APPENDIX A. MODELING ABOUTNESS

A.1   Subject Relationship and Group 3 Entities Introduced in FRBR

The subject relationship introduced in the FRBR model is illustrated in Figure A.1:
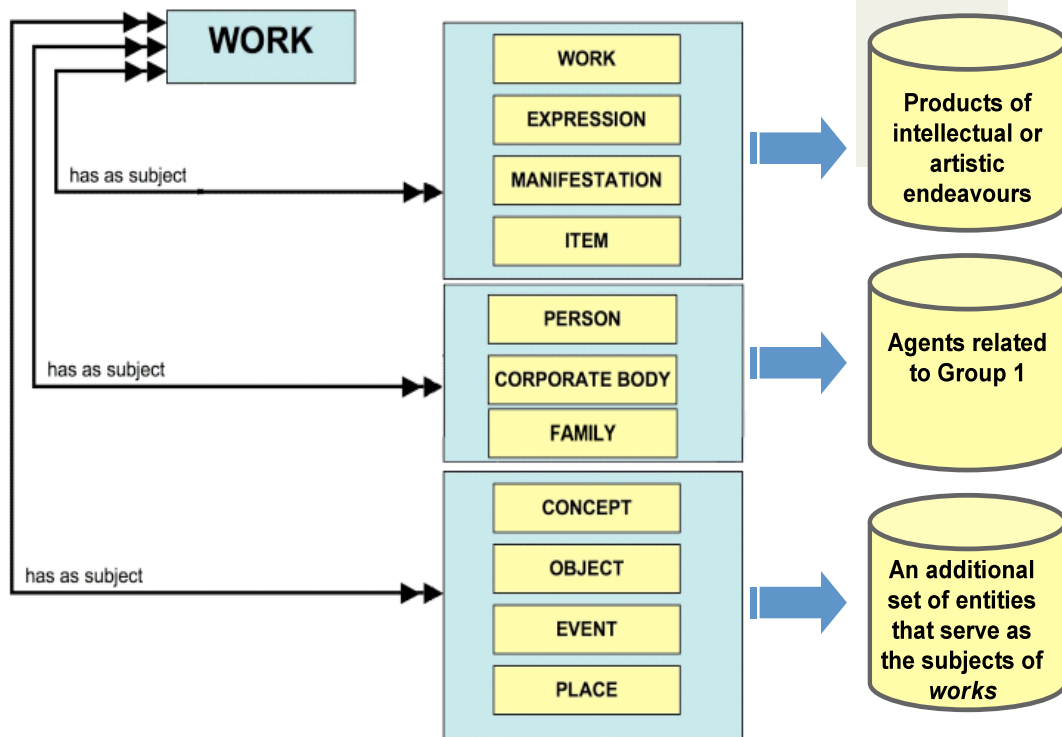

Figure A.1 Extension of FRBR Figure 3.3 "Group 3 entities and 'subject' relationships"

The diagram in FRBR Figure 3.3 depicts the "subject" relationships between *works* and entities in Group 1, Group 2, and Group 3. These three groups are represented as the components on the right side of the above figure. The left and centre components in the figure are based on the FRBR Figure, with the *Family* entity added in Group 2 according to the FRAD model.

The entities in Group 3 represent an additional set of entities that serve as the subjects of *works*. The FRBR report specified Group 3 entities under Figure 3.3 as[36]:

3.1.3 Group 3 Entities: Concept, Object, Event, Place

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[36] *Functional Requirements for Bibliographic Records: Final Report*. (1998). IFLA Study Group on the Functional Requirements for Bibliographic Records. München: KG Saur, p. 17.

The entities in the third group (outlined in bold in Figure 3.3) represent an additional set of entities that serve as the subjects of *works*. The group includes *concept* (an abstract notion or idea), *object* (a material thing), *event* (an action or occurrence), and *place* (a location).

The diagram depicts the "subject" relationships between entities in the third group and the *work* entity in the first group. The diagram indicates that a *work* may have as its subject one or more than one *concept, object, event,* and/or *place*. Conversely, a *concept, object, event,* and/or *place* may be the subject of one or more than one *work*.

The diagram also depicts the "subject" relationships between *work* and the entities in the first and second groups. The diagram indicates that a work may have as its subject one or more than one *work*, *expression*, *manifestation*, *item*, *person*, and/or *corporate body*.

A.2   Possible Approaches to the Model of Aboutness

The FRSAR Working Group has, as the central part of its terms of reference, the goal of building a conceptual model of Group 3 entities within the FRBR framework as they relate to the **aboutness** of *works*.

It is mentioned in the FRBR study that "further analysis is needed of the entities that are the centre of focus for subject authorities, thesauri, and classification schemes, and of the relationships between those entities"[37]. In the years following the publication of the FRBR model, some researchers focused on Group 3 entities, particularly on the fact that *time* is not included.[38] Consequently, time and space are not treated symmetrically. Some discussions brought attention to the lack of coverage of activities and processes.

Tom Delsey, in his paper published in *Cataloging & Classification Quarterly* in 2005, highlighted the aspects of the FRBR model that "will need to be re-examined as part of a more intensive analysis of subject access"[39]. Delsey followed up with a presentation of a paper at the IFLA satellite meeting in Järvenpää, Finland, before the IFLA General Conference in Oslo in August 2005. His presentation has provoked much discussion among the members of the FRSAR Working Group.

Delsey identified three "broad objectives" to be met by re-examination of the ways in which the FRBR model analyzes data relevant to subject access:

1) "to ensure that the scope of the *entities* defined in the [FRBR and FRAD] models is sufficient to cover everything that a user of a library catalogue might view as a 'subject'";

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[37]*Ibid*, p. 7.
[38] Heaney, M. (1997). Time is of the essence. Available at:
http://www.bodley.ox.ac.uk/users/mh/time978a.htm (accessed 2010-01-20).
[39] Delsey, T. (2005). Modeling subject access: Extending the FRBR and FRANAR conceptual models. *Cataloging & Classification Quarterly* 39 (3/4): 49–61.

2) "to ensure that the *attributes* that come into play in the construction and use of subject access points and subject authority records are adequately covered"; and

3) "to ensure that the models provide a clear and pragmatic representation of the *relationships* that are reflected through subject access points in bibliographic records as well as those reflected in the syndetic structure of thesauri, subject heading lists, and classification schemes and in the syntactic structure of indexing strings[40] (emphases added)".

Delsey identified two "key questions" related to entities: "The first [of the key questions] is whether the entities are defined in sufficiently broad terms to cover fully what we might characterize as the "subject" universe. The second is whether the categorizations represented by the entities defined in the models are appropriate and meaningful for the purposes of clarifying the bibliographic conventions through which that "subject" universe is reflected"[41]. In other words:

1. Are the entity classes *collectively exhaustive*? Does the model cover the whole universe of subject-related entity classes?

2. Are the entity classes *individually appropriate*? Does the model carve up the universe of subject-related entity classes in the "right" way[42]?

As a first step, the FRSAR Entities Sub-Group performed a pilot study, in which four students and faculty members at the Kent State University School of Library and Information Science classified existing subject terms used by the NSDL (National Science Digital Library) contributors. These included about 3000 terms assigned based on a variety of subject vocabularies and free keywords. They classified terms into six categories: concrete stuff, abstract stuff, event, time, place, and others. The same method was also applied by one of the Working Group members to another set of subject terms from controlled vocabularies used in two library science textbooks. The results show that there is a blurred distinction between concrete and abstract concepts; for example, the distinction between a particular chair as a physical object and the concept of chairs. In addition, there were difficulties in classifying named instances (proper names), which resulted in many terms being put into the "others" category. The results of this test indicate that it would be difficult for any user (end user, librarian, or vocabulary developer) to conduct such a task when using subject authority data. These categories do not seem helpful or necessary to the end users either.

Following the pilot study, the Working Group discussed several possible previously identified approaches to the development of a theoretical framework of aboutness.

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[40] Delsey, *op. cit.*, p. 50.
[41] Delsey, *op. cit.*, p. 50.
[42] See also: Furner, J. (2006). The ontology of subjects of works. Paper presented at ASIS&T 2006: Annual Meeting of the American Society for Information Science and Technology, Austin, TX, November 3–8, 2006.

Scenario 1

Keep FRBR Group 3 entities (*concept*, *object*, *event*, and *place*) and only analyze attributes and relationships. The advantage is that the Working Group uses an existing framework. However, as demonstrated in the pilot study of the FRSAR Entities Sub-Group, the Group 3 entities need to be revisited. Adding *time* to the FRBR list solves one part of the problem, but the resulting model still does not cover processes, activities, or situations.

An additional argument for rejecting this scenario is that the original categorisation of Group 3 entities into four classes goes too far towards prescribing a particular way of structuring the subject languages that are used to provide access to *works*. Any subject authority system that lacks a faceted structure to distinguish clearly between *concepts, objects, events,* and *places* can be modelled only with difficulty. Rather than taking a stand on exactly which aspects to identify for the entire information community, the Working Group felt it was important to provide a higher level, more theoretical approach and not to impose any constraint on the forms that subject authority systems take in particular implementations.   This modelling does not limit any community from implementing the original FRBR Group 3 entities; on the contrary, it allows for more flexibility.

Scenario 2

Take Ranganathan's facets as the basis of the new framework. The facets would become entities:
   • Personality
   • Matter
   • Energy
   • Space
   • Time

The advantage is that this approach is well known in the library community, has been justified theoretically, and covers all areas of aboutness quite well. The issues are whether we would still have problems defining some of the entities, and whether librarians and end users would have trouble understanding and applying them.

Scenario 3

Take the <in*d*ecs>[43] model as the basis of the new framework. The main focus of the <in*d*ecs> model is intellectual property and rights management, but it also overlaps significantly with FRBR. The basic <in*d*ecs> entities are defined as:

   • **Percept**: an entity that is perceived directly with at least one of the five senses.

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[43] Rust, G. and Bide, M. (2000). The <in*d*ecs> metadata framework: Principles, Model and Data Dictionary. Version2. Indecs Framework Ltd. Available at:
http://www.doi.org/topics/indecs/indecs_framework_2000.pdf   (accessed 2010-01-20).

- o **Being**: an entity that has characteristics of animate life; anything which lives and dies
- o **Thing**: an entity without the characteristics of animate life
- **Concept**: an entity that cannot be perceived directly through the mode of one of the five senses; an abstract entity, a notion or idea; an abstract noun; an unobservable proposition, which exists independently of time and space
- **Relation**: the interaction of percepts and/or concepts; a connection between two or more entities
    - o **Event**: a dynamic relation involving two or more entities; something that happens; a relation through which an attribute of an entity is changed, added or removed
    - o **Situation**: a static relation involving two or more entities; something that continues to be the case; a relation in which the attributes of entities remain unchanged

Being and **Thing** together correspond to a supertype of the FRBR entity *object*; **Concept** roughly corresponds to the FRBR entity *concept*; and **Event** corresponds to the FRBR entity *event*. Thus, the three main differences between the <in*d*ecs> model and the FRBR model are (a) the subtyping of **Percept** in the <in*d*ecs> model into **Being** and **Thing**, and in the FRBR model into *item*, *person*, and *object*, (b) the absence of an FRBR entity that directly corresponds to the <in*d*ecs> entity **Situation**, and (c) the absence of an <in*d*ecs> entity that directly corresponds to the FRBR entity *place*.

As Delsey[44] notes, these differences raise corresponding questions about the possibility of making changes to the set of Group 3 entities defined in the original FRBR model: (a) Should the original entity ***Object*** be subtyped into two entities—e.g., **Inanimate object**, and **Animate object**? (b) Should **Situation** be added as an entity? (c) Should the FRBR entity *place* be removed? Note that in the FRBR report *places* are treated as entities only to the extent that they are the subject of a *work*.

Scenario 4

Make a pragmatic list of entities. Buizza and Guerrini created one example of such a list[45] for the Italian project Nuovo soggettario. Two logical entities, the *subject* (the topic, the basic theme of the work, the summarisation of its main contents) and *concept* (a unit of thought, each of the single elements which make up the subject), were defined. The list shows, as an example, what can be a concept in a specific implementation and draws on categories, roles and relationships from the report of the project:
- Object (material thing)
- Abstraction
- Living organism
- Person
- Corporate body

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[44] Delsey, op. cit., p. 51 - 52
[45] Buizza, P. and Guerrini, M. 2002. A conceptual model for the New Soggetario: Subject indexing in the light of FRBR. *Cataloging & Classification Quarterly*, 34(4): 31–45.

- Work
- Matter/material
- Property/quality
- Action
- Process
- Event
- Place
- Time

The problem with such lists is that the entities are not mutually exclusive, have overlaps, and rely on individual common everyday definitions of the entities. The authors' original purpose was to show the compatibility of those categories with the model. It is also a warning that making a pragmatic list of entities would be a disadvantage for a theoretical model.

Scenario 5

Do not make any recommendation on categorisation of subjects. This approach is a more abstract view and does not pose restrictions on any implementations. It also allows a more abstract, general view.

This last scenario (5) was the decision taken by the Working Group, based on comparative analysis of all scenarios and the pilot user study. None of scenarios 1-5 are ideal for all situations, while each may be a good solution for particular implementations. Any further categorization of Group 3 entities would prescribe a particular way of structuring the subject authority systems that are used to provide access to works. A good model should allow for any multiple domain-specific structures and should be flexible enough to accommodate different implementations. This can be achieved only by a more abstract theoretical model, completely independent of any implementation that enables the treatment of attributes and relationships on a more general level.