

Ontology Design

Dr. Maciej Jamik
Noam Bercovici

Credit:

Aldo Gangemi, Valentina Presutti, Fabien Gandon

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 http://www.reazyread.com/sacks.html

The Man Who Mistook His Wife for a Hat :
And Other Clinical Tales by [Oliver W. Sacks](#)

In his most extraordinary book, "one of the great clinical writers of the 20th century" ([The New York Times](#)) recounts the case histories of patients lost in the bizarre, apparently inescapable world of neurological disorders. Oliver Sacks's *The Man Who Mistook His Wife for a Hat* tells the stories of individuals who have lost their memory, cannot recognize people, shout involuntary words, are retarded yet are gifted. If inconceivably strange, these brilliant tales are studies of life struggling against increasingly impaired, to imagine with our hearts what medicine's ultimate responsibility: "the suffering."

Our rating : ★★★★★

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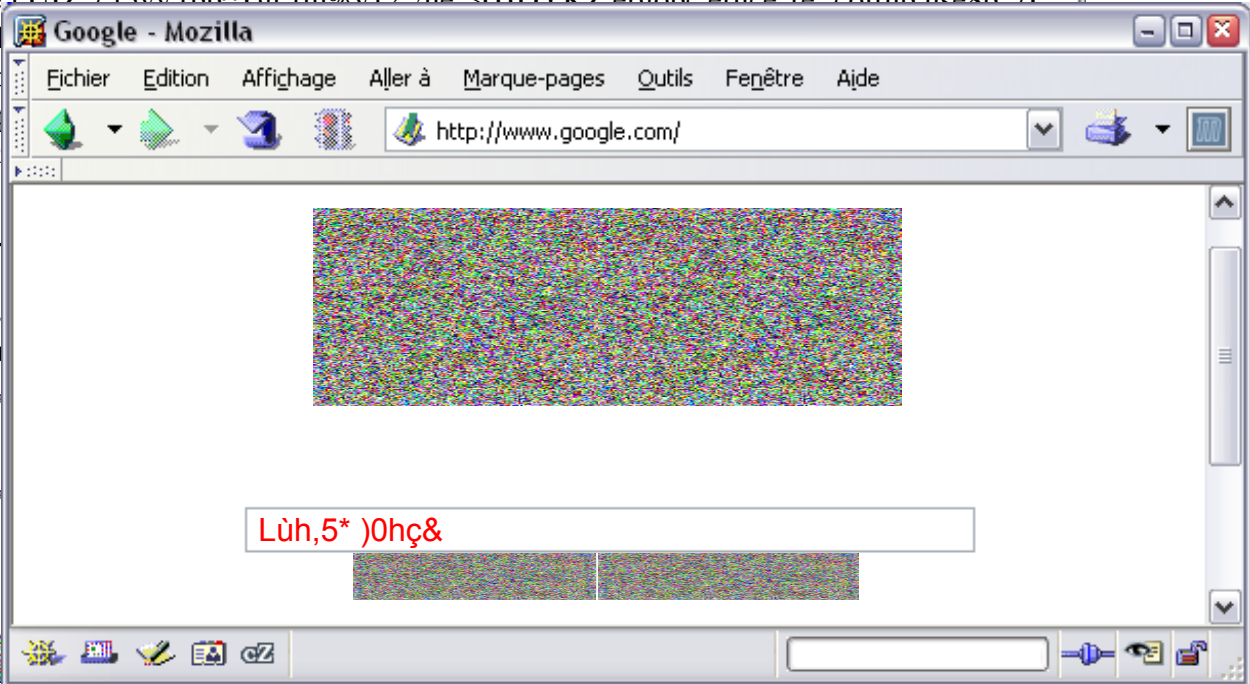
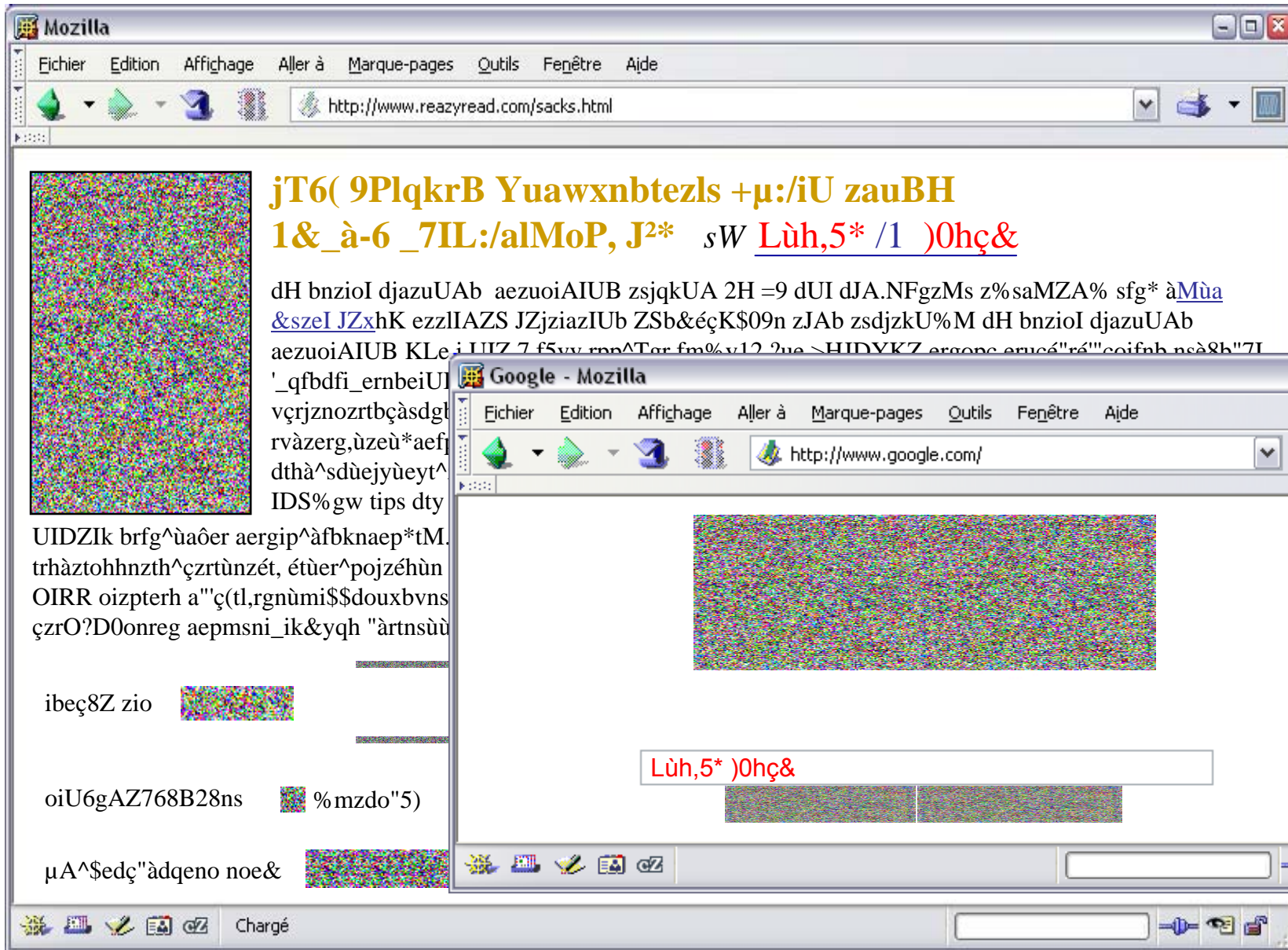
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Oliver Sacks

Google Search I'm Feeling Lucky

Chargé



something is missing
some knowledge

RDF stands for

Resource: *pages, images, videos, ...
everything that can have a URI*

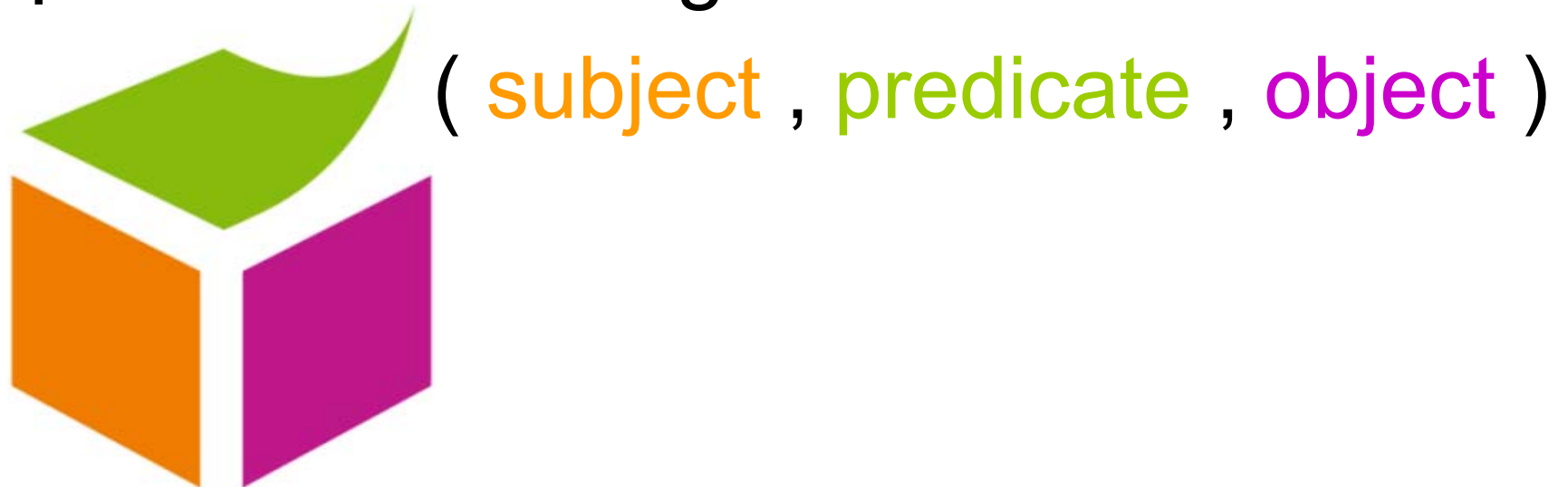
Description: *attributes, features, and
relations of the resources*

Framework: *model, languages and
syntaxes for these descriptions*

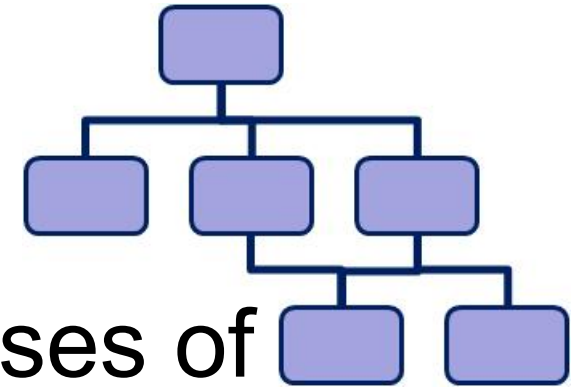
in RDF knowledge always
comes in three



RDF is a triple model *i.e.* every piece of knowledge is broken down into



RDFS to define classes of resources and organize their hierarchy



a little drop of semantics goes a
long way

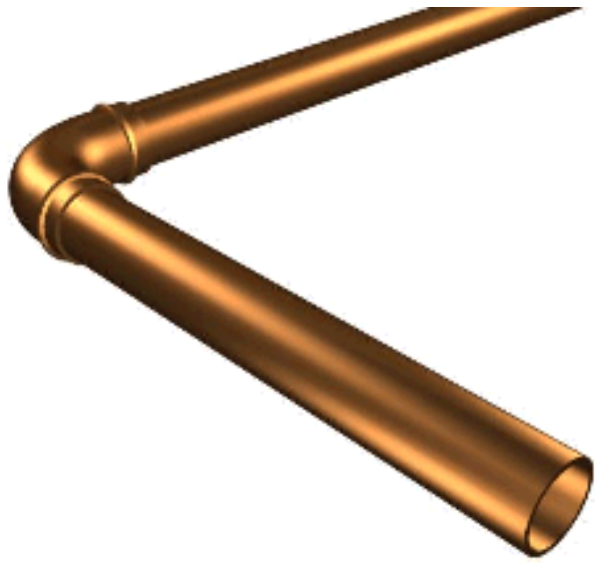


RDF Schema to...

- ... define classes and relations of resources and organize their hierarchy
- ... define signatures of relations (domain, range)
- ... document them with labels and comments
- ... define associated inference rules



ntologies
in a nutshell



this is not
a pipe



Google™

pipe

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Ceci n'est pas une pipe.

This is Not a **Pipe** (1968)
510 x 364 - 25k - jpg
foucault.info



Drill Pipe
500 x 379 - 35k - jpg
www.made-in-china.com



Hello Kitty Exhaust **Pipe**.
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www.popgadget.net



Ontology

a logical theory which gives an explicit, partial account of a conceptualization *i.e.* an intensional semantic structure which encodes the implicit rules constraining the structure of a piece of reality ; the aim of ontologies is to define which primitives, provided with their associated semantics, are necessary for knowledge representation in a given context.

[Gruber, 1993] [Guarino & Giaretta, 1995] [Bachimont, 2000]

I never saw a universal ontology



- ◆ ... (maybe) we can check the consistency, classify, and query all this knowledge
 - ◆ this is great, but ...
- ◆ ... when I locally reuse parts of such a big bunch of knowledge, inferences sometimes produce strange results:
 - ◆ a web page same as an email address (e.g. `http://.../Aldo owl:sameAs mailto://aldo@...`)
 - ◆ a person same as a wikipedia article (e.g. `Aldo owl:sameAs http://en.wikipedia.org/Aldo`)
 - ◆ Italy is a continent (e.g. `(Italy rdf:type (Country) rdfs:subClassOf Continent)`)
 - ◆ ...
- ◆ ... and problems are hardly fixable on a large scale
- ◆ Logical consistency is not the main problem
 - ◆ e.g. `owl:sameAs` can be wrongly used and still we have consistency

When to use owl:Individual, Class, ObjectProperty, DatatypeProperty? New problems arising on the Web

- ◆ OWL gives us logical language constructs, but does not give us any guidelines on how to use them in order to solve our tasks. E.g. modeling something as an individual, a class, or an object property can be quite arbitrary
- ◆ cf. Semantic Web Interest Group post May 27th, 2008 by Zille Huma:
"I have been wondering for sometime now that why isn't it a popular trend to store standard activities of a domain in the ontology and not only the concepts, e.g., for the tourism domain, ontologies normally contain concepts like Tourist, Resort, etc. but I have not so far come across an ontology that also contains the standard activities like searchResort, bookHotel, etc. Why is it so? What support is provided in the ontology languages to model the standard activities of the domain as well?"

When to use owl:Individual, Class, ObjectProperty, DatatypeProperty? New problems arising on the Web

- ◆ (1) a functionality for searching resorts is implemented in our web service
 - ◆ owl:Individual(searchResort) rdf:type(Functionality)
- ◆ (2) searching resorts is a type of functionality required for this kind of services
 - ◆ owl:Class(searchResort) rdfs:subClassOf(Functionality)
- ◆ (3) who has been searching for what resorts in our web service?
 - ◆ owl:ObjectProperty(searchResort) rdfs:range(Resort)
- ◆ (4) how many users have been using our resort searching functionality?
 - ◆ owl:DatatypeProperty(searchResort) rdfs:range(xsd:boolean)

- ◆ Requirements (I want to attend my ideal talk)
- ◆ Logical constructs (subClassOf, restriction, ...)
- ◆ Existing ontologies (FOAF, BibTex, DOLCE, ...)
- ◆ Informal knowledge resources (CiteSeer, ACM topic catalog)
- ◆ Conventions and practices (naming/URI making, disjoint covering, reification patterns, transitive partOf, role-task, ...)
- ◆ Tools: editors, reasoners, translators, etc. (Protégé, NeOn Toolkit, TBC, FaCT++, Pellet, Jena, AllegroGraph, Virtuoso, ...)

- ◆ Naming Convention

- ◆ |

Matching problems to solutions is not trivial

- ◆ |

- ◆ |

space

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ion