# Notes on Design, industrial design and mass production

c-e ore 08.05.2015

## 1 Background

In CIDOC-CRM the class E29 Design or Procedure is a sub class of E73 Information Object, The first paragraph of the scope is

This class comprises documented plans for the execution of actions in order to achieve a result of a specific quality, form or contents. In particular it comprises plans for deliberate human activities that may result in the modification or production of instances of E24 Physical Thing.

This definition corresponds to the sense 7. b of the noun design in the Oxford English Dictionary (oed.com)

In the sense 7. a of the noun design the meaning is described as the process leading to what we model as an instance of E29 Design or Procedure. The most common sense of the verb design, according OED, is to perform this process. Since it is a process design in sense 7.a has to be modelled as a series of instances of E7 Activity. A concrete example of such a model (as a conservative extension of CRM) was shown in the presentation ‘Social Semantic Information Space’ by Chrysoula Bekiari and Martin Doerr at the 32nd CIDOC CRM-SIG & 26th FRBR CRM, Harmonization meeting Oxford , February 2015.

In Wikipedia the term ‘industrial design is described as  **“**is a process of [design](http://en.wikipedia.org/wiki/Design) applied to [products](http://en.wikipedia.org/wiki/Product_%28business%29) that are to be manufactured through techniques of [mass production](http://en.wikipedia.org/wiki/Mass_production).[[2]](http://en.wikipedia.org/wiki/Industrial_design#cite_note-FOOTNOTEHeskett198010-11-2)[[3]](http://en.wikipedia.org/wiki/Industrial_design#cite_note-FOOTNOTEKirkham1999-3) Its key characteristic is that design is separated from manufacture […]’

According to Wikipedia “An **industrial design right** is an [intellectual property](http://en.wikipedia.org/wiki/Intellectual_property) right that protects the visual design objects that are not purely utilitarian. An [industrial design](http://en.wikipedia.org/wiki/Industrial_design) consists of the creation of a shape, configuration or composition of pattern or color, or combination of pattern and color in three-dimensional form containing aesthetic value.” and “Under the [Hague Agreement Concerning the International Deposit of Industrial Designs](http://en.wikipedia.org/wiki/Hague_Agreement_Concerning_the_International_Deposit_of_Industrial_Designs), a [WIPO](http://en.wikipedia.org/wiki/World_Intellectual_Property_Organization)-administered treaty, a procedure for an international registration exists”.

The current CIDOC-CRM 6.0 is designed to model all this. Design in the sense process is modelled instances of E7 Activity and design in the sense plan or definition of form, colur etc, is modelled as an instance of E29 Design or Procedure and consequently of E72 Legal Object. The production of products of a given design is modelled by instances of P12 Production. The type of the produced object of a given production is a concept used to categorize or catalogue them. It is not a legal object and should not be confused with the design neither as a process nor as a plan.

## 2 FRBRoo has two additional properties connected to production.

### The manifestation product types of the items resulting from a production

R26 produced things of type

Domain: F32 Carrier Production Event

Range: F3 Manifestation Product Type

Quantification: (1,n:0,1)

*R26 produced* is the short cut of the following path: E12 Production. P108 has produced: E24 Physical Man-MadeThing. P2 has type: E55 Type

R26 produced is a strong shortcut, that is, the production must have produced at least one object of the given type.

### A property that associates a publication with one of its exemplars

R7 is example of

Domain: F54 Utilized Information Carrier

Range: F3 Manifestation Product Type

Quantification: (1,1:0,n)

The property ‘R7 is example of' has the scopenote “This property associates a publication with one of its exemplars”. It is a shortcut of the following longer path

F5 Item *R28i was produced by* F32 Carrier Production *R26 produced things of type (was produced by):* F3 Manifestation Product Type

## 3 Possible extention to CRM

Basically CRM don’t need extentions, but one can argue that we can add three properties and a class

Px1 is example of

Domain: E24 Physical Man-Made Thing

Range Ex Product Type

Sub property of P2 has type

Superproperty of R7

 Px2 produced thing of product type

Domain: E12 Production¨

Range Ex Product Type

Sub property of P2 has type

Super property of R26

Suggested by Maria

Px3 produced things of type

Domain: E12 Production¨

Range Ex Product Type

Sub property of P2 has type

 Ex Product Type is a

subtype of E55 Type (or E55 Type can be used in stead)

and a supertype of F3 Manifestation Product Type.

## 4 Background material

### OED entry for design

7. a. The art of drawing or sketching; (hence) the process, practice, or art of devising, planning, or constructing something (as a work of art, structure, device, etc.) according to aesthetic or functional criteria; (also) this as a subject of study or examination.

*graphic*, *industrial*, *interior*, *product*, *web design*, et c.: see the first element .

b. The completed product or result of this process; the arrangement of features in something planned or produced according to aesthetic or functional criteria; a particular shape, style, or model.

c. A decorative pattern.

15. *trans.* To produce (a design) (DESIGN *n.* 7b).

a. *(a)* To make drawings for the construction or creation of (something, as a building, object, garment, etc.) according to certain aesthetic criteria; *(b)* to make plans for the production of (a device, product, etc.) according to structural or functional criteria (sometimes without the implication of aesthetic requirements); *(c)* (in extended use) to conceive, devise, plan (something immaterial, as a scheme, system, programme, etc.).

Now the most common sense. Cf. also sense 9 .

### Industrial design

**Industrial design** is a process of [design](http://en.wikipedia.org/wiki/Design) applied to [products](http://en.wikipedia.org/wiki/Product_%28business%29) that are to be manufactured through techniques of [mass production](http://en.wikipedia.org/wiki/Mass_production).[[2]](http://en.wikipedia.org/wiki/Industrial_design#cite_note-FOOTNOTEHeskett198010-11-2)[[3]](http://en.wikipedia.org/wiki/Industrial_design#cite_note-FOOTNOTEKirkham1999-3) Its key characteristic is that design is separated from manufacture: the creative act of determining and defining a product's form takes place in advance of the physical act of making a product, which consists purely of repeated, often automated, replication.[[4]](http://en.wikipedia.org/wiki/Industrial_design#cite_note-FOOTNOTEHeskett198010-4)[[5]](http://en.wikipedia.org/wiki/Industrial_design#cite_note-FOOTNOTENoblet199321-22-5) This distinguishes industrial design from [craft](http://en.wikipedia.org/wiki/Craft)-based design, where the form of the product is determined by the product's creator at the time of its creation.

(<http://en.wikipedia.org/wiki/Industrial_design>)

### Industrial design rights

An **industrial design right** is an [intellectual property](http://en.wikipedia.org/wiki/Intellectual_property) right that protects the visual design objects that are not purely utilitarian. An [industrial design](http://en.wikipedia.org/wiki/Industrial_design) consists of the creation of a shape, configuration or composition of pattern or color, or combination of pattern and color in three-dimensional form containing aesthetic value. An industrial design can be a two- or three-dimensional pattern used to produce a product, industrial commodity or handicraft.

Under the [Hague Agreement Concerning the International Deposit of Industrial Designs](http://en.wikipedia.org/wiki/Hague_Agreement_Concerning_the_International_Deposit_of_Industrial_Designs), a [WIPO](http://en.wikipedia.org/wiki/World_Intellectual_Property_Organization)-administered treaty, a procedure for an international registration exists. An applicant can file for a single international deposit with WIPO or with the national office in a country party to the treaty. The design will then be protected in as many member countries of the treaty as desired. Design rights started in the [United Kingdom](http://en.wikipedia.org/wiki/United_Kingdom) in 1787 with the Designing and Printing of Linen Act and have expanded from there.

An industrial design right can be viewed as a [sui generis](http://en.wikipedia.org/wiki/Sui_generis) intellectual property right similar to [copyright](http://en.wikipedia.org/wiki/Copyright)

(<http://en.wikipedia.org/wiki/Industrial_design_right>)

The **Hague Agreement Concerning the International Deposit of Industrial Designs**, also known as the *Hague system* provides a mechanism for registering an [industrial design](http://en.wikipedia.org/wiki/Industrial_design) in several countries by means of a single application, filed in one language, with one set of fees. The system is administered by [WIPO](http://en.wikipedia.org/wiki/World_Intellectual_Property_Organization) (World Intellectual Property Organization)

(<http://en.wikipedia.org/wiki/Hague_Agreement_Concerning_the_International_Deposit_of_Industrial_Designs>)

### 4.2 TYPES and E55 TYPE

The current scope note of E55 Type is as follows

"This class comprises concepts denoted by terms from thesauri and controlled vocabularies used to characterize and classify instances of CRM classes. Instances of E55 Type represent concepts in contrast to instances of E41 Appellation which are used to name instances of CRM classes.

E55 Type is the CRM’s interface to domain specific ontologies and thesauri. These can be represented in the CRM as subclasses of E55 Type, forming hierarchies of terms, i.e. instances of E55 Type linked via P127 has broader term (has narrower term). Such hierarchies may be extended with additional properties."

A CRM-type (instance of E55 Type) is a concept (a E28 Conceptual object in CRM). A CRM-type represents or denotes a hypothetical set of other instances (members of) of CRM classes. The set is hypothetical in the sense that we don't know all its potential members.

Ontologically we assume that there exists a procedure that makes it possible to catalog, characterize or decide whether an instance of a CRM class belongs to (P2 has type) to the set denoted by the concept. For example:

In Natural History (systematical biology) every species definition (in CRM a species is an instance of E55 Type), has to prescribe explicitly or implicitly a procedure how to decide that a specimen belongs to a given species. This procedure is an intellectual object and can in CRM be modelled as an instance of E73 Information Object and consequently of E72 Legal Object. The procedure may be controlled by rights and legislation. The type, that is, the concept of the hypothetical set of specimens in the nature is not.

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### 4.3 MASS PRODUCTION, COINS AND THE CLASS F3 MANIFESTATION PRODUCT TYPE IN FRBRoo

Last year Dan Matei raised the issue of how model coins and coin production. He suggested that F3 Manifestation Product Type could be used. F3 is specialized to publication products. Although many non book objects are found in libraries, e.g. CDs, DVDs, stamp and perhaps bank notes, it may be case problems if we extend F3 to cover all sets of items which can be found in a library and documented in a library documentation system? This issue will be discussed in other homework.

Here I will examine the model of book production found in FRBRoo as a specialization of the model of mass production found in CIDOC-CRM

As a reply to Dan Mateis’s question Maria Theodoridou referred to how they had extended CRM with two properties to be able to model coins and coin production:

E12 Production. PC1 produced things of type: E55 Type

E22 Man-Made Object. PC2 is example of: E55 Type Both PC1 and PC2 are subproperties of P2 has type"

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In un-extended CIDOC- CRM a (mass) production can be modelled as follows:

A) The event for the production: P12 Production.

B) Categorization of production: P12 Production P2, has E55 Type

C) The outcome of the production: P12 Production, P108 has produced (was produced by), E24 Physical Man-Made Thing

D) The categorization of the products: E24 Physical Man-Made Thing, has type E55Type

E) Physical source material: E7 Activity, P16 used specific object, E70 Thing

F) Immaterial source material, e.g., for books: E7 Activity, P16 used specific object, E70 Thing

G) The design or procedure to be followed in the production: E11 Modification P33 used specific technique E29 Design or Procedure

In this model instances of E29 Design or Procedure describes how to make things. The produced things are instances of E24 Physical Man-Made Thing. Both classes are subclasses of E72 Legal Object. The type (E55 Type) of the produced things is not.

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### 4.4 FRBRoo

The production of books is not different form the production of anything else. The printing (production) of books (F5 Item) is modelled as follows

A) The event for the production: F32 Carrier Production Event

B) Categorization of production: F32 Carrier Production Event, R26 produced things of type, F3 Manifestation Product Type

C) A member of the outcome of the production: F32 Carrier Production Event, R28 produced, F54 Utilized Information Carrier

D) The categorization of the products: F54 Utilized Information Carrier, R7 is example of, F3 Manifestation Product Type

E) Physical source material: E7 Activity, P16 used specific object, E70 Thing

F) Immaterial source material: F32 Carrier Production Event, R27 used as source, P24 Publication Expression

G) E7 Activity P33 used specific technique E29 Design or Procedure

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Relation to the general model of un-extended CIDOC-CRM

• F32 Carrier Production Event is a subclass of E12 Production

• F3 Manifestation Product Type is a subclass of E55 Type

• F54 Utilized Information Carrier is a subclass of E71 Man Made Thing

• F32 Carrier Production, R27 used as source, P24 Publication Expression is a subproperty of E7 Activity, P16 used specific object, E70 Thing

• F32 Carrier Production Event, R26 produced things of type, F3 Manifestation Product Type would be a subproperty of: E12 Production. PC1 produced things of type: E55 Type and finally a subproperty of P2 has type E55.

• F54 Utilized Information Carrier, R7 is example of, F3 Manifestation Product Type would be a subproperty of E22 Man-Made Object. PC2 is example of: E55 Type and finally a subpropert of P2 has type E55.

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### 4.5 CONCLUSION

From the outlines above we see that the model of production of books in FRBRoo is a specialization of the more general model of production in CRM. There some minor differences especially in the definition of the R26 being defined as a shortcut involving a property of a property. This is not important here. The most important difference is that F3 Manifestation Product Type is a subclass of E72 Legal Object in addition to being a subclass of E55 Type.

Is this a correct ontological analysis? IPR rights are clearly connected to the content modelled as an instance of P24 Publication Expression) the production plan resulting from the design process (layout, form, number of pages, use of material etc.) modelled as an instance E29 Design or Procedure). The concept that there is a certain set of books produced according to a common design and belonging to the same edition is not the subject of IPR.

F3 Manifestation Product Type is simply a subtype of E55 Type which can be used to catalog or characterize items. Similar to species not being legal objects (the structure of their DNA may be patentable), instances of F3 Manifestation Product Type should not be instances of E72 Legal Object.

If my argument is unsound, then we should introduce a general E?? Product Type which is a subclass of E 55 Type and of E72 Legal Object connected to E12 Production.