

Critical Thinking: The Art of Reasoning

Lecture 2 Basic Grouping

Key Concepts

- Group
- Grouping principle
- Coherence
- Hierarchical Grouping
- Abstraction
- Level consistency

Group

- A group is a collection of items which belong together in some way.



Groups can contain anything

- popular musicians
- beetles
- words
- principles
- ideas
- reasons
- etc.



Grouping

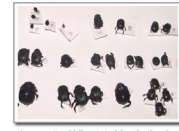
- The activity of forming or specifying groups.
- Grouping involves:
 - identifying a suitable grouping principle
 - identifying the items which belong to the group thus defined, and
 - presenting the items in a clear and orderly way.
- Grouping can be done well or badly!

Grouping Principle

- an explicit statement of the essence of the group, i.e., the sense or respect in which the items belong together
- roughly, completing the following: "A thing belongs to the group if it is a ..."



"...member of the music group
The Beatles"



"...dung beetle"

- Grouping principles should be specified clearly and precisely

Coherent Groups

- A group should be well-thought-out and well-presented – i.e., *coherent*.

Example: making a coherent group.
How to classify the animal kingdom?



Borges describes a certain Chinese Encyclopedia, the *Celestial Emporium of Benevolent Knowledge*:

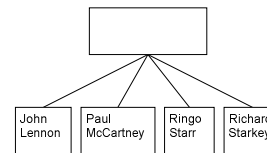
'...in which it is written that animals are divided into:

1. those that belong to the Emperor
2. embalmed animals,
3. those that are trained,
4. suckling pigs,
5. mermaids,
6. fabulous ones,
7. stray dogs,
8. those included in the present classification,
9. those that tremble as if they were mad,
10. innumerable ones,
11. those drawn with a very fine camelhair brush,
12. others,
13. those that have just broken a flower vase,
14. those that from a long way off look like flies.'

Jorge Luis Borges, *The Analytical Language of Jon Wilkins*

MECE

- "MECE" is one way of defining when a group is well-thought-out.
- "mutually exclusive, collectively exhaustive"



Is this group MECE?

No – it is not ME, since Ringo Starr and Richard Starkey are not distinct.

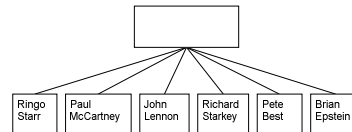
No – it is not CE, since George Harrison is missing.

MECE at McKinsey

- "MECE...is a sine qua non of the problem-solving process at McKinsey. MECE gets pounded into every new associate's head from the moment of entering the Firm. Every document (including internal memos), every presentation, every email and voice mail produced by a McKinsey-ite is supposed to be MECE. Ask any number of McKinsey alumni what they remember most about the way the Firm solves problems and they will tell you, "MECE, MECE, MECE."
- Rasiel, E.M. *The McKinsey Way*.

McKinsey is one of the world's leading management consulting firms. *The McKinsey Way* is a book, by an ex-McKinsey person, about how McKinsey does its work.

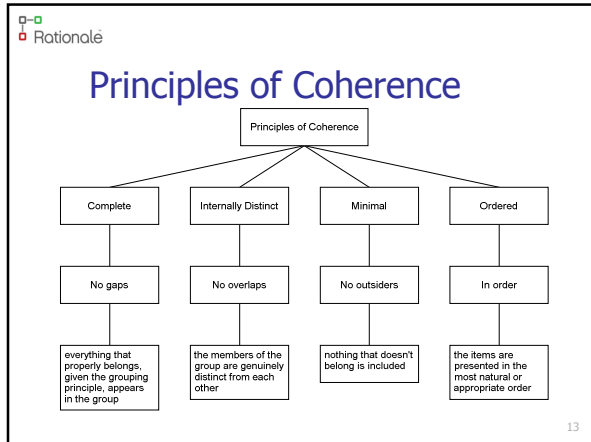
Is MECE MECE?



How many different kinds of incoherence affect this group?

Are there kinds of incoherence which are not failures of MECE?

- If the grouping principle is "people who played for The Beatles" then the group is neither ME nor CE.
- In addition, the group is
 - not minimal – there is an item that doesn't belong (Brian Epstein)
 - is not presented in any sensible order
- Since the group has serious deficiencies which are not violations of MECE, MECE itself is not CE.



Rationalé

Hierarchical Grouping

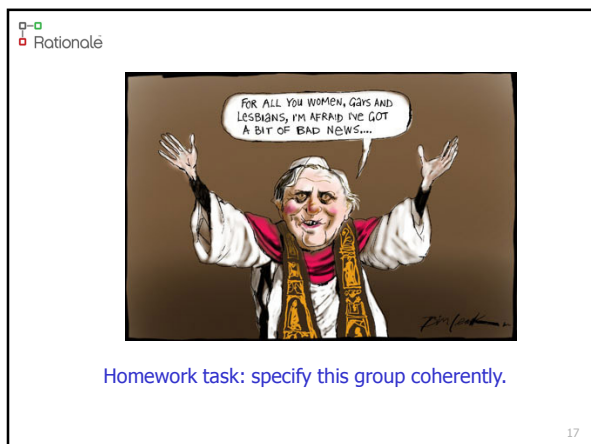
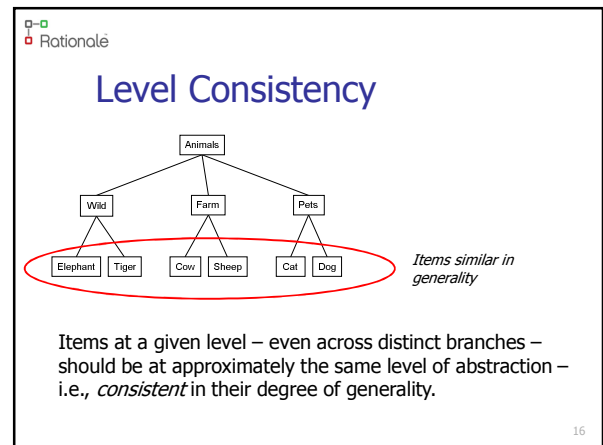
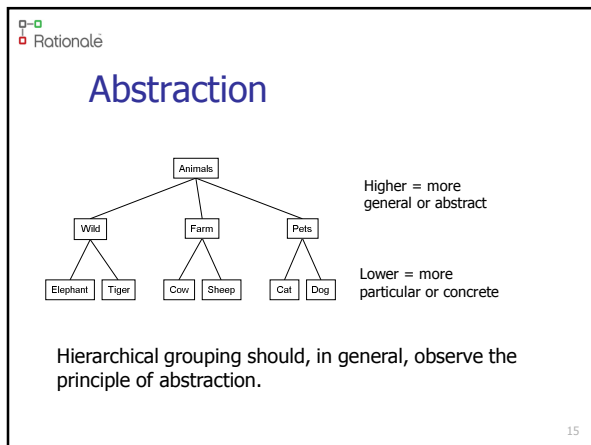
The Plot: A Web of Connections

The Sept. 11 terrorist attacks were the culmination of an intricate choreography by conspirators who came to the United States and trained for specific missions. In the first phase, April through November 1999, Mohamed Atta and other leaders/pilots entered the U.S. and took flight training. Between January 2000 and June 2001, the first insiders arrived, some who spent a lot of time in local gyms. In July 2001, their conspiracy entered the third phase that ended on Sept. 11 with the deadliest acts of terror ever mounted on U.S. soil. [View the Timeline](#)

Examples of hijackers: Hani Hanjour, Khalid Al-Murbei, Salem Alhazni, Khalid Al-Fahd, Mohamed Atta, Waleed Al-Ramahi, Wael M. M. Atta, Suhayb Atiyah, Marwan al-Shehri, Fayez Ahmed, Ahmed Alhaznawi, Ahmed Al-Haznawi, Mohamed Atta, Ziad Jarrah, Ahmed Alhaznawi, Ahmed Alhaznawi, Ahmed Alhaznawi.

An example of hierarchical grouping.

14



- Rationalé
- ## Key Concepts
- Group
 - Grouping principle
 - Coherence
 - Complete, internally distinct, minimal, ordered
 - Hierarchical Grouping
 - Abstraction
 - Level consistency