The Others Footprints or Semantical ecosystems as evidence of collaboration in inter / multi / trans-disciplinary research: The case of ICPP.

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All knowledge is connected to all other knowledge. The fun is in making the connections.

Arthur Aufderheide (1922–2013) - Paleopathologist

Research Description

Intergovernmental Panel on Climate Change (IPCC): Boundary organization (between research and public interest) that produce reports in scientific, management and politics about climate change. 4th Assessment Report of 2014 - AR ICPP is a boundary object (an artifact -document- that connect interest), for this reason is a transdisciplinary sample.

- How can we differentiate each category/hierarchy of collaboration in knowledge systems?
- What are good strategies to visualize knowledge interactions on these systems?
- Can we identify in a specific text, e.g. 2014's AR of IPCC, the hierarchy of collaboration?

This is research combines an exploratory approach with an experiment

Knowledge systems as boundary objects

- Language is a boundary. As a boundary, separates at least two different adjunct dimensions. These dimensions construct our reality.
- Knowledge systems are structured on language. Epistemic cultures boundaries are linguistic separations, that emerges historically, but change semantically.
- Computing knowledge systems are explored previously network semantics to analyze content. This approach consider that tool, but for a knowledge categorization
- If each text is a sample of the authors collaboration, are evidence of a variety of interaction (historical, sociological, epistemic and **Linguistics**)

Ecosystems and semantic ecosystems

- Traditional approach to assess knowledge systems focus in the people (humans), more than the text (non-human). An *affective approach to knowledge systems* illustrate the dynamics on language boundaries to show the nature of the interactions.
- **Semantical Ecosystems** are a unit of analysis of knowledge systems, that is evident on the documents. There are recognized as dynamics collections of words that interact in collections of affective nodes. The stabilization and robustness of nodes are internally meaningful categories called disciplines, that exchange historically its association to others words.
- Semantical ecosystems are lives systems, because new text contributes with new associations that articulate traditions of thought. Idiomatic difference are relevant, but don't exchange the *actual* state of the *virtuality*.

Semantical ecologies hierarchy

Discipline: A highly stable semantic ecology, that could be observed in dense semantic constructions. The ***closeness of words*** among the names of the "objects of studies" are a characteristic of them. Corpus, glossaries and reviews act as sources to disciplinary semantic ecosystems. **Interdiscipline:** A knowledge system characterized by the ***overlap of two semantic ecologies***, expressing connection with one concept. This concept is a bridge between them, but also exclusive to these two categories. **Multidiscipline:** Semantic ecosystems that are related to ***more than two disciplinary semantic systems***, with long-range interactions. These knowledge systems could be referred as fields, for instance, professional knowledge is multidisciplinar. **Transdiscipline:** Reduced semantic ecosystem with a high-range to interactions. Knowledge systems are spread among differents disciplinar knowledge systems, going further any previous category. ***These semantic ecosystems are highly political and more close to common (non-expert) language.*** These concepts are embedded on popular language.

Knowledge & collaboration

METHODOLOGY: Observing semantical ecosystems: Affect on knowledge systems

Word mining and knowledge networks with R and Python

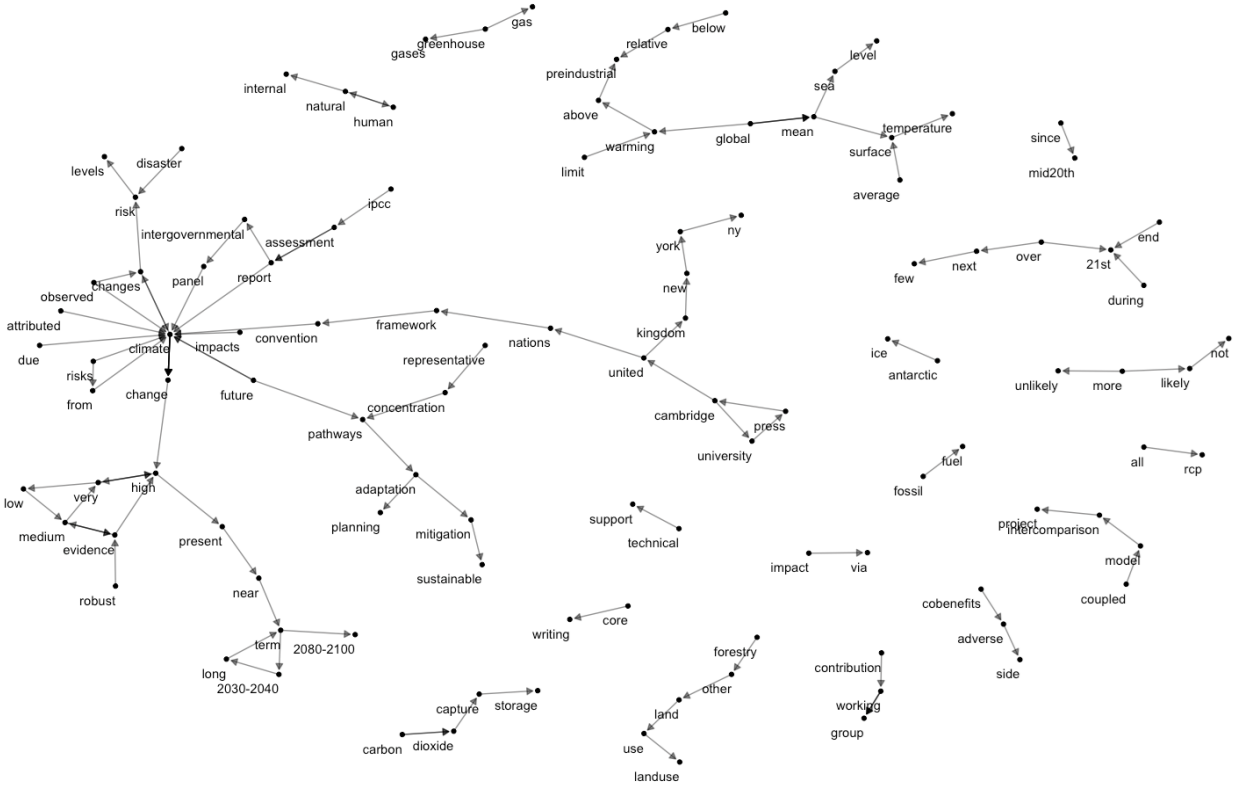
R v3.4.2

Packages tm, qdap, SnowballC, wordcloud, ggplot2, RWeka, dendextend, digiplot2, igraph, Rmphr, tidyverse, tidytext, ggraph and socialmedialab

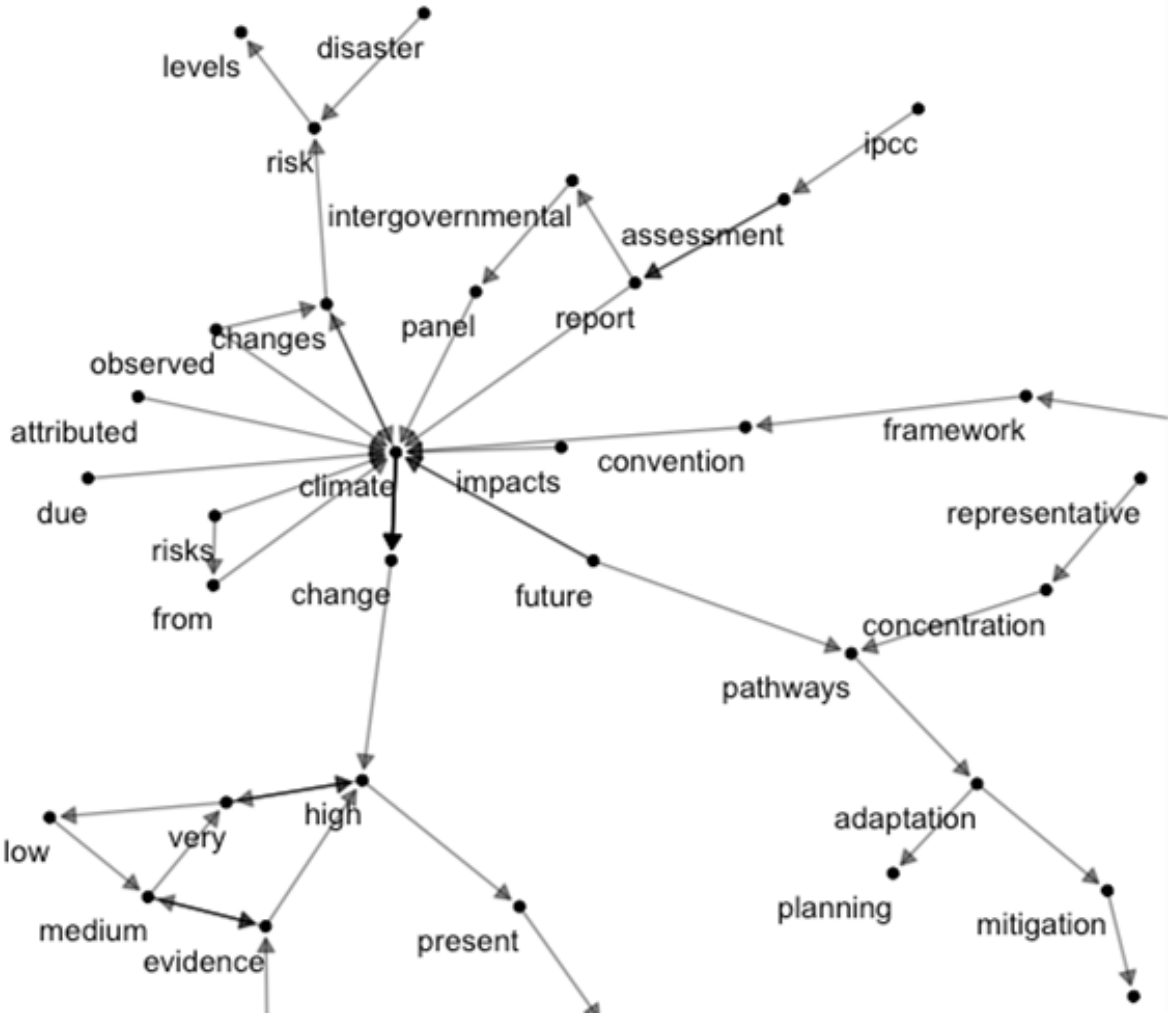
Python v3.6.1

Packages nltk and re (re2)

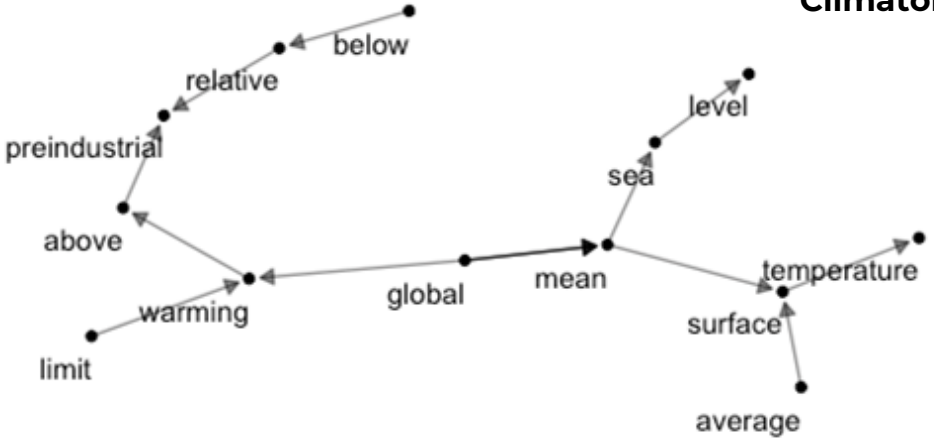
IPCC emergent semantical Ecologies



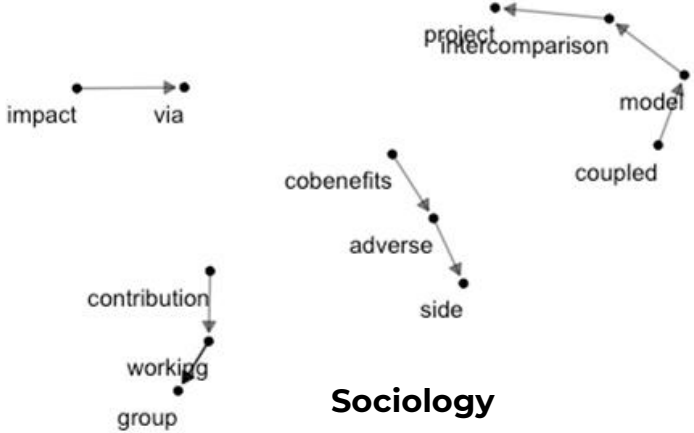
Transdisciplinar Nucleus



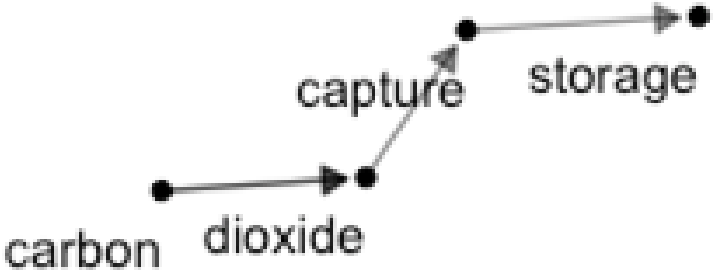
Semantic Ecologies



Climatology



Sociology



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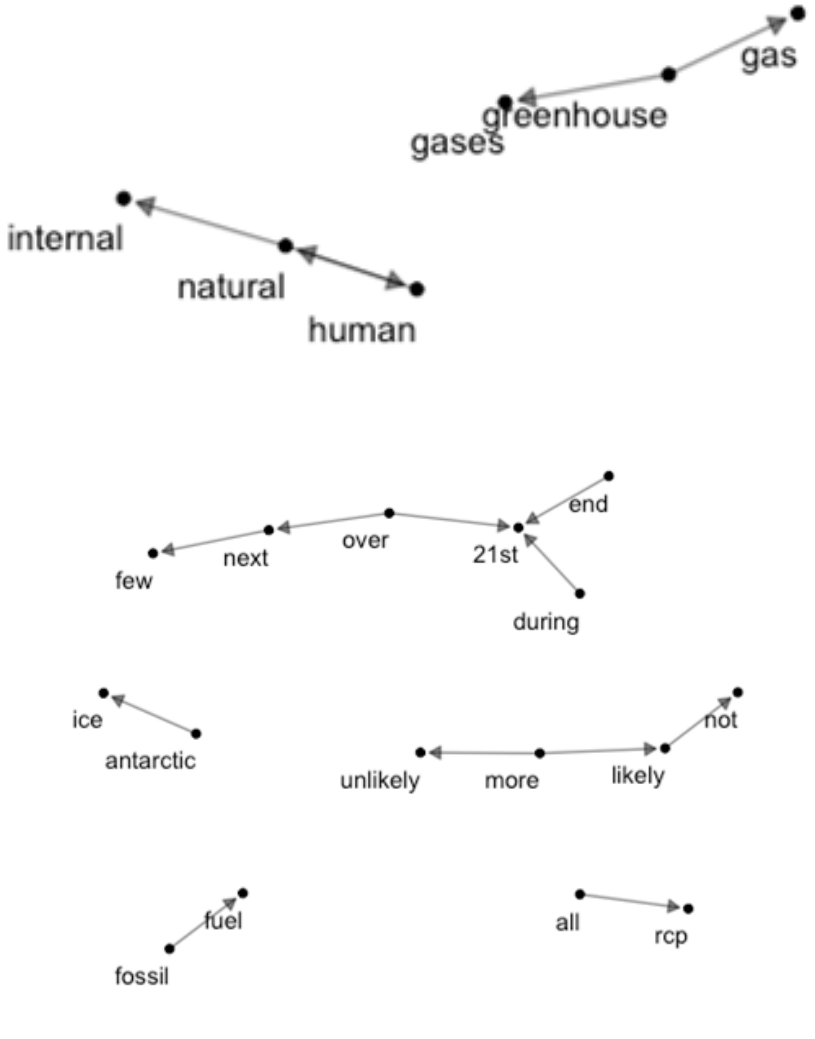

DISCUSSION

- Semantical Ecosystems as unit of Analysis shows relevant correlation with knowledge categorizations.
- Computing and linguistic approach have more things to contribute to understand collaboration - with non-human in the foreground.
- Interconnection among a concept reveals their multidimensionality and impact. Now, we going to try to quantify these frequencies as indicators to make these intuitions coherent.
- Words meaning is so extensive among corpus and glossaries, that is necessary human comprobation to validate the databases, increasing the scale of the research.
- Incorporate most complete corpus comparison could improve the reliability of these strategy.

CONCLUSION

- This experiments show the basis to incorporate affective criteria in categorization of research.
- Language, as boundary object, carry on with evidence of interactions among bigger set of ideas: semantical ecologies.
- There are several semantical ecologies tributing to “Climate Change” concept. The behavior is adequate to a boundary object is a transdisciplinary idea.