There is a real world with real structure. The program of mind has been trained on vast interaction with this world and so contains code that reflects the structure of the world and knows how to exploit it. This code contains representations of real objects in the world and represents the interactions of real objects.

You exploit the structure of the world to make decisions and take actions. Where you draw the line on categories, what constitutes a single object or a single class of objects for you, is determined by the program of your mind, which does the classification. This classification is not random but reflects a compact description of the world, and in particular a description useful for exploiting the structure of the world.

– Eric B. Baum [2004]

Knowledge Graphs and Ontologies

- Is there a flexible way to represent relations?
- How can knowledge/data bases be made to interoperate?

Choosing Individuals and Relations

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prop(*Individual*, *Property*, *Value*) is the only relation needed:
called individual-property-value representation
or triple representation

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- $prop(a, parcel, true)$, where *parcel* is a Boolean property
  Here parcel is the characteristic function of the class.

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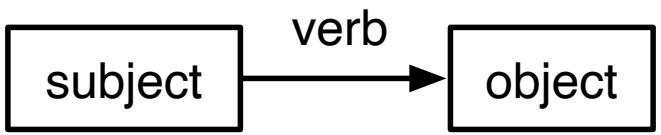

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$prop(subject, verb, object)$ is the only relation needed: $\langle subject, verb, object \rangle$ triples, semantic network, entity relationship model, knowledge graphs, concept maps, ...

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- The IRI denotes the entity, not the web site; if someone uses the IRI they mean the individual denoted by the IRI.

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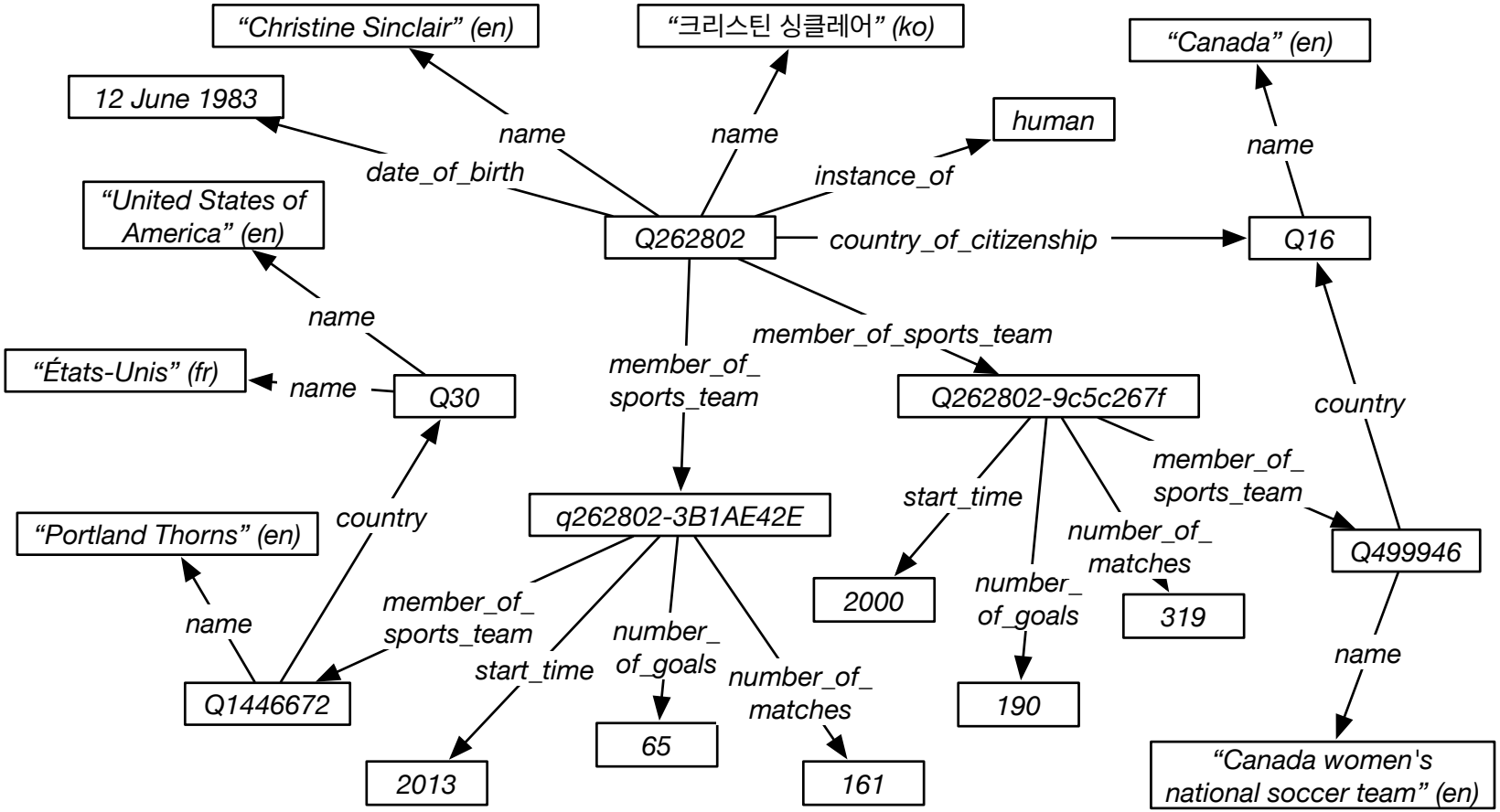
  /entity/Q262802 /prop/direct/P27 /entity/Q16

  but all starting with `http://www.wikidata.org`

Part of the Wikidata Knowledge Graph



Accessing Wikidata using Prolog

`https://artint.info/3e/resources/ch16/sem_web.pl`

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- These are true triples:
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- However, Air Canada does not fly from New York to Los Angeles.
  The information about flights is lost!