Synthesis

Resilience and Vulnerability: Complementary or Conflicting Concepts?

Fiona Miller¹, Henny Osbahr², Emily Boyd³, Frank Thomalla⁵,⁶, Sukaina Bharwani⁷, Gina Ziervogel⁷,⁸, Brian Walker⁴,⁹, Jörn Birkmann¹⁰, Sander van der Leeuw¹¹, Johan Rockström⁴,¹², Jochen Hinkel¹³, Tom Downing⁷, Carl Folke⁴,¹⁴, and Donald Nelson¹⁵,¹⁶

ABSTRACT. Resilience and vulnerability represent two related yet different approaches to understanding the response of systems and actors to change; to shocks and surprises, as well as slow creeping changes. Their respective origins in ecological and social theory largely explain the continuing differences in approach to social-ecological dimensions of change. However, there are many areas of strong convergence. This paper explores the emerging linkages and complementarities between the concepts of resilience and vulnerability to identify areas of synergy. We do this with regard to theory, methodology, and application. The paper seeks to go beyond just recognizing the complementarities between the two approaches to demonstrate how researchers are actively engaging with each field to coproduce new knowledge, and to suggest promising areas of complementarity that are likely to further research and action in the field.

Key Words: climate change; hazards; interdisciplinarity; resilience; social-ecological systems; vulnerability

INTRODUCTION

Resilience and vulnerability, as well as the related concepts of adaptation and transformation, are central concepts in highly influential but somewhat different ways of framing our analyses of social-ecological change and the challenges of sustainability (MA 2005, Janssen and Ostrom 2006, IPCC 2007, Jäger et al. 2007, Schneider et al. 2007). Although these four concepts are related, in this paper, we focus in particular on resilience and vulnerability. Our underlying hypothesis is that a number of fundamental linkages and complementarities exist between the two approaches, but that they have been kept artificially separate by conceptual constructs, scientific traditions, and lack of interaction between the two academic communities involved. Considering the urgency of the challenges posed by environmental change, we no longer have the luxury of pursuing purely curiosity-driven conceptual advances in the study of common problems along parallel tracks. While still acknowledging the value of multiple perspectives, to address pressing real world problems we need to be better at identifying convergence, seeking collaboration to advance integrated social-ecological knowledge, and building on the strengths from different fields.

To further such convergence, it is imperative that scholars critically reflect on the core concepts involved, as well as on the ways to use them and the toolkits they derive from them, to ascertain their appropriateness in explaining and addressing the issues at hand. This paper seeks to advance that goal. The authors argue that, taken singly, each approach and each research community has so far fallen short of meeting the needs of sustainable development, and although interest is rising in policy they remain largely disconnected from practice. This is evidenced by the continued lack of integration of resilience and vulnerability assessment methods and insights into major national and international policy and planning initiatives, beyond isolated

¹Department of Resource Management and Geography, University of Melbourne, ²School of Agriculture, Policy and Development and the Walker Institute for Climate Systems Research, University of Reading, ³Sustainability Research Institute, University of Leeds, ⁴Stockholm Resilience Centre, Stockholm University, ⁵Stockholm Environment Institute (Asia), ⁶Department of Environment and Geography – Human Geography, Macquarie University, ⁷Stockholm Environment Institute (Oxford), ⁸Climate Systems Analysis Group (CSAG), University of Cape Town, ⁹CSIRO Sustainable Ecosystems, Australia, ¹⁰Institute for Environment and Human Security, United Nations University, ¹¹Department of Environment and Geography – Human Geography, Macquarie University, ¹²Stockholm Environmental Institute (Sweden), ¹³Potsdam Institute for Climate Impact Research, ¹⁴The Beijer Institute, Stockholm University, ¹⁵Tyndall Centre for Climate Change Research, University of East Anglia, ¹⁶Department of Anthropology, University of Georgia