object model semantics

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an object model

› for discussion groups
› what does it denote?

- Group
- Member
- Message
- Moderated Group
- Moderator

members → messages

! posts

+ moderators +

? approves

* respondsTo

!
object model semantics

meaning = set of instances
› an instance is an object diagram

non-instances
› violate some rule in the object model
semantics examples

Ceramics (Moderated Group)

Alice (Moderator)  Bob (Member)

M1 (Message)  M2 (Message)

messages

moderators  members

posts  posts

respondsTo

? ∈ ✓
semantics examples
semantics examples
semantics examples
graphical limitations

consider this instance
› Alice is not a member of Ceramics

can we say moderators should be members?
› not in this graphical notation
Only a group (i.e., not a message, e.g.) can have members. Every ModeratedGroup is a Group. Only a group in ModeratedGroup can have moderators. A group’s members must be in the set Member. Every Moderator is a Member. But not every moderator of g is a member of g.

A group’s moderators must be in the set Moderator.
examples of textual constraints

› moderators must be members of the group
› member only posts message in group she belongs to
› moderators approve messages in groups they moderate
› message only responds to message in same group
richer OM notations

semantic data models
› beyond entity-relationship diagrams

OCL
› textual constraints for UML

Alloy
› OM language developed at MIT
› textual constraints in logic (eg, moderators in members)
› analyzer finds instances, checks properties