Nicola "IDEF1X vs IE Notation" p2

Nicola Vitacolonna (University of Udine, Computer Science, Professor) has published a document **IDEF1X-vs-IE-Notation** that deals with purported issues as per the document title. It falsely attributes certain notions to me. This is a response to that set of errors only, it is not a response to anything else. Some discussion (unfortunately drawn out and not resolved, as is typical with academics in the Modern era) of the subject can be found at the database theory forum **"Theoreticians" are Clueless about Relational Data Modelling, Teach Anti-Relational Muddling**, which may unwittingly provide evidence. I would rather not address the larger issue.

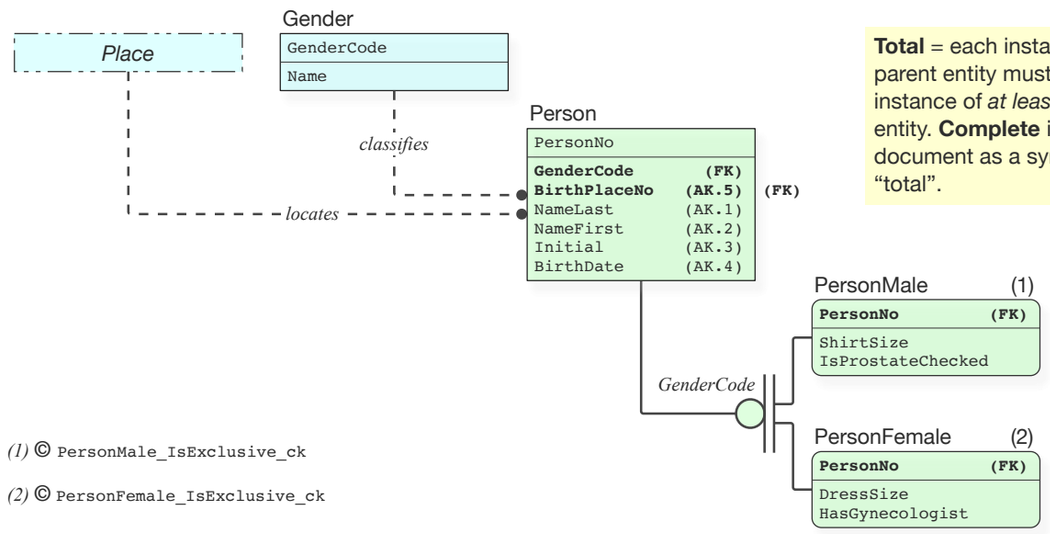
2. Total, Exclusive Specialization (Exclusive Subtyping)

IE Notation [Derek]

False Attribution

There is no such thing as *Complete ("Total")* ***and*** *Exclusive*.
The two concepts, and thus the two notations, are mutually exclusive.
The notion *Complete ("Total")* ***and*** *Exclusive* is incoherent.
Neither IE nor I have such a notation.
The misrepresented diagram, in its original form, is in **Subtype**.

IDEF1X (ISO 31320:2) Notation [Nicola]



Total = each instance of the parent entity must be an instance of *at least* one child entity. **Complete** is used in this document as a synonym for "total".

Nicola's comments: semantically equivalent, just different notation.

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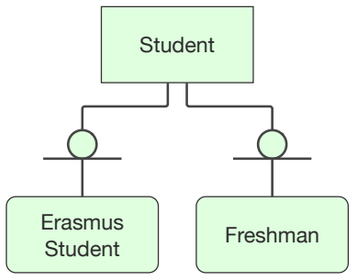
3. Partial, Non-Exclusive Specialization

Example:

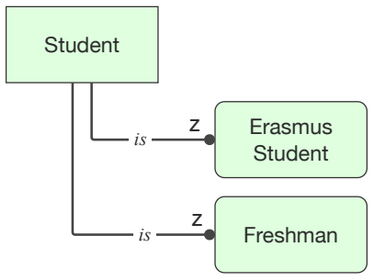
- a student may be an Erasmus student;
- a student may be a freshman;
- a student may be neither an Erasmus student nor a freshman;
- a student **may be both** an Erasmus student and a freshman.

Partial = not every instance of the parent entity is an instance of a child entity. **Incomplete** is used in this document as a synonym for “partial”.

IDEF1X (ISO 31320:2) Notation [Nicola]



Alternatively:



IE Notation [Derek]

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4. Total, Non-Exclusive Specialization (Non-Exclusive Subtyping)

IE Notation [Derek]

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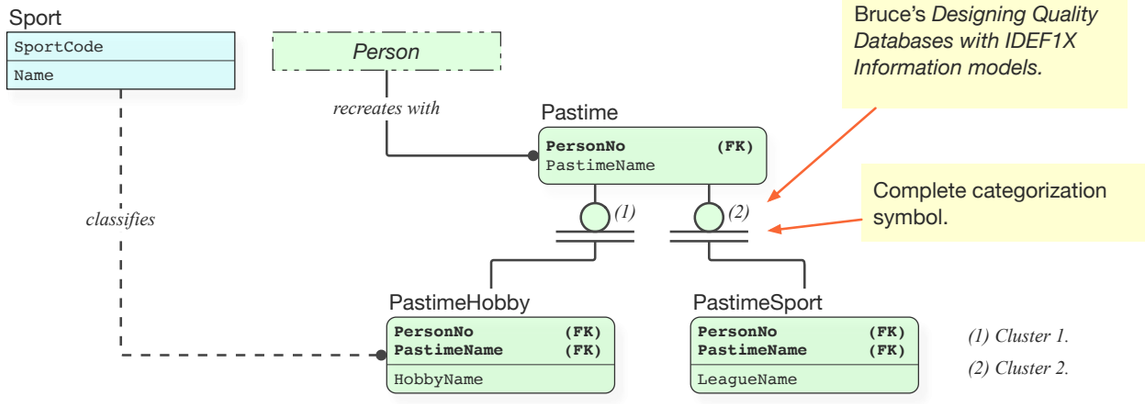
The misrepresented diagram, in its original form, is in **Subtype**.

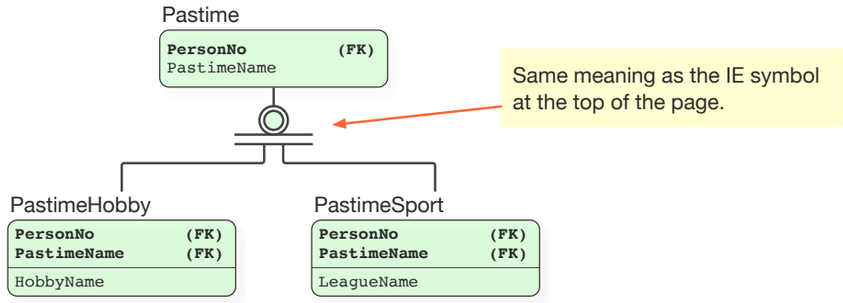
IDEF1X (ISO 31320:2) Notation [Nicola]

See, for instance, ERwin's Methods Guide or Thomas Bruce's *Designing Quality Databases with IDEF1X Information models.*



Nicola's comments: this is problematic in IDEF1X, and it should not be.

- Clusters cannot be interpreted individually, but only as a whole. If clusters were interpreted individually, then one would conclude that (see Cluster 1) each Pastime *must be a* PastimeHobby, *and* (see Cluster 2) each Pastime *must be a* PastimeSport—the assumed interpretation is instead that each Pastime *must be* a PastimeHobby *or* a PastimeSport, and *it may be both*.
- The assumed interpretation does not conform to what ISO 31320:2 defines.
- If one sticks to the standard, a total, non-exclusive specialization can only be approximated.
- In the assumed interpretation, the complete categorization symbol is interpreted in different ways, depending on how many children a cluster has (e.g., compare with §2). In particular, a cluster with two or more children can be translated into predicates independently, regardless of the existence of other clusters.
- The issue can be easily remedied by adding a specific symbol for this case. Since mixing IE notation would be confusing, a new symbol should be defined, e.g.:



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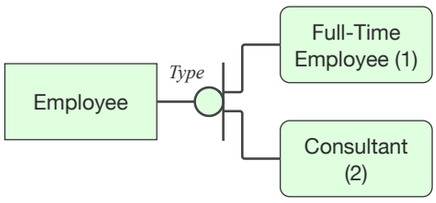
4. Partial, Exclusive Specialization

Example:

- an employee may be a full-time employee;
- an employee may be a consultant;
- an employee may be neither a full-time employee nor a consultant;
- an employee **cannot** be both a full-time and a consultant.

IDEF1X (ISO 31320:2) Notation [Nicola]



Sample transaction (pseudocode):

```
EmployeeAdd:
  INSERT Employee
  IF Type = 'FT'
    INSERT FullTimeEmployee
  ELSEIF Type = 'C'
    INSERT Consultant
```

(1) © `FullTimeEmployee_IsExclusive_ck` *(2)* © `Consultant_IsExclusive_ck`

IE Notation [Derek]

False Attribution

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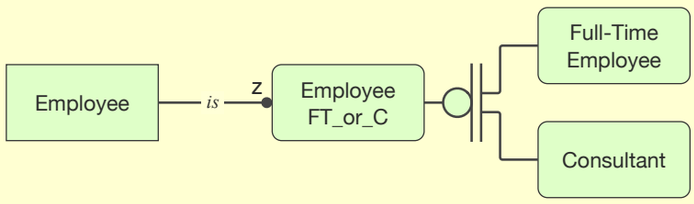
Nicola's comments: IE notation requires an additional entity (additional INSERT): the example cannot be modelled with three entities. IDEF1X in this case is straightforward, and it can also straightforwardly represent the four-entity model, if necessary:



Similarly to IDEF1X in §4, a new symbol might be added to cover this case in IE notation, e.g.:

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