

A PATTERN OF DUST: ITALO CALVINO VS. SEMANTIC WEB

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Strange things happen when, sweating inside a crowded bus in traffic-jammed Belgrade, you read a surrealistic book about weird, non-existing cities of the old Mongol Empire, while going to a Computer Science meeting about Semantic Web, Berners-Lee's viewpoints, Artificial Intelligence, ontologies, and knowledge representation.

The book was Italo Calvino's *Invisible Cities*, a dense fictitious dialog between Marco Polo, the traveler of travelers, and Kublai Khan, the emperor of emperors. While seated at the tsar's gardens in Xanadu, Venetian describes cities visited on his expeditions through the Mongol Empire, various odd phantom towns, obscure and invisible, bizzare and beautiful, anti-cities never seen by anybody. In explorer's accounts is the old Tartar king able to realize the vastness and ambiguity of his impossible realm – that is, at the same time, *the sum of all wonders and an endless, formless ruin*.

Each of those cities is named after a woman: Armilla, Zobeide, Eutropia, Olinda. The story of each of them is told as a poetic riddle on various topics: language, memory, desire, dreams, patterns, time, and human nature.

While the bus was about to pass the central square, I reached the city of Zora. Marco (or Calvino) told Kublai (or me):

Beyond six rivers and three mountain ranges rises Zora, a city no one, having seen it, can forget. (...) Zora's secret lies in the way your gaze runs over patterns following one another as in a musical score where not a note can be altered or displaced. The man who knows by heart how Zora is made, if he is unable to sleep at night, can imagine he is walking along the streets and he remembers the order by which the copper clock follows the barber's striped awning, then the fountain with the nine jets, the astronomer's glass tower, the melon vendor's kiosk, the statue of the hermit and the lion, the Turkish bath, the café at the corner, the alley that lead to the harbor. This city which cannot be expunged from the mind is like an armature, a honeycomb in whose cells each of us can place the things he wants to remember: names of famous men, virtues, numbers, vegetable and mineral classifications, dates of battles, constellations, parts of speech. Between each idea and each point of the itinerary infinity or a contrast can be established, serving as an immediate aid to memory. So the world's most learned men are those who have memorized Zora.

A small eyelid-like pattern of dust on the bus window overlapped the stone eye of an old statue at the square, spontaneously forming a meaningful new sculpture in my mind. Suddenly, I realized that Zora was nothing but a giant ontology: a semantic network with a rigidly defined structure between concepts, a formal representation of the world.

Ontology, being a metaphysical study of the nature of being and existence, traditionally aims to discover those fundamental categories into which the world's entities naturally fall, and relationships between them. Yet, it has been a while since computer scientists co-opted this term from philosophers. Thus, ontology became a computational model for describing the world that consists of a set of formal types, their attributes and relationships; something that could really be engineered, built, instead of only speculated about. AI researchers saw it as a way to represent the world knowledge and meaning in a machine-readable form, enabling certain kinds of computer automated reasoning. However, the practical results were not spectacular. Following the same idea, the Web's father, Tim Berners-Lee, later made a daring proposal of a new WWW with well-defined semantics, the Web that could understand the meaning of data: the Semantic Web. With a large bunch of ontologies, logical rules, and inference algorithms – the proposal said – we might be able to make our Web and our machines (pseudo)intelligent.

The original vision held by Tim and alike was similar to the one of Zora. The future software agent would be able to connect each item on the Semantic Web with its appropriate ontology – just like a traveler in the city of Zora is able to put each concept into a point of the town's clever topography. That would help him (agent or traveler) not only to memorize, but also to derive and understand the world's information. The Semantic vision speaks about software agents being capable of paying our bills, planning our schedules, understanding our literary and travel tastes, and even, with all that in *mind*, booking our Trans-Siberian Railway tickets to Mongolia automatically. With Zora's map, that atlas of knowledge, in their pockets, machines might become *the world's most learned men*.

Nevertheless, this is what happened to the magical semantic town, according to Calvino's Marco Polo:

Forced to remain motionless and always the same, in order to be more easily remembered, Zora has languished, disintegrated, disappeared. The earth has forgotten her.

The tragic faith of the poor town warns us that the reality might be just too vast, evasive, ambiguous, multifaceted, and ever-changing to be grasped by any unified worldview described in pure, rigid logic. The seminal Semantic Web research seems stuck; luckily it is now being transformed into a less ambitious Web of Data project.

Before the bus stopped, I pondered: Could it be that the Tim's original dream is another Kublai Khan's empire – tempting, yet invisible, impossible to possess, doomed to be shrunk, disintegrated, forgotten?