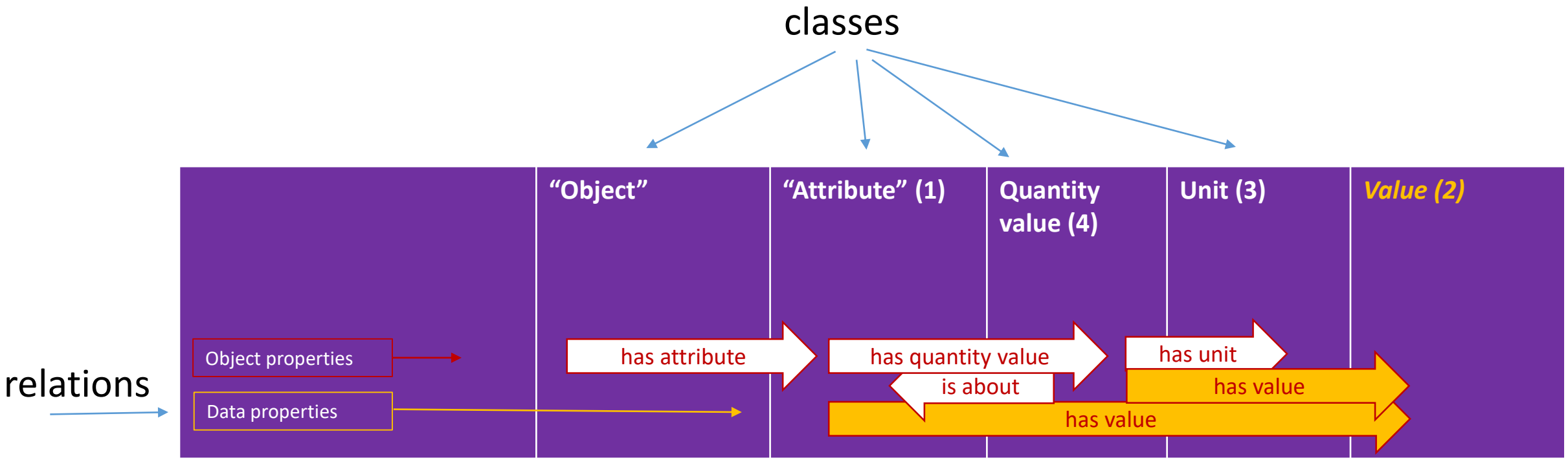
How to connect “hub hight” to “wind turbine”?

- Or more general: „How to connect `objects` and `attributes`?
- Current discussion, e.g. Meta-Issue: Example case for instance data description in triples #492
- Never implemented such a connection yet in the OEO
- Building the OEO is a community learning process!

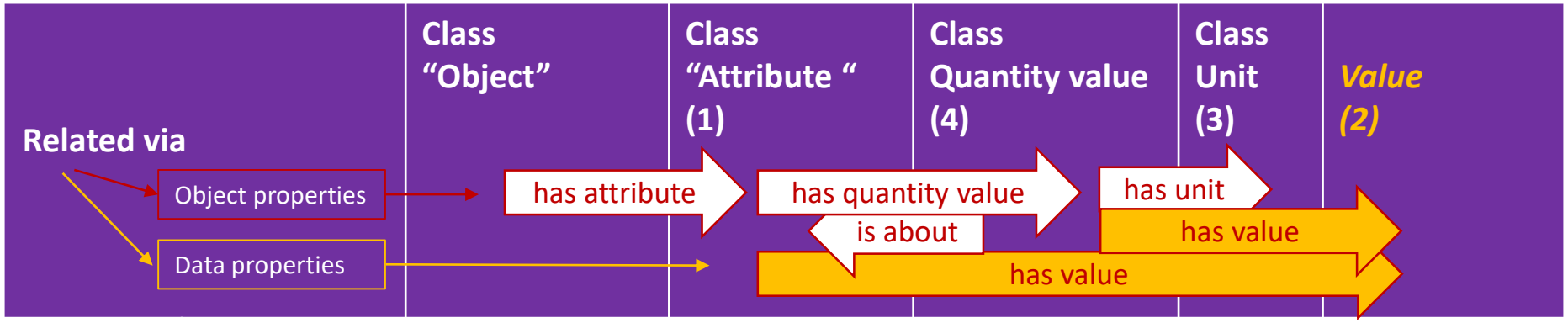
1. Clarify ambiguous terms used in this context: “object”, “attribute”, “property”
2. Introduce process for „How to connect `objects` and `attributes`?“
3. Does this address our "main" problem? What is not yet addressed? Which questions are still open? Do we need to establish further processes?



About Quantity values:
"There are always four separate things:
(1) the entity in reality (some sort of specifically dependent continuant, perhaps, or a process)
(2) a number
(3) a unit. The entity then has_value some
(4) quantity value entity, that has_unit the unit. (And may have a specified value with a data property).
The relationship between the quantity value entity (4) and the entity in the world (1) is is_about."

Issue #434, comment by @jannahastings

Info: classes `manufacturer`, `hub height`, `length value` as well as object property `has attribute` are hypothetical classes/relations and not (yet) part of the OEO.



		Class "Object"	Class "Attribute " (1)	Class Quantity value (4)	Class Unit (3)	*Value (2)*
Example 1	**Real entity**	wind turbine	manufacturer	-	-	*ENERCON*
	OEO entity	wind energy converting unit	manufacturer	-	-	*ENERCON*
	OEO classification	artificial object	role	-	-	-
Example 2	**Real entity**	wind turbine	hub height	-	m	*140*
	OEO entity	wind energy converting unit	hub height	length value	m	*140*
	OEO classification	artificial object	quality	quantity value	unit	-

About Quantity values:
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Issue #434, comment by @jannahastings

(1) Attribute

(2) Value

(3) Unit

(4) Quantity value

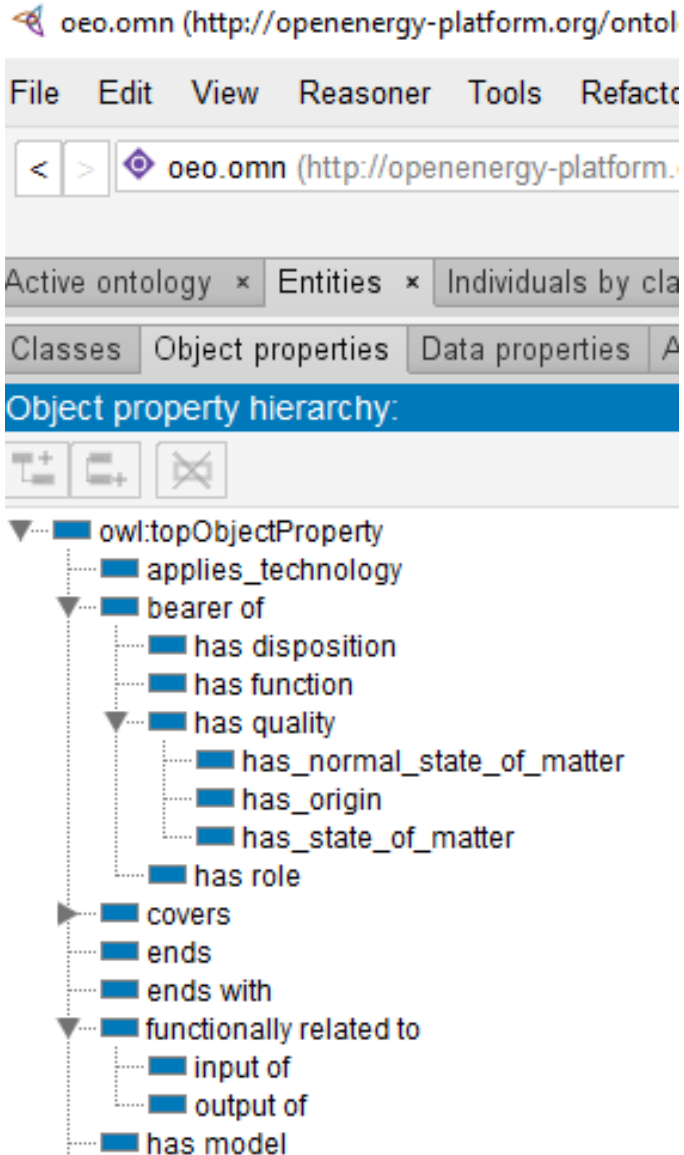
Connection of object, attribute and value via object property and data property relations:

Example 1: `wind turbine` (has attribute `manufacturer` (has value *ENERCON*))

Example 2: `wind turbine` (has attribute `hub height` (has quantity value `length value` (has unit `m` , has value *140*)))

Info: classes `manufacturer`, `hub height`, `length value` as well as object property `has attribute` are hypothetical classes/relations and not (yet) part of the OEO.

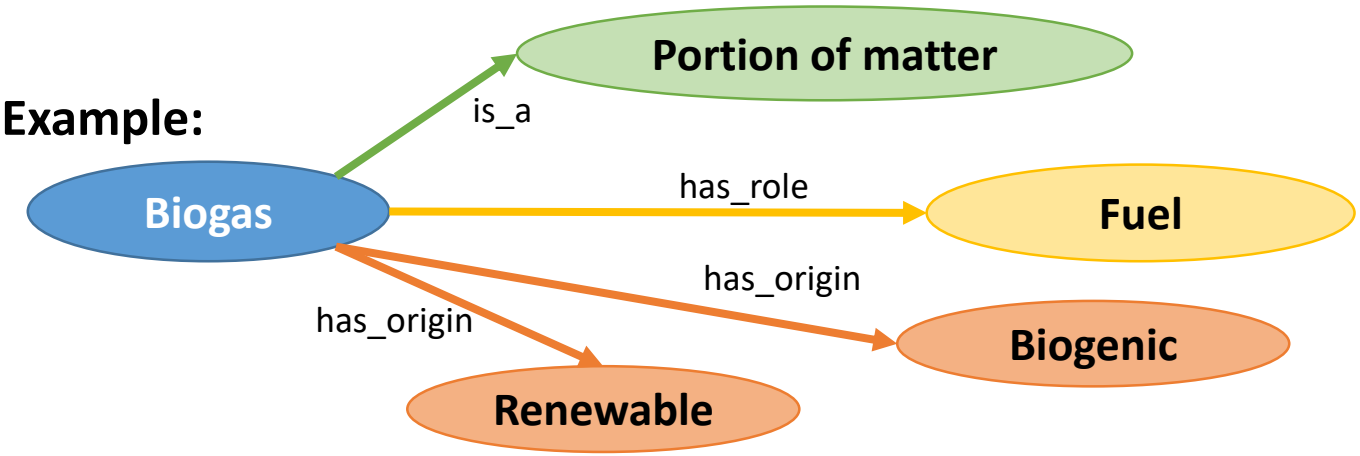
What do we mean when we say **„property“** ?



Protégé: Properties represent relations between classes

BFO: “*The **relations** that obtain between and among them* [the classes] *need to be defined also, and we further need to provide axioms, for example, representing how specific categories are related to each other within the ontology. **Definitions and axioms can then be combined together for purposes of reasoning.** “* (Source: Arp, Smith, Spear, “Building Ontologies with BFO”, 2015*)*

Example:



Further questions

- Are „quantity value“-values going to be stored within the OEO or externally (e.g. OEP)?
  - Ontologie ist für die Annotierung von Daten da. Lieber Konzepte ablegen und Individuen außerhalb ablegen.
  - EnArgus hat viele Individuen abgelegt, viel Arbeit, das zu pflegen

- Does „quantity value“ need exactly one unit and one value?
  - What about entities like „monetary value“ which might need a „currency“ and a „base year“?