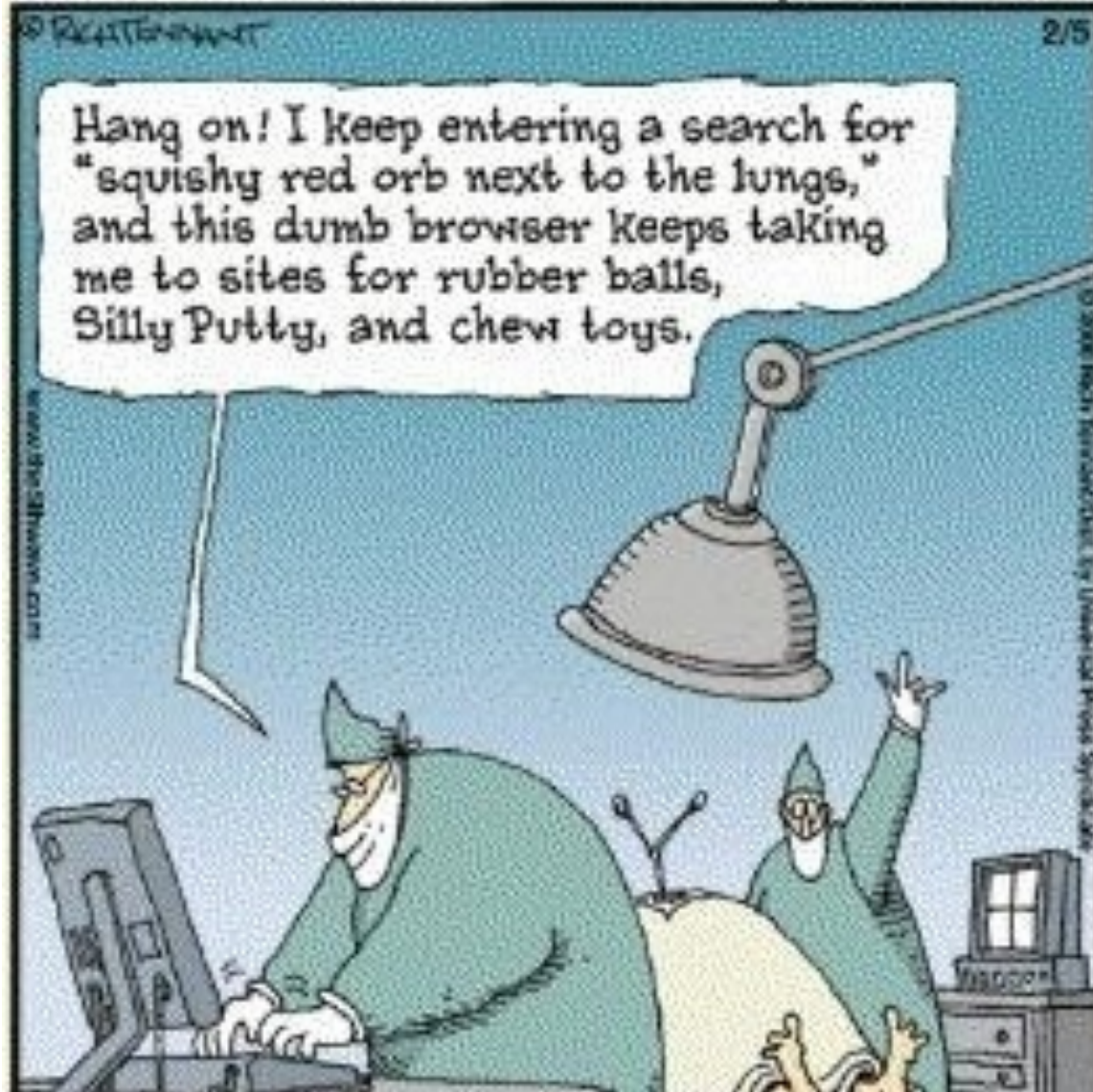


The 5th Wave

By Rich Tennant



Knowledge Representation and Communities

Margaret-Anne Storey

mstorey@uvic.ca

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*Why are ontologies, classifications,
standards, terminologies of importance
in CSCW???*

How do people classify?

How does your bathroom cabinet compare to the medicine aisle in the supermarket?

How do you manage your course materials and emails (discussion point), your files? (Evian)

What if a course website was not based on a hierarchy but instead relied on your ability to search, tag and link... (i.e. search vs. browse?)

How do you manage your material information in concert with your digital materials?

Digital information has fewer constraints, thus fewer constraints to organization!

Consequences of classification

“Each standard and category **valorizes** some point of view and **silences** another”

Some standards become **visible** because of **timing**... e.g. VHS, Windows software

Jobs are won/lost, regions prosper or are impoverished because of these decisions

Humans have a tendency to “**satisfice**” when classifying
(see <http://en.wikipedia.org/wiki/Satisficing>)

*“Information systems that neglects use and user semantics is bound for trouble down the line – it will become either **oppressive** or **irrelevant**.”*
[Bowker/Star]

Personal information management systems...

Designed to make the process of managing information **transparent**

But we still need to **design/select categories**, **enter the data**, and **struggle** with things that do not quite fit!

And then how do these systems **fit** in with **large-scale formal categories**?

Linking and categories

Every **link** in hypertext creates a **category** (same as, like, related to, example of)

But **finding** is perhaps easier than assessing its **quality**?

What about accessing potential private information out of context? (e.g. of googling future employee, boyfriend etc)

*Information systems involve the hard
technical problems of **storage, retrieval** and **display**
as well as the hard
interactional problems of **organization and**
navigation.*

Classifications and standards...

Impact of classifications and standards

*“Remarkably for such a central part of our lives, we stand for the most part in formal ignorance of the **social and moral order** created by these invisible, potent entities. Their impact is indisputable, and as Foucault reminds us, inescapable”*

*“Classifications serve as both a **political force** and as an **organizing rubric** for complex bureaucracies.”*

“These properties inform social and moral order via the new technological and electronic infrastructures.”

[Bowker/Star]

Classification

A classification is a segmentation of some aspect of the world:

- **Consistent, unique** classificatory principles in operation
- Categories are **mutually exclusive**
- System is **complete**

But no real world classification meets these simple requirements!

Classification as “boundary objects”

Objects for cooperation across social worlds

Boundary objects inhabit several communities of practice and satisfy the information requirements of each of them

They are able to travel across boundaries and maintain a sense of identity – but they can be tailored to meet the needs of any one community – thus they are both ambiguous and constant

Standards

- A standard is any set of **agreed-upon rules** for the production of textual or material objects
- A standard may span more than one **community of practice** (or site of activity) – **persists** over time
- Standards are deployed in **making things work** together, often enforced legally

Classifications may or may not become standardized

Call for caution!

*“Forms like the death certificate, when aggregated form a case of ... ‘**the substitution of precision for validity**’. ”*

“When a seemingly neutral data collection mechanism is substituted for ethical conflict about the contents of the form, the moral debate is partially erased. One may get ever more precise knowledge, without having resolved deeper questions, and indeed, by burying those questions.”

[Bowker/Star]

Ontologies , folksonomies...



Segueway to SLE Keynote on Ontologies....

Problems with ontologies?

Ontologies are usually created to address pressing **practical needs** for specific tasks

But they become embedded in the software design and within the navigational structures

But what about “folksonomies”?

Tagging and wikis support the development of **folksonomies** that emerge from the needs and actions of the community

Issues with “folksonomies”?

Some researchers are now observing that **tag effectiveness is decreasing** over time (Chi, 2007)

- too many items with the same tags leads to too many choices for navigation
- it is also getting harder to find experts given a set of tags (users using more diverse set of tags over time)
- similarly, users in search engines are using more keywords to specify a search

Discussion on tagging...

- If you let everyone tag it (even not that carefully) the many tags will be more helpful than the carefully selected categories by a professional) – but here the goal is to **find** something, not **classify** it!
- **User** and **time** are core attributes of tagging
 - Lets you search by user
 - And supports the notion of **decay**
- Similar perhaps to *post hoc* **filtering**?
- Move from strict synonyms to fuzzier relationships – but doesn't define what the **relationship** is!

When should ontologies be used?

Domain to be organized:

- Small corpus (really?)
- Formal categories
- Stable entities
- Restricted entities
- Clear edges

Participants:

- Expert catalogers
- Authoritative source of judgment
- Coordinated users
- Expert users

When should it *not* be used?

Domain:

- Large corpus (I don't agree with this!)
- No formal categories
- Unstable entities
- Unrestricted entities
- No clear edges

Participants:

- Uncoordinated users
- Amateur users
- Naïve catalogers
- No authority

A way forward: are both needed?

“Any information system that neglects use and user semantics is bound to become oppressive or irrelevant”

Ontologies may be used if there is sufficient **consensus** -- learnable, predictable, implementable

Folksonomies can provide **ad-hoc** navigation when classifications are emerging and evolving

Organizations going organic?

Moving away from **binary** organization (either is in or is not in) to a **probabilistic** world

Philosophical question: Does the world make sense or do we make sense of the world?

If you make sense of the world and someone else sees it differently to you, then you have to formally reconcile those differences

But what kind of tool support is required?

Ontologies need to be supplemented with **user participation data** (Gruber, 2007)

Tools can perhaps address entropy of tagging systems
e.g. auto-tagging, tag suggestions, annotations as tags
(Chi, 2007)

Do today's systems work? Or could they be improved?

Tensions or opportunities:

Formal/Planned → know where things are, can learn... But doesn't keep up, too brittle/static
versus

Conventional/Emergent → can change as information changes.... But difficult to learn/use

Personal versus Social

Active versus Passive

From your posts...

Knowledge Representation

- “The world today doesn’t make sense, so why should I paint pictures that do that?” – Pablo Picasso
- “All models are wrong, but some are useful.” — George E. P. Box
- From chaos, we can create order...
- Ontologies are so much more than classifications – relationships matter...

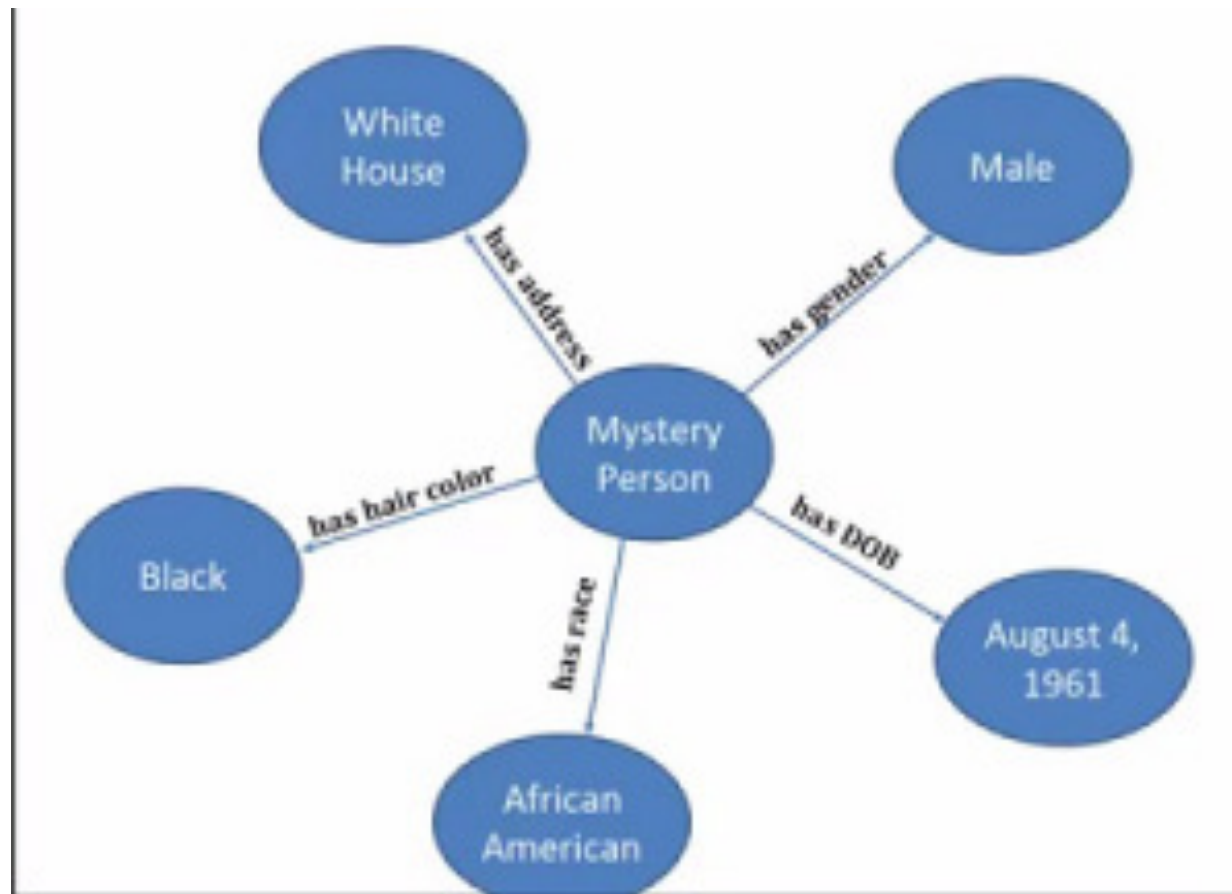
From your posts...

Knowledge Representation

- **Desire for more concrete examples...**
- “Tagging is not sufficient in today’s world which is full of collaboration, communication, trading and several people are working together electronically.”
- **Video link:** <https://youtu.be/jfUPLuPL3Ho>
- **Resonated with many of you in terms of education...**

From your posts...

“Trying to find a way to categorize the internet is like trying to categorize the dewey decimal system, it’s pointless, and even if you succeed, nobody will use your system. The internet is already an ontological model.”



From your posts

“Ontology has to do with sense-making—it’s the science of what we mean when we say things. And so where taxonomy tuning is about the systems of specific words we use, ontology tuning is an activity that information architects and content strategists can engage in to ensure that there’s a sort of cognitive consistency across all of the elements, features and offers.”

Dan Klyn

From the posts -- Communities

- It is the interactions that perhaps matter the most (not the domain of interest)
- “the community that acts as a living curriculum for the apprentice”
- “Shirky argues that there still can be situations where ontological classification may be useful. From his description, it sounds like communities of practice (Wenger-Trayner, 2015) may be the most suited to adopting and sharing a common ontology”

Domain	Community	Practice
<p>“identity defined by a shared domain of interest. Membership therefore implies a commitment to the domain, and therefore a shared competence that distinguishes members from other people (Wenger, 2015),”</p>	<p>“ members engage in joint activities and discussions, help each other, and share information. They build relationships that enable them to learn from each other (Wenger, 2015).”</p>	<p>“Members of a community of practice are practitioners. They develop a shared repertoire of resources: experiences, stories, tools, ways of addressing recurring problems—in short a shared practice (Wenger, 2015)”</p>

From the posts -- Communities

“In essence, the modern digital paradigm of meta-ontology, protocols of information FOR (not of) communication, have dissolved the rigid top-down structures of communities of practice. What is left in the wake of this wave break is an effectively infinite number of communities of practice at the touch of a button.”



A Snapshot Comparison

Communities of practice, formal work groups, teams, and informal networks are useful in complementary ways. Below is a summary of their characteristics.

	What's the purpose?	Who belongs?	What holds it together?	How long does it last?
Community of practice	To develop members' capabilities; to build and exchange knowledge	Members who select themselves	Passion, commitment, and identification with the group's expertise	As long as there is interest in maintaining the group
Formal work group	To deliver a product or service	Everyone who reports to the group's manager	Job requirements and common goals	Until the next reorganization
Project team	To accomplish a specified task	Employees assigned by senior management	The project's milestones and goals	Until the project has been completed
Informal network	To collect and pass on business information	Friends and business acquaintances	Mutual needs	As long as people have a reason to connect

Look back to look forward...

- Linked data:

https://www.ted.com/talks/tim_berners_lee_on_the_next_web?language=en

- 30 years of the MIT Media Lab:

https://www.ted.com/talks/nicholas_negroponte_a_30_year_history_of_the_future

- Internet of Things in our World:

<https://www.youtube.com/watch?v=QaTlt1C5R-M>

Consider: What role does/could the Internet of Things play in CSCW?

The Art of Communities:

<https://www.youtube.com/watch?v=VzSJvA1RyJ>

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