
SEMANTIC CONCEPTS

introduction

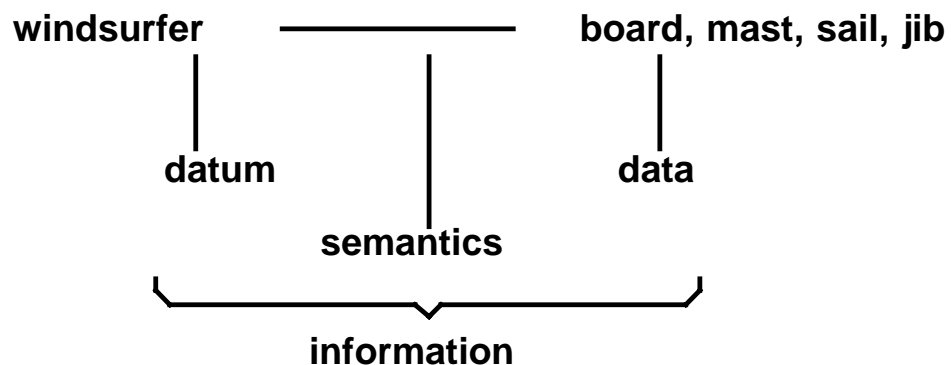
SEMANTIC APPROACH:

CONSIDERING A COLLECTION OF DISTINCT PROPERTIES AS A SINGLE UNIT.

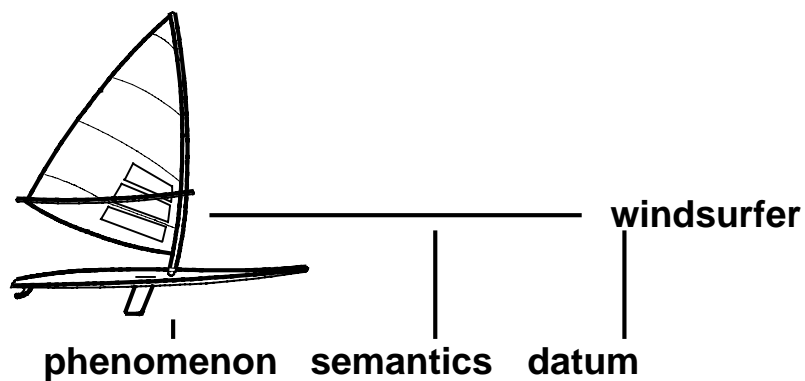
EXAMPLE:

type windsurfer = board, mast, sail, jib.

- RELATIONSHIP BETWEEN DATA:



- RELATIONSHIP WITH PHENOMENON:



CONVERTIBILITY

EXAMPLE:

type student = name, address, faculty

subject predicate

1. subject \rightarrow predicate
subject is unique among others.
2. subject \leftarrow predicate
predicate is unique among others.

CONSEQUENCES FOR DATABASE CONTENTS:

student	name	address	faculty
1002	Smith	Blockhurst	Physics
1003	McDonald	Stockton	Mathematics
1004	O'Connor	Blockton	Mechanics

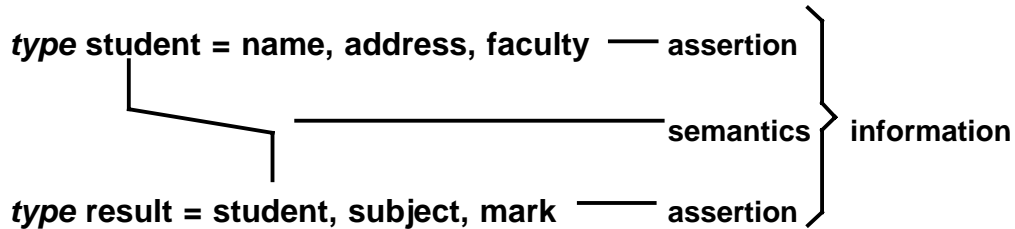
INSERTION OF:

1005 O'Connor Blockton Mechanics

IS NOT ALLOWED !

RELATABILITY

EXAMPLE:



CONSEQUENCES FOR DATABASE CONTENTS:

student	name	address	faculty
1002	Smith	Blockhurst	Physics
1003	McDonald	Stockton	Mathematics
1004	O'Connor	Blockton	Mechanics

result	student	subject	mark
60070	1002	23	A
60071	1002	24	B
60072	1003	26	B
60073	1003	23	C
60074	1003	25	B

$\{result\ its\ student\} \subseteq \{student\}$

$\{1002, 1003\} \subseteq \{1002, 1003, 1004\}$

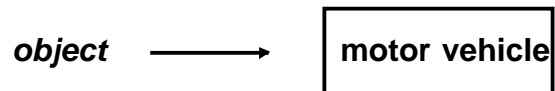
RELATABILITY INDICATES THAT:

- AN ATTRIBUTE IS RELATED TO ONE AND ONLY ONE TYPE WITH THE SAME NAME. EACH TYPE CAN CORRESPOND TO VARIOUS ATTRIBUTES.
- AN ATTRIBUTE VALUE IS RELATED TO ONE AND ONLY ONE INSTANCE IN THE RELATED TYPE.

OBJECT RELATIVITY

DIFFERENT INTERPRETATIONS:

- **OBJECT**



- **TYPE**

type →

motor vehicle	manufacturer	model	year	price	fuel
1024	Citroën	XM	1990	70 k	petrol

- **INSTANCE**

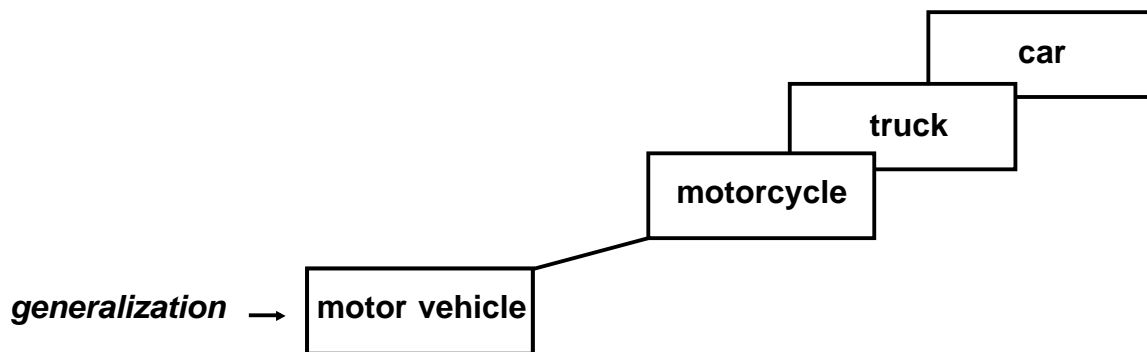
instance →

category	pollution index
motor vehicle	high

OBJECT RELATIVITY

continued

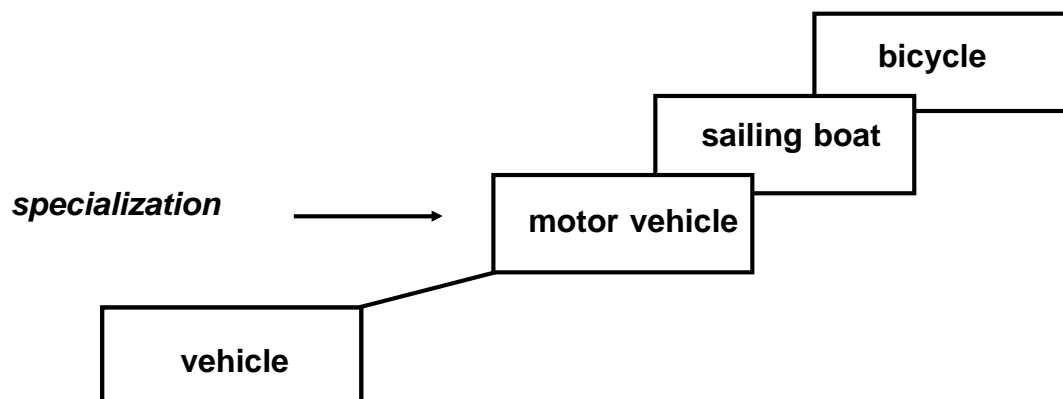
- **GENERALIZATION**



TYPE DEFINITIONS:

type motor vehicle = ...
type motorcycle = [motor vehicle], ...
type truck = [motor vehicle], ...
type car = [motor vehicle], ...

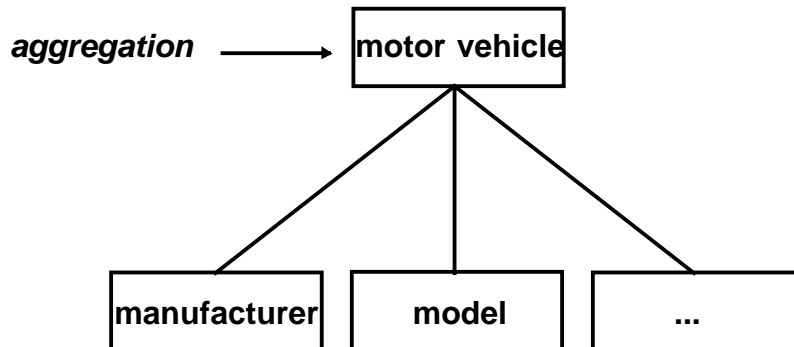
- **SPECIALIZATION**



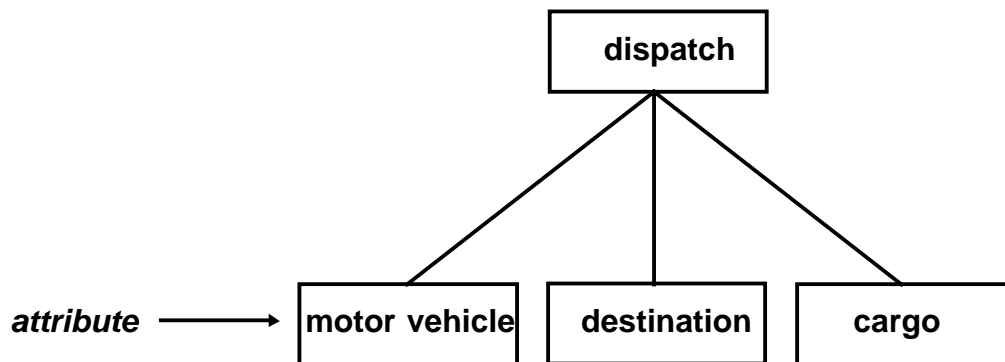
OBJECT RELATIVITY

continued

- **AGGREGATION**



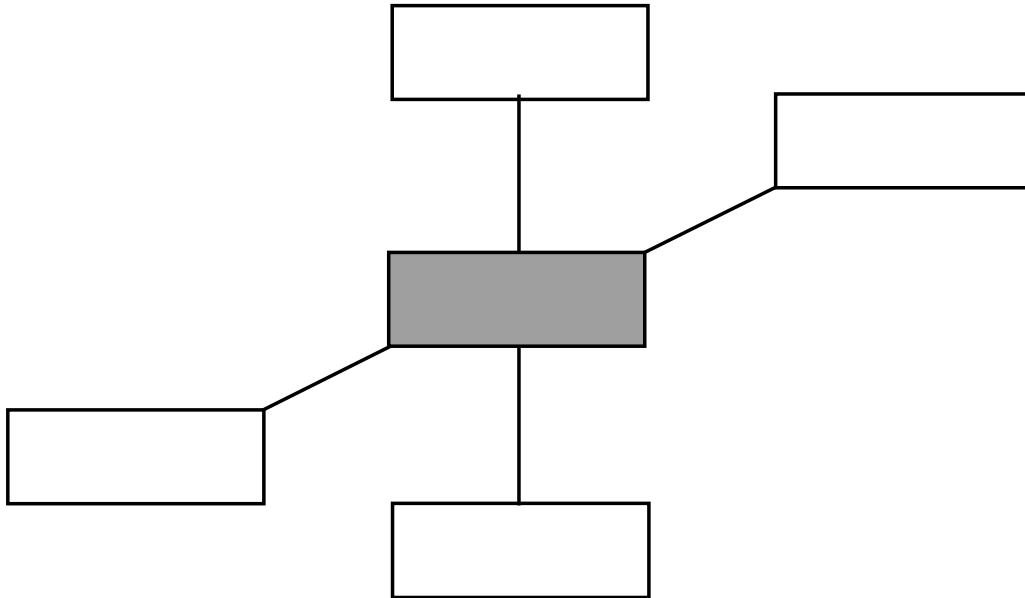
- **ATTRIBUTE**



TYPE DEFINITION:

***type* dispatch = motor vehicle, destination, cargo**

VIEW INDEPENDENCE



OBJECT CAN BE INTERPRETED AS:

- TYPE
- INSTANCE
- RELATIONSHIP
- GENERALIZATION
- SPECIALIZATION
- ATTRIBUTE
- AGGREGATION
- and many others

THIS PROPERTY IS KNOWN AS:

OBJECT RELATIVITY.