Vulnerability Wiki – A collaborative knowledge platform

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Aims of Vuwiki

Our starting point:

- Various ideas how to conceptualize and measure vulnerability in different disciplines
- How can this scattered information be accessed and structured for newcomers in the field, practitioners and researchers from other fields?

Our aims:

- Provide a framework for the description of vulnerability assessment methods, especially those which have already been applied in empirical research
- Develop a uniform ontology that allows the annotation of key categories and properties of vulnerability, so that they can be made comparable and easily accessible at a glance

We make no claim to „synthezise“ any kind of holistic or comprehensive model!!
What is a semantic wiki?

Conventional wikis:
- …collect and share knowledge,
- … are good for storing and retrieving individual information, but not for getting aggregated or queried information,
- … are not machine-interpretable and weakly structured.

Semantic wikis:
- … allow to organize categories hierarchically and thus improve the consistency of the content,
- … are structured by an ontology, which could be understood as a hierarchical representation of concepts and their interrelations in a certain knowledge domain,
- … semantic annotations are added with a special markup allowing the wiki to function as a collaborative database.
What is an ontology?

“An ontology […] is a formal representation of technical concepts and their interrelations in a form that supports domain knowledge. Generally, an ontology is hierarchical, with child concepts having explicit properties to specialize the parent concept(s)” (Raskin & Pan 2005: 1120).

Common components of ontologies:

- Individuals: instances or objects (the basic or "ground level" objects)
- Classes: sets, collections, concepts, classes in programming, types of objects, or kinds of things
- Attributes: aspects, properties, features, characteristics, or parameters that objects (and classes) can have
- Relations: ways in which classes and individuals can be related to one another.
Collaborative Ontology and Wiki Development

Survey of vulnerability assessments
- Review of vulnerability assessments based on literature

Collaborative ontology and taxonomy development
- Iterative revision based on test-cases and discussing their fit to the ontology

Semantic interface and wiki development
- Feedback loop including user survey

Populate wiki
- Added a initial database of about 60 studies to the wiki
Our Ontology 1.0

1. Vulnerability of what?
2. Vulnerability to what?
3. Context of assessment
4. How is vulnerability measured?
Welcome to VuWiki - A Knowledgebase and Ontology for Vulnerability Assessment Methods

**Vulnerability Ontology**

VuWiki is a collaborative cross-disciplinary project to develop an ontology for the explicit description of vulnerability assessment studies. In VuWiki 1.0 we present a first scalable version of a vulnerability ontology to describe vulnerability assessment methods.

Developing the vulnerability ontology is an adaptive process which will continue to grow with more input from the community. Use the Edit Ontology and related discussion pages to help build and comment the next vulnerability ontology.

The vulnerability ontology addresses the following core questions for each assessment:

1. Vulnerability of what?
2. Vulnerability to what?
3. What is the context of the assessment?
4. How is vulnerability measured?

**Semantic Wiki**

VuWiki currently compiles over 50 empirical vulnerability assessments and methods from a wide range of disciplines.

VuWiki allows you to search, structure or compare different vulnerability studies through a number of semantic tools.

1. Use the dynamic tables to sort and view the different vulnerability studies on the site.
2. Use the wiki drill down to filter and search the vulnerability studies based on the ontology.
3. Use the step-by-step semantic form to enrich VuWiki by adding additional vulnerability studies.

**Enrich VuWiki**

Get started in three simple steps:

1. Create an account. Don’t forget to send an email to admin@vuwiki.org with subject ‘VuWiki CONFIRMATION’ to be authorized for editing the site.
2. Confirmation of your account and notification by the admin (depending on your timezone this can take a few hours).
3. Contribute to VuWiki by adding a new study, discussing existing studies or by extending/editing the vulnerability ontology.

**Latest Studies in VuWiki**

- 18 January: Daniell et al. 2010 Vulnerability index for Floods and Earthquakes in the Asia-Pacific
- 30 December: Giovanni et al. 2011: Fire vulnerability index for the Mediterranean region
- 23 December: Eriksen et al. 2009: The vulnerability context
- 23 December: Rygel et al. 2006: A method for constructing a social vulnerability Index
- 23 December: Wei et al. 2004: The assessment of vulnerability
- 20 December: Turner at al. 2003: Illustrating the coupled human–environment system
How to access and how to participate

How to access the content of the wiki?

- Browse studies
- Use automatically generated lists
- Use semantic search/drill
- Document theoretical thoughts as you can do in a conventional wiki

How to participate actively?

- Add studies by a semantic form which guides you through the ontology
- Annotate existing studies by the form or directly on the wiki page
Add a vulnerability assessment by the semantic form

Information is gathered by certain methods and based on certain approaches. In the next section we ask you to give some information about which is used in the assessment.

Operational approach

- Research design: Case study
- Data collection method:
  - (Face to face) interview
  - Survey (questionnaire)
  - Expert interview
  - Group discussion / Focus group
  - Secondary data / Official statistics
  - Mapping
  - Content analysis
- Main source of data:
  - Primary data
  - Secondary data
- Participatory approach:
  -
- Data analysis method:
  - Multivariate statistics
  - Content analysis
  - Historical analysis / Policy analysis
  - Uncertainty treatment
  - Spatial analysis
  - Mapping (spatial or temporal)
  - Indexing

If indexing was chosen:
- Name of index: composite index (no specific name), p
- Index Abbreviation:
- Weighting of indicators:
  - Statistical
  - Expert judgement
  - MCDA
- Aggregation of indicators:
  - Additive
  - Multiplicative
  - Geometric
- Formulas (if any):
Add a study: the result

Cutter et al. 2000 Revealing the Vulnerability of People and Places

Abstract

Losses from environmental hazards have escalated in the past decade, prompting a reorientation of emergency management systems away from simple postevent response. There is a noticeable change in policy, with more emphasis on loss reduction through mitigation, preparedness, and recovery programs. Effective mitigation of losses from hazards requires hazard identification, an assessment of all the hazards likely to affect a given place, and risk-reduction measures that are compatible across a multitude of hazards. The degree to which populations are vulnerable to hazards, however, is not solely dependent upon proximity to the source of the threat or the physical nature of the hazard-social factors also play a significant role in determining vulnerability. This paper presents a method for assessing vulnerability in spatial terms using both biophysical and social indicators. A geographic information system was utilized to establish areas of vulnerability based upon twelve environmental threats and eight social characteristics for our study area, Georgetown County, South Carolina. Our results suggest that the most biophysically vulnerable places do not always spatially interact with the most vulnerable populations. This is an important finding because it reflects the likely “social costs” of hazards on the region. While economic losses might be large in areas of high biophysical risk, the resident population also may have greater safety nets (insurance, additional financial resources) to absorb and recover from the loss quickly. Conversely, it would take only a moderate hazard event to disrupt the well-being of the majority of county residents (who are more socially vulnerable, but perhaps do not reside in the highest areas of biophysical risks) and retard their longer-term recovery from disasters. This paper advances our theoretical and conceptual understanding of the spatial dimensions of vulnerability. It further highlights the merger of conceptualizations of human environment relationships with geographical techniques in understanding contemporary public policy issues.

Definition of vulnerability

The term social vulnerability is used to define the susceptibility of social groups to potential losses from hazard events or society’s resistance and resilience to hazards. (p. 715-716) but also reference to Blaikie et al., 1994, Hewitt, 1997

Additional content

Add Text
Semantic search: Make use of the ontology!

Browse data: Reference framework

Reference framework
Click on one or more items below to narrow your results.

- **Geographical area:**
  - Americas (3) · Asia (1) · Caribbean (3) · Central America (1) · Eastern Africa (5) · Eastern Asia (2) · Europe (2) · Latin America and the Caribbean (2) · Northern Africa (1) · Northern America (6) · Northern Europe (1) · South America (1) · South-Eastern Asia (3) · Southern Africa (1) · Southern Asia (4) · Southern Europe (1) · Western Europe (4)

- **Economic group of research area:**
  - Developed countries (18) · Developing countries (11) · Least developed countries (10) · Megacities (1) · Small island developing countries (4) · Transition countries (2)

- **Spatial unit of assessment:**
  - City/Village/Commune (10) · Country (14) · County/Disdtrict (4) · County/District (3) · Global (1) · Grid (4) · Region (5) · Subcity (7)

- **Temporal scale of assessment:**
  - Long term (18) · Mid term (5) · Point of time (13) · Point of time, Short term (2) · Point of time, Short term, Mid term, Long term (1) · Short term (2) · Short term, Long term (2)

- **Social scale of assessment:**
  - Communities (14) · Households (18) · Individuals (7) · Neighbourhoods (4)

Showing below up to 58 results starting with #1.

View (previous 250 | next 250) (20 | 50 | 100 | 250 | 500)

A
- Adger 1999: Social Vulnerability to Climate Change
- Adger et al. 2005: The determinants of vulnerability and adaptive capacity
- Attzs 2009: Natural disasters and remittances

B
- Bird et al. 2009: Vulnerability, poverty and coping
- Birkmann et al. 2006: Measuring vulnerability in Sri Lanka

F cont.
- Fekete 2009: Validation of a social vulnerability index
- Few 2010: Climatic hazards, health risk and response in Vietnam
- Füssel 2010: How inequitable is the global distribution of responsibility, capability, and vulnerability to climate change

P cont.
- Patt et al. 2010: Estimating least-developed countries’ vulnerability
- Pelting 2003: Maintaining civil society in a liberal Democracy
- Pelting 2003: Patrimonial regimes and the maintenance of a constructive civil society
- Pelting 2003: Post-socialism and Barriers to building a civic society: Georgetown, Guyana
What are the challenges for developing a wiki?

Lessons learned:

- Do not underestimate the time exposure for technological questions.
- A semantic wiki will be only as good as its ontology.
- Ontologies can help to structure debates about nomenclature, but do not necessarily solve all problems related to it.
- Make sure that everyone, who is involved in developing the ontology understands the logic behind it (thinks in terms of the ontology).
- To be viable the wiki should provide a value added for its users.
Thank you for your attention!
The Vuwiki Core Team

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Principles in ontology construction

- Scalability = easily extendable to enable specialized domains to build upon more general ontologies already generated.

- Application-independence = structure and contents are based upon the inherent knowledge of the discipline, rather than on how the domain knowledge is used.

- Natural language-independence = provide a representation of concepts, rather than of terms. The concepts remain the same regardless of the inclusion of slang, technical jargon, foreign languages

- Orthogonality = compound concepts should be decomposed into their component parts, to make it easy to recombine concepts in new ways

- Community involvement = Community input should guide the development of any ontology

(Raskin & Pan 2005:1121)