Synthesizing the Gaseous State is an ongoing research effort that uses neural networks to map word relations, hierarchies, gaps, and foci of terms within large data sets of architecture and urban theory, as they are graphed geographically by epoch. It chooses to extend the usual application of algorithms from structural, physical, spatial, or mathematical purposes, to include theoretical concerns. The methodology employed in order to achieve this relies on each term stored according to its contextual relations (words directly surrounding the term in a sentence) that are referenced according to their place in multiple texts and occurrences within the same text. While this context is dynamic, as dependent upon the weighted relations traced through texts loaded upon the data set, it is balanced against a static or fixed context - the definition of these words, their author, place, and date. Relying upon the information acquired, each term behaves as an active agent, seeking out relations based upon new contexts and visually graphing them according to place, author, and date, as opposed to abstract or empty space. This comes with the purpose of visually revealing the movement of architectural thought through the terrain, while describing how it converges and diverges from certain concerns locally, as compared to global currents across time, as a Computer Aided Epistemology of architecture theory.

The fitness criteria used while evaluating the optimization of the software is its capacity to graphically seek out a determined proximity measure between associated terms, while still being constrained to a certain latitude-longitude range in position, associated with the author’s affiliated institutions.

Currently the software uses a 1GB database of architecture theory taken from assorted periodicals (Architectural Design Magazine and Architectural Record), for proof-of-concept purposes. Next steps will include collaborations with Charles University, Prague, and the ICCIT University of Toronto, to synthesize 20+ years of PhD theses, in order to acquire a knowledge map of most related and commonly used terms, most discussed topics, authors cited by hierarchy, sites of intervention and least discussed subjects. The software allows any language to be entered and analyzed. Applications for this can span various scenarios, such as: a) the need for aid in traumatized regions due to war and natural disasters where acquiring/organizing information from the ground, can give a clearer and more rapid picture of the necessities of the people affected, as these are instantaneously built into a database b) an interface for exploring our collective knowledge, the most pressing stimuli upon our profession and our obscured topics as they are hierarchized through time, c) a synthesis of the diversity of public opinions upon the built/urban environment without sacrificing variables, or channeling opinions through surveys, d) ideological or economic movements through the terrain, such as protests, gentrification and educational inequalities, in data-substantiated ways, that can give further insight into other statistical analysis, and e) a dynamic graph that can connect, the user’s interest, with particular places, authors, or historical facts, of the subjects he or she has queried.
Synthesizing the Gaseous State

Mapping the Geographic Convergence of Knowledge

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