized the next morning by reviewers working towards a cumulative synthesis. In addition, authors of the best student papers – awarded the Vickers and Rapoport awards – had the opportunity to enlarge their audience from the parallel sessions during the week to the full plenary audience on the last day of the meeting.
- Through to the summer of 2013, the plenary speakers and student award winners were encouraged to revise and evolve their work into the more formal writing included in this issue of *Systems Research and Behavioral Science*.

The theme of “Service Systems, Natural Systems” invited conference participants to engage, reflect on and discuss the complexities of the 21st century world through a systemic lens. The systems approach enables a collective appreciation of interconnections in our views of the world, with an opportunity to surface blind spots where others can help. The articles published in this issue should be seen as points along the journey in the development of the body of knowledge that makes up the systems community.

Gary Metcalf and Pamela Buckle Henning, in “An overview of plenary presentations – ISSS 2012”, summarize both the spirit and the content of the meeting in San Jose. The plenary speakers and panelists embodied deep understandings and appreciations of luminaries in the systems movement from the 20th century, as they have continued to develop and apply systems principles in the world of the 21st century. Metcalf and Buckle Henning report on observations about mainstream science and the continuing work of the systems movement. In addition, the historical support of the systems movement by institutions of higher learning continues to decline, so ongoing advances in knowledge may increasingly rest on the shoulders of scholars as individuals.

David Ing, in “Rethinking Systems Thinking: Learning and Coevolving in the World” revisits the understanding of systems thinking developed in the 1960s to 1980s in light of the world of the 2010s. Three ways in which systems thinking could be rethought are proposed: (i) from “parts and whole” snapshots to “learning and coevolving” over time; (ii) from social systems and ecological systems towards the service economy and the anthropocene, and (iii) from the emphasis on episteme and techne towards phronesis for the living and non-living. Systems thinkers are encouraged to reflect on their orientations, given Ackoff's distinctions between inactivism, reactivism, preactivism and interactivism.

Rafael Ramirez and Mikael Paltschik, in “Seizing the opportunities opened by the 'peak oil' effect to reorient ‘services’ and 'systems' research towards 'value co-production systems' scholarship”, presents both historical and forward-looking perspectives. The observed decline of research into systems and services is posed as one of three situations: (i) the field is tapped out and the well is dry, (ii) this is a temporary blip until new exploration and production succeeds, or (iii) the trend represents misinformation with a larger reserve yet untapped. Historically, the line of systems thinking from Churchman, Ackoff and Trist in the 1960s-1980s through to Richard Normann in the 1990s-2000s is traced, and compared with the more contemporary popularity with Vargo and Lusch in the late 2000s-2010s. Ramirez and Paltschik propose three options to reinvigorate these fields by (i) addressing significant social issues, (ii) linking scholarship more to the humanities, and (iii) considering value coproduction systems in longer temporal terms and broader contexts.

Jim Spohrer, Alessio Giuiusa, Haluk Demirkan and David Ing, in “Service Science: Reframing Progress with Universities”, observe that progress is often equated with economic growth. In a service science perspective, progress is reframed with entities' (i.e. service systems') knowledge of their rights and responsibilities in value-cocreation interactions from one generation to the next. Society relies on trust in “the system of others” so that progress doesn't slow. As faculty labour in universities shifts from teaching (first stream activities, transferring knowledge) to entrepreneurship (third stream activities, applying knowledge to create value) and research (second stream activities, creating knowledge), general systems theory is seen as way to better develop students into T-shaped professionals.

Timothy F.H. Allen, Duncan Shaw, Peter C. Allen and Jim Spohrer, in “Insights into the Relationship between Products and Services Coming from Biology”, consider service systems as an emerging science in light of concepts well-developed in the ecological sciences. With organisms viewed in the contexts of levels and scales, biologists tend

towards comparison over contrast. Social scientists, including services researchers in business, tend towards contrasts over comparison. The concept of gain is applied to compare manufacturing products with steep material and energy gradients with services maintained with shallow material and energy gradient. Through biological and ecological lenses, five insights into service systems are presented.

Andreas Hieronymi, in “Understanding Systems Science: A visual and integrative approach”, cites systems thinking as a foundational competence for the world of the 21st century, yet the field itself is complicated for practitioners in education, counseling and management. With five phenomenological sciences of (i) natural systems, (ii) living systems, (iii) cognitive systems, (iv) social systems and (v) technological systems, the function of systems science in the containing field of sciences is mapped, as are key systems thinkers. A list of general principles of systems is cross-tabulated with traditions as sub-disciplines of systems science. Methods are then mapped in the four-stage process cycle of action learning and reflective practice. Systems science is presented as an integrated pluralism that appreciates both diversity and unity.

Will Varey, in “Apithological Inquiry: Learnings from an Ecological Aesthetic”, extends research into generativity and growth in living systems. In a continuum of development, the apithology of wellness is contrasted to the pathology of disease. Combining the logical categories of type of learning by Bateson with epistemological choices in observing complex hierarchies from Ahl and Allen, philosophical coherence is formed through five categories for inquiry by Creswell. From these learnings, five observational protocols for praxis are proposed.

The final paper of this edition by incoming President-Elect Gerald Midgley and Luis A Pinzon reflects on all of these areas of practice in a specific case of mediation and process of dialogue in situations of mediation. The paper proposes that in all such arenas, personal reflection on our own moral frameworks is essential, and the authors present tools and a process for the support of such reflection.

Other artifacts from ISSS San Jose 2012, such as audio recordings and much of the presentation content, were made available on the ISSS web site shortly after the meeting. With the publication of these articles, a formal cycle of knowledge capture and dissemination closes. The ISSS 2013 cycle is just entering its publication phase, and the ISSS 2014 cycle has just begun formal planning for the meeting one year hence. The synthesis of science continues with new challenges, new places and new people to add to the wealth of knowledge in the systems sciences.

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Guest Editors