

Lakoff's 'Women, Fire & Dangerous Things' - What every IA should know

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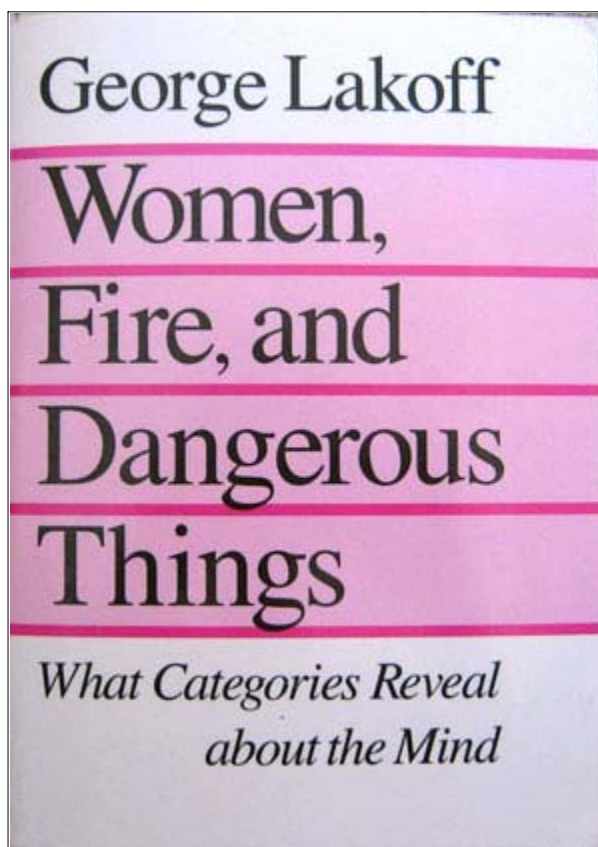
IA Summit 2006

About Donna Maurer

- Freelance information architect/interaction designer
 - I design interfaces for complex informational and interactive systems
 - 5+ years professional experience
- Designed loads of business applications, websites, intranets
- Practice, teach and write about IA and IxD
- Studying Masters of Human Factors
- Chair for next year's IA Summit

Website: <http://maadmob.com.au/>

The book



Articles

1. *Lakoff's Women, Fire, and Dangerous Things*. James Melzer:
http://www.jamesmelzer.com/bearings/archives/2003/09/lakoffs_women_f.html
2. *Women, Fire and Dangerous Things: What Categories Reveal About the Mind*. Maadbooks:
<http://maadmob.net/maadbooks/index.php/women-fire-dangerous>

Why this is important

The idea of a category is central... Most symbols (i.e., words & representations) do not designate particular things or individuals in the world... Most of our words & concepts designate categories.

There is nothing more basic than categorization to our thought, perception, action & speech. Every time we see something as a kind of thing, for example, a tree, we are categorizing.

Why is this important to know:

- The book is about categorisation and cognition
- Challenges the classical theory of categorisation
- Contains a number of core insights into the way categories work in our brain
- Fundamental for the type of work IAs do
- Can be paradigm shifting

Plus, it is also incredibly hard to read, and contains a lot of information we do not need to know about. The key ideas are tiny sentences, mixed up amongst long paragraphs.

The concepts discussed here are those that are most relevant for IAs. They do not cover everything in the book, especially much of the philosophical argument. Most of the key concepts actually belong to others, being reviewed and examined here.

Classical categorisation

- In the classical view of categories:
 - categories are abstract containers with things either inside or outside the category
 - things are in the same category if and only if they have certain properties in common
 - each category has clear boundaries
 - the category is defined by common properties of the members
 - the category is independent of the peculiarities of any beings doing the categorising
 - no member of a category has any special status
 - all levels of a hierarchy are important and equivalent
- It has been with us for thousands of years

The intent of the book is very much to debunk classical categorisation theory, and replace it with a theory of prototype-based categories defined by cognitive models.

The book starts with a review of the major themes, by examining contributions from particular authors. This appears to be unimportant background material, but is the most important chapter of the book. If you read nothing else, read this chapter.

The theme that holds the following ideas together is the idea of a cognitive model. From the book:

- Cognitive models are directly embodied with respect to their content, or else they are systematically linked to directly embodied models. Cognitive models directly structure thought and are used in forming categories and in reasoning.
- Most cognitive models are embodied with respect to use. Those that are not are only used consciously and with noticeable effort.
- The nature of conceptual embodiment leads to basic-level categorization and basic level primacy

Prototype effects

- Categories have best, or prototypical examples, with some members of the category being more representative than other members
- These are abundant in the real world:
 - Bird - robins, chickens, penguins, ostriches
 - Chair - desk chair, kitchen chair, rocking chair, electric chair
- Prototype effects are superficial phenomena which may have many sources

If classical theory were true, no member of a category would have any special status, as the properties defining the category are shared by all members.

Elanor Rosch is considered to be the key contributor to prototype theory and basic level categories.

Other challenges to the classic theory

- Family resemblance - category members may be related to one another without all having properties in common (game)
- Some categories have degrees of membership and no clear boundaries (number, tall men)
- Generativity - Categories can be defined by a generator plus rules
- Metonymy - some subcategory or submodel is used to comprehend the category as a whole (e.g. stereotypes)
- Ideals - many categories are understood in terms of abstract ideal cases, which may not be typical or stereotypical
- Radial categories - a central subcategory plus non-central extensions. Extensions are based on convention (mother)

These are some of Lakoff's key challenges to classic theory. At least one example is provided for each, but not enough examples for me to clearly understand the difference between the types of prototype effects.

The example provided for a generative category is that of relationships in an American Indian kinship system.

Basic level categories

Categories are not merely organized in a hierarchy from the most general to the most specific, but are also organised so that the categories that are most cognitively basic are "in the middle" of a general-to-specific hierarchy. Generalisation proceeds upward from the basic level and specialization proceeds down.

Basic level categories

- A basic level category is somewhere in the middle of a hierarchy and is cognitively basic
- It is the level that is learned earliest
- Usually has a short name and is used frequently
- Highest level at which a single mental image can reflect the category
- There is no definitive basic level for a hierarchy - it is dependent on the audience
- Most of our knowledge is organised around basic level categories

Other aspects:

- The highest level at which category members have similarly perceived overall shapes
- Highest level at which a person uses similar motor actions for interacting with category members
- Level at which people are fastest at identifying category members
- Terms can be used in neutral contexts
- Folk categories correspond to scientific categories very accurately at this level
- The basic level may be culturally specific. For example, for apartment dwellers, the basic level may be 'tree', for people in the suburbs, it may be the genus ('oak', 'pine', 'maple'), for a farmer, it will be the species (radiata pine)

In contrast to classical categorisation theory, where it is assumed that categories are formed without any influence of the person forming them, basic level categories show effects of the human. For example, the single mental image and motor activities are related to human physiology. There is no definitive basic level for the domain as it relies on perception of the user group.

Lakoff leans heavily on physical objects as examples for basic-level categories. His examples are like Animal - Dog - Dalmatian (where dog is basic).

Basic level categories



Toys by Category

Educational:

[Early Development](#)
[Reading Fun](#)
[Number Fun](#)
[Science & Discovery](#)
[Motor Skills](#)
[Top Learning Toys](#)

Art & Craft:

[Painting](#)
[Drawing](#)
[Dough Fun](#)
[Stencils & Stamps](#)
[Craft Materials](#)
[Make & Create Kits](#)

Puzzles & Games:

[Puzzles & Jigsaws](#)
[Card Games](#)
[Board Games](#)
[Active & Hands-on Games](#)
[Memory & Matching](#)
[Educational](#)

Make Believe:

[Play Sets](#)
[Dolls, Puppets & Figures](#)
[Around the Home](#)
[Shopping & Food](#)
[Occupations](#)
[Transport Fun](#)

Outside & Active:

[Water & Sand Fun](#)
[Active Fun & Games](#)
[Gardening & Exploring](#)
[Cars, Planes & Boats](#)
[Sport & Play Equipment](#)

Activities:

[Hobbies](#)
[Projects](#)
[Building & Design](#)
[Activity Books](#)
[Top Activity Toys](#)

This example shows a set that I think are an odd mixture of superordinate and subordinate. Combination categories like 'Puzzles & Games' are clearly superordinate, but I think some of the items within the category are likely to be subordinate. Basic (to me) would be 'puzzles' and 'games'. The entire educational category is likely to be superordinate, as are some of the others. There are few basic-level items in here. Will it work? Probably.

Basic level categories



The example from ebay shows more basic level categories, though some are also represented as combinations. Books, comics, mags, cameras, cars, bikes, boats, dvds, gems, watches, mobiles, phones - these are all likely to be basic. The other categories aren't hard to understand, but it takes a little more to think about what will be in the jewellery category compared to the watches category.

When I was looking for examples, I assumed that I would be able to find an example of a category that had superordinate, basic and subordinate items. On not finding them, I realised this is an example of classical thinking - that there should be easy examples of the world. In reality, this just isn't the case.

Articles

1. *Basic level categories.* Peter Van Dijck:
<http://www.poorbuthappy.com/ease/archives/2003/11/20/1944/basic-level-categories/>
2. *Basic level categories, 'and then' IA.* DonnaM:
<http://www.maadmob.net/donna/blog/archives/000540.html>
3. *Basic-Level Categories and Analogy in WordNet.* Tony Veale, Dept. of Computer Science, University College Dublin: <http://www.cs.tcd.ie/seminars/02/Basic-Level.doc>
4. *Supporting content retrieval from WWW via "basic level categories".* Eduard Hoenkamp, Onno Stegeman, Cap Gemini: <http://portal.acm.org/citation.cfm?id=312743>
5. *The Basics of the Basic Level: Mixing Memory:*
<http://mixingmemory.blogspot.com/2005/03/basics-of-basic-level.html>
6. *What is a Basic-Level Category?* WiseGeek:
<http://www.wisegeek.com/what-is-a-basic-level-category.htm>

So, why is this important?

One of the reasons why the classical theory of categorization is becoming more, rather than less, popular, is that it is built into the foundations of mathematics and into much of our current computer software. Since mathematical and computer models are being used more and more as intellectual tools in the cognitive sciences, it is not surprising that there is considerable pressure to keep the traditional theory of classification at all costs. It fits the available intellectual tools, and abandoning it would require the development of new intellectual tools. And retooling is no more popular in the academy than in industry.

This is a quote from the book, which is, admittedly 15 years old. I'm not sure whether programming tools still follow this model, but I certainly think the idea of classical categorisation pervades the way people think about computer systems.

Articles

1. *Stop! The! World! For! A! Moment!.* Alexander Johannesen: <http://shelter.nu/blog-102.html>

Implications for IAs - Prototype effects

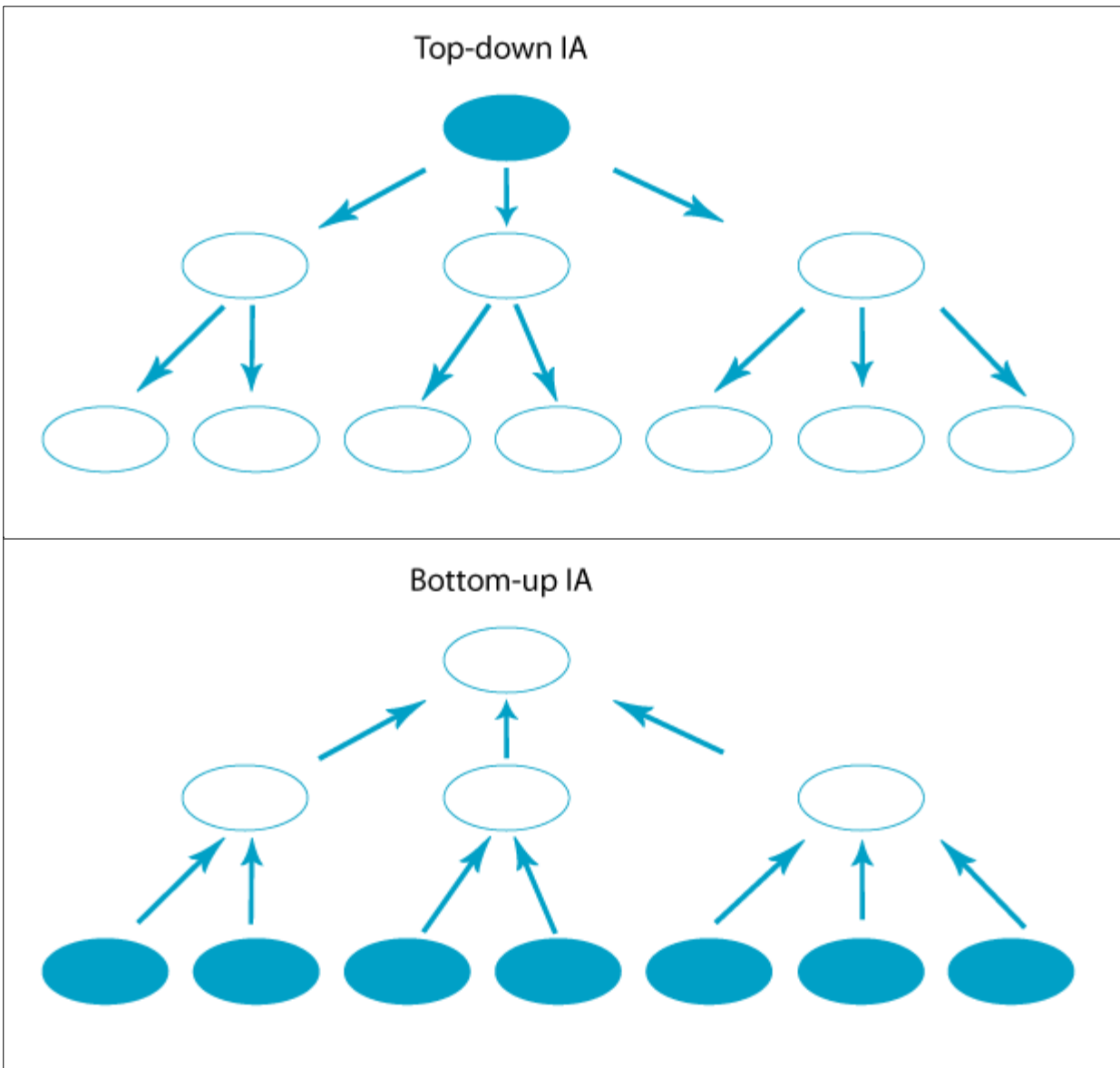
- Recognise that they occur and you'll be less stressed about why categorisation is not neat
 - 'Miscellaneous' / 'everything else' categories are cognitively real, just not easy to use as navigation
 - Use prototypical items when communicating - they are strong communicators as they represent a category well
 - Use less prototypical items to describe edge cases
 - "Lakoff not only gives us new techniques for doing IA, he gives us a mechanism for reflection on the craft itself" - Dan Brown
-

I'm still not sure why IAs haven't gotten more excited about this. Either it is so obvious, it is just duh! or so obscure that it has been too hard to think about. I hope it is the latter.

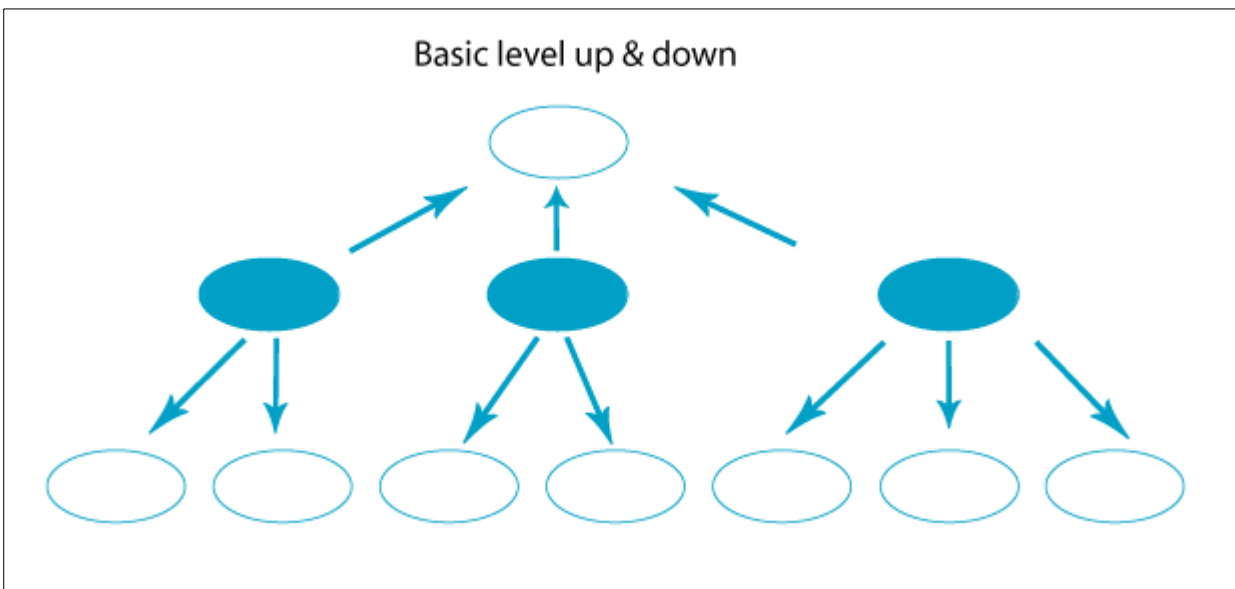
I haven't thought very deeply about prototype effects in general - they relate to the entire concept of categorisation, and I just haven't gone there yet.

Implications for IAs - Basic level

Basic level categories are interesting and have potential to inform the way we work and the solutions we design.



Information architecture is often described as being top down (where you start at the broadest level and break the domain into more and more detailed pieces); or bottom up (where you assemble content into more and more broad pieces). These aren't convenient theoretical breakdowns - I have worked with people who do approach it from one direction or the other.



I suggest these approaches be abandoned and we start in the middle instead. Start with the basic level, group these upwards into superordinate categories, and split them downwards into more detailed groupings. I do this on all my IA projects and it works amazingly well.

Implications for IAs - Basic level

- Basic level names are short and frequently used - analyse user research data to identify them
 - Basic level items are easily recognised, and likely to have good scent. Use them as trigger words
 - Card sort with basic level items rather than more granular content elements
 - Get people to the basic level of the hierarchy as soon as possible (in navigation)
 - Test navigation items for basic-level characteristics
 - I wonder whether folksonomy-based tags are basic-level, accounting for their popularity
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Thanks

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