Adding semantics to AV contents: from words to interaction

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Semantics and AV

- Why it is useful ?
  - Having something common between several different occurrences to refer to them and wrap them;
    - E.g. : multiple examplars of an AV item;
- Why it is difficult ?
  - AV items are non textual data that should be explicitly categorized and described.

Usual approach: textual metadata

Interpretation by human being

Label is attributed to the content, of which it expresses a meaning;

Label

Label produced by users while interpreting; Label materialises interpretation

It seems to work: the unreasonable efficiency of language

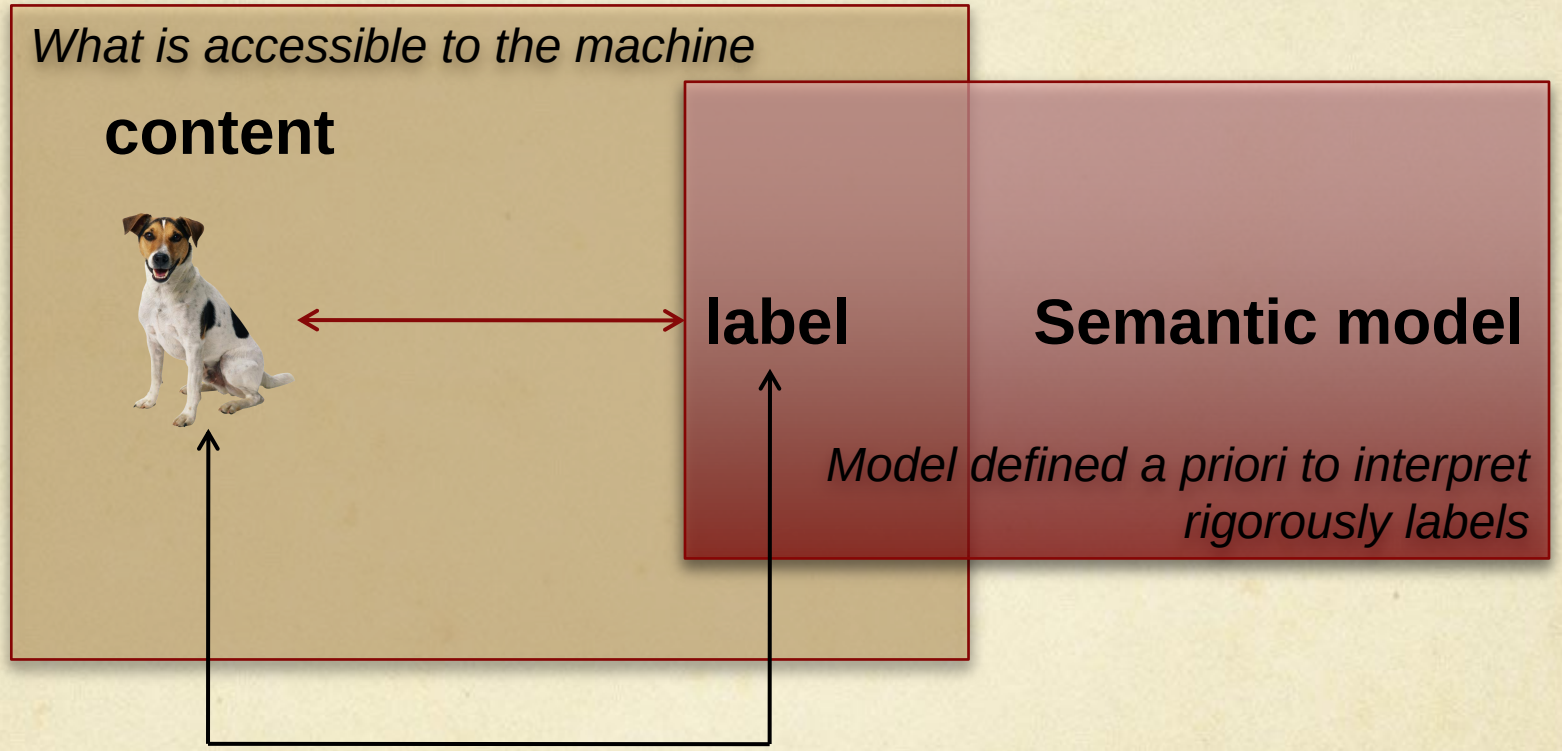
Non-textual / Non verbal data

Semantically opaque : data cannot describe itself

Textual data **dog**

Semantically transparent: a word seems to be autoexplicative

In fact…



Association made while indexing; two issues :

- To choose the right label
- To be able to re-interpret it correctly

Problem

- Actually, textual labels are ***not*** at a semantic level in themselves
- They convey meaning since they belong to natural language, but their interpretation is context-dependent, user dependent, etc.

Labelling approach is not serious from a semantic point of view !

Seriously speaking

- Semantics is really added when it has been modelled through specific language and associated with the AV items.
- These specific languages are usually formal languages, as those used by the Semantic Web.
- However, these approaches are difficult to apply and cumbersome for users:
  - Mastering many ontologies;
  - Categorizing data according to these ontologies.

But one needs to specify semantics

Usual understanding of semantics in AV communities

Meaning ?

DOG

Meaning ?

<biology:naturalcategory: dog>

Meaning modelling in knowledge engineering and philosophy : ontologies, formal semantics, etc.

Problem

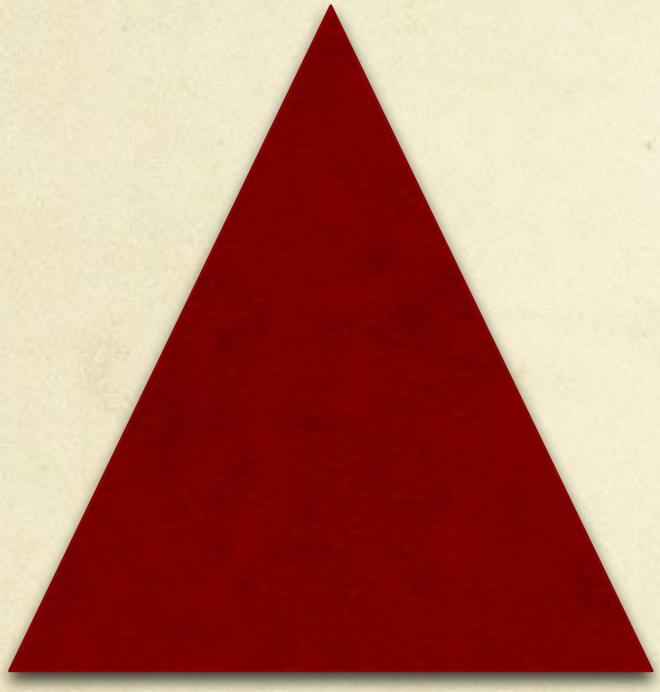
- Professionnal users should be aware of the multiple ontologies populating the AV framework;
- These users are not scientists in knowledge engineering, but…. Professionnals !

Rigorous semantic approach is not serious from a pragmatic point of view !

Back to fundamentals…

Peirce

interpretant



Sign

Object

- *Sign* is interpreted is an *object* according to the *interpretant*
- Put another way:
  - *Sign* is reformulated as an *object* according to *interpretant*

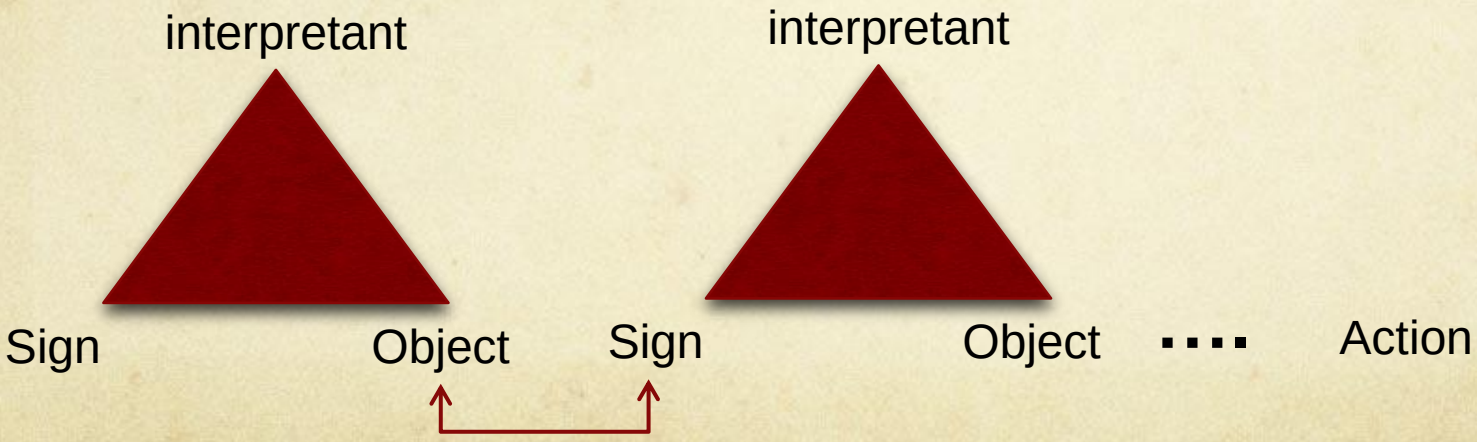
is interpreted as « dog ».

Keep interpreting…

- But « dog » is also an object waiting for its interpretation :
  - « dog » is interpreted as « canis » (Latin will become in 2020 the international language for semantics, replacing english).
- But « canis » also…
- Interpretation is a never ending process.

Exception

- Interpretation has an end when one interprets the object by acting
  - Action is the end of the interpretation process.



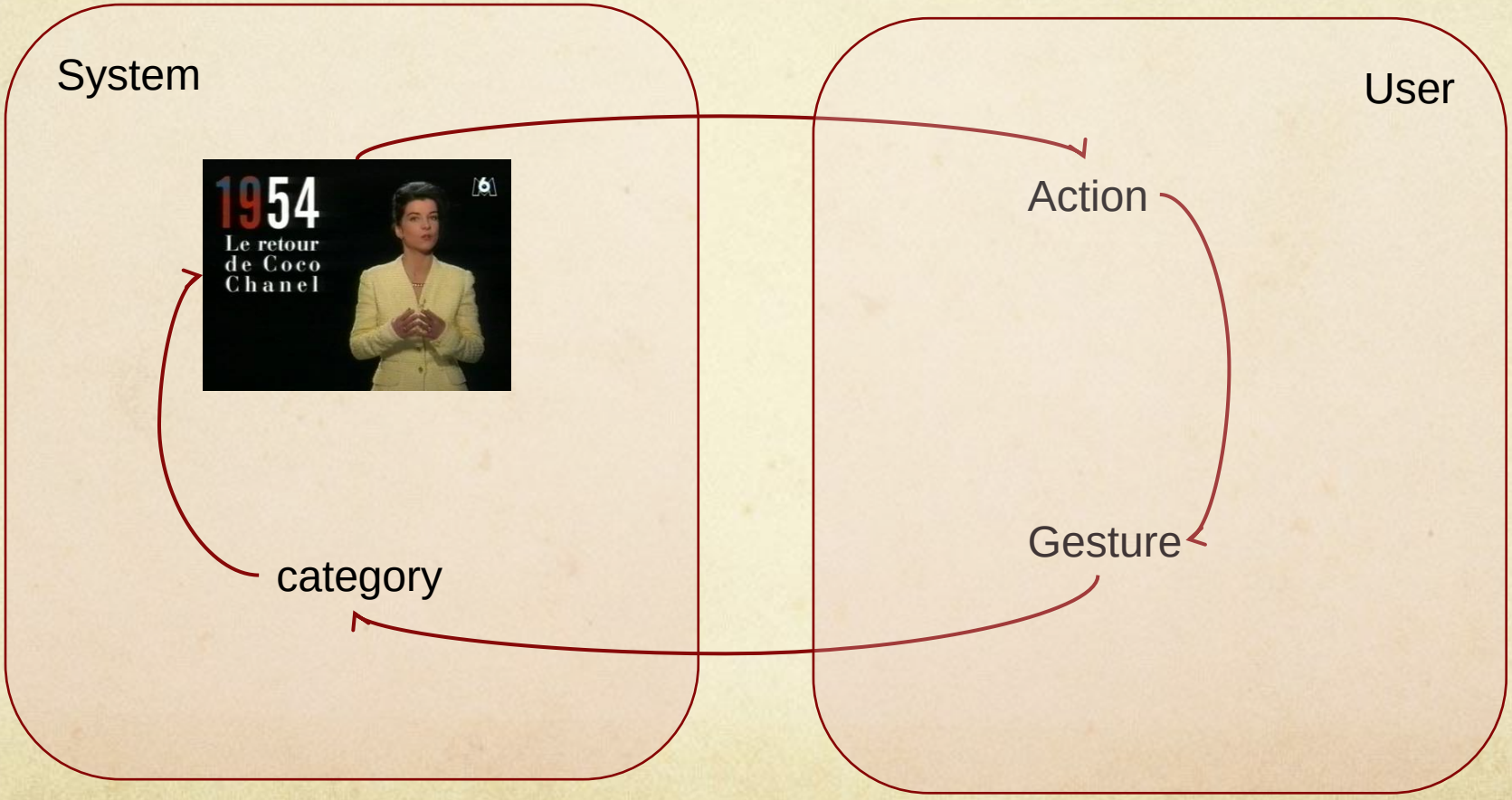
Adding semantics by acting

- Rather than adding some labels that remain ambiguous since they should be reinterpreted in a never-ending interpretation loop, users can act / react to AV objects.

What kind of action ?

- Action should be defined according to performances usual for the users, according to what they do.
- Their action is defined by their behaviour, in particular their bodily behaviour.

The semantic loop

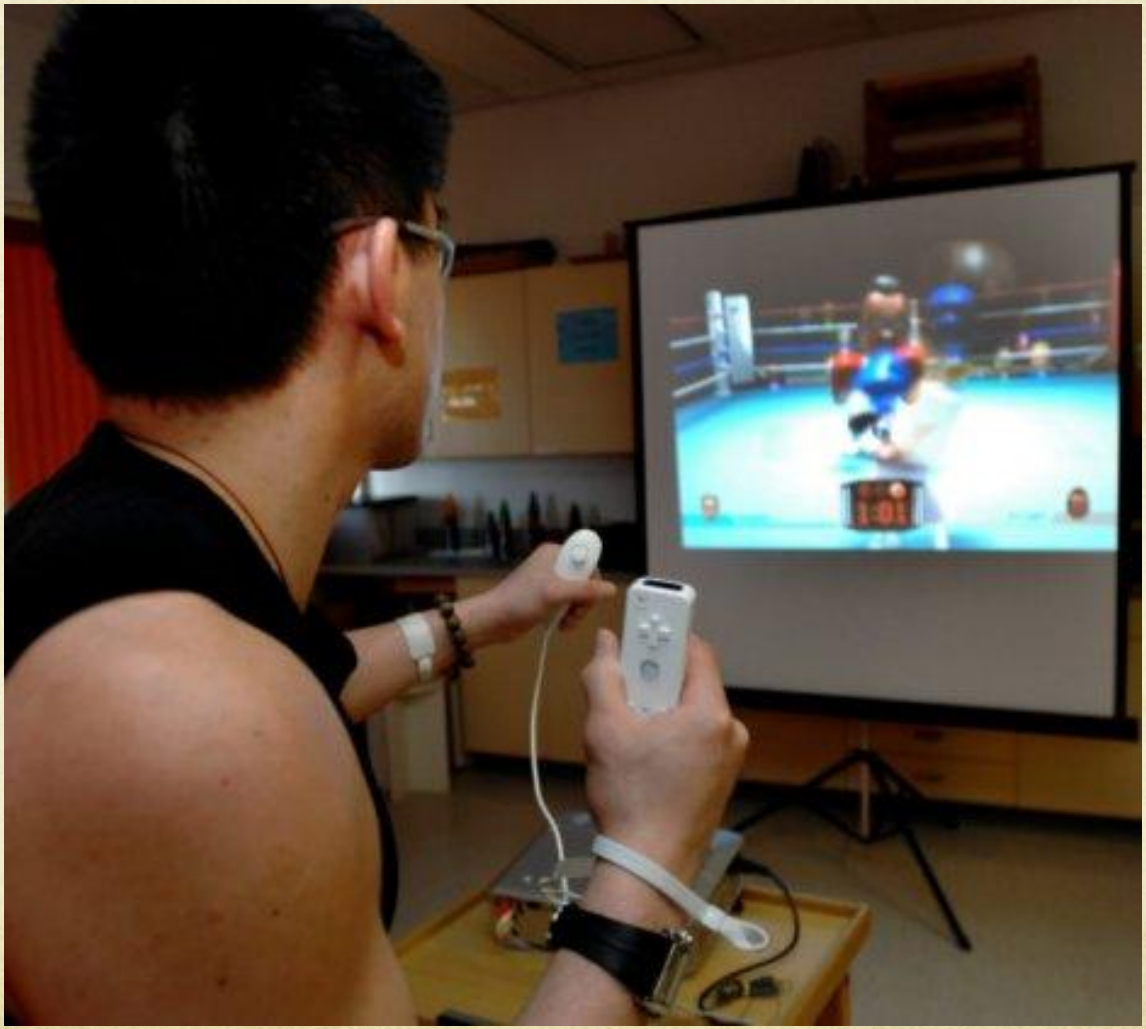


Consequences

- The user should not be aware of ontologies or complex semantic framework
- The system should be able to interpret user gestures and to keep a semantic value, according to hidden ontologies.

Famous examples

Others…



More serious examples

- Wait for the other talks (especially Steny’s talk and Julien’s one !)

Conclusions

- Two well known facts :
  - Semantics is natural for users;
  - Modelling is cumbersome for users

  Don’t ask them for explaining what they are doing, just look at them !

- Approach :
  - Let users act;
  - Relies on their bodily and semantic capacities;
  - Extract a semantic value from their actions.