To: Joint Steering Committee for Development of RDA

From: Gordon Dunsire, Chair, JSC Technical Working Group

Subject: High-level subject relationship in RDA

Abstract

The paper discusses the high-level accommodation in RDA for the FRSAD subject relationship, and makes recommendations for improving the consistency and coherency of RDA elements and relationship designators associated with concept of subject.

Introduction

The JSC Technical Working Group has developed these recommendations to provide a coherent and comprehensive framework for the future development of the treatment of the Subject concept in RDA.

FRSAD model

The Functional Requirements for Subject Authority Data (FRSAD) model has a namespace published in the Open Metadata Registry.[1]

The primary relationship between a FRBR Work and a Thema is represented as a reciprocal pair of properties (in terse triple language, ttl):

frsad:P2001 rdfs:label "has as subject" ;

      skos:definition "Relates a work to a thema." ;

      owl:inverseOf frsad:P2002 .

frsad:P2002 rdfs:label "is subject of" ;

      skos:definition " Relates a thema to a work." ;

      owl:inverseOf frsad:P2001 .

The "has as subject" relationship is the high-level relationship that should be added to the *RDA relationship elements* to maintain semantic consistency with relationship designators that refine a high-level subject relationship. The relationship is also consistent with the FRAD model, so it is unlikely to change significantly as a result of consolidation of the FR models.

Thema is defined as "Any entity used as a subject of a work". There is no current or anticipated requirement for the FRSAD entity Thema to be added to RDA because it is only required for clarity within the FRSAD model and between FRSAD, FRBR, and FRAD.[2]

---

[1] http://metadataregistry.org/schemaprop/list/sort/label/type/asc/schema_id/26.html

Recommendation 1: Add a primary relationship element to the RDA element set with the label "Subject", definition "The subject of a work", and domain **Work**. The corresponding Registry property will have rdfs:label "has subject", skos:definition "Relates a work to the subject of a work", rdfs:domain rdac:C10001, and no range.

RDA relationship designators

Descriptive relationships for WEMI entities are given in RDA Appendix J.

The descriptive relationship designators appear to cover all of the kinds of subject relationship between the RDA WEMI entities.

The semantics of descriptive relationships are part of the semantics of subject relationships.

That is, the generic relationships at RDA J.1.3, J.2.3, J.3.3, and J.4.3 are element sub-types or sub-properties of the **Subject** relationship element, effectively adding each of the WEMI entities as a range to refine the high-level element.

However, RDA assigns descriptive relationships to **Expressions** as well as **Works**.

This allows an **Expression** of a **Work** to describe:

- Another **Work**; for example "Dunsire, Gordon. Description of Hamlet. French" describes "Shakespeare, William. Hamlet".
- An **Expression** of another *Work*; for example "Dunsire, Gordon. Description of the French translation of Hamlet. French" describes "Shakespeare, William. Hamlet. French".
- A **Manifestation** or **Item**.

There are 2 levels of hierarchy of designators for descriptive relationships for each WEMI entity. The top level designators, together with the super-properties for the generic relationships at RDA J.1.3, J.2.3, J.3.3, and J.4.3 are given in Table 1 in the Appendix, with their Registry semantics.[3] The Toolkit semantics were revised in the April 2014 update to remove the anomaly of **Item**-**Item** and **Manifestation**-**Manifestation** descriptive relationships when such relationships apply in the primary direction from **Works** and their **Expressions** only. Further similar revisions to the Toolkit semantics are required for the 2nd level designators for *analysis*, *commentary*, *critique*, *evaluation*, and *review* relationships.

Table 1 reveals some missing designators:

1. Definition: "A work that describes an expression."; Domain: **Expression**; Range: **Work**

2. Definition: "An expression described by a describing work."; Domain: **Work**; Range: **Expression**

3. Definition: "An expression of a work that describes a work."; Domain: **Work**; Range: **Expression**.

---

[2] Dunsire, Gordon. Representing the FR Family in the Semantic Web, http://www.gordondunsire.com/pubs/docs/Representing_the_FR_family_in_the_Semantic_WebPre.pdf
[3] The Registry has pending updates to conform to this table.

4. Definition: "A work described by an expression of a describing work."; Domain: **Expression**; Range: **Work**.

5. Definition: "An expression of a work that describes a manifestation."; Domain: **Manifestation**; Range: **Expression**.

6. Definition: "An expression of a work that describes an item."; Domain: **Item**; Range: **Expression**.

7. Definition: "A manifestation described by an expression of a describing work."; Domain: **Expression** ; Range: **Manifestation**.

8. Definition: "An item described by an expression of a describing work."; Domain: **Expression** ; Range: **Item**.

1 and 2, 3 and 4, 5 and 7, and 6 and 8 are reciprocal pairs.

3, 5, and 6 complete the "Expression of a Work describing …" relationships.

These are all examples of *cross-Entity designators*; that is, designators covering relationships between different WEMI entities. The matrix established by the existing designators and completed with the new designators is given in Table 2 in the Appendix.

The five second-level designators (*analysis*, *commentary*, *critique*, *evaluation*, and *review*) will have similar matrices, and will require similar additional designators.

Discussion

The current RDA semantics of descriptive relationship designators is not compatible with the FRSAD model.

To make RDA compatible with FRSAD, the "Expression of a Work describing …" relationship designators must be removed, so that only **Work** is the domain of the descriptive relationship designators in the primary direction from **Work**.

This will also considerably simplify RDA and reduce the need to add as many new designators as indicated. The resulting entity matrix is shown in Table 3 in the Appendix, with transformations of existing designators to accommodate the new cross-entity additions. The resulting marked-up list of designators and Registry elements is shown in Table 4 in the Appendix, with a clean version in Table 5 in the Appendix.

The changes to the published elements do not require new replacement elements; the semantics are bent, but not broken, by the changes. Table 4 indicates, however, that corresponding changes to the RDA Registry element URIs to maintain consistency will require the deprecation of some elements with re-registration under a different URI, and redirection from deprecated to active URIs.

This approach removes the generic same-entity relationships at RDA J.2.3, J.3.3, and J.4.3, leaving only the J.1.3 "descriptive work relationship" to be a sub-property of the proposed primary subject relationship element. A generic relationship covers designators and their reciprocals; the reciprocal swaps the domain and range, so a generic relationship property must have the same domain and

range, that is be a same-entity relationship. Generic cross-entity relationships must therefore be unconstrained.

The changes shown in Table 4 remove the cross-entity designators from the sub-property chain leading to the proposed primary subject relationship element. They remain in the sub-property chain leading to a published unconstrained designator. The descriptive relationship designators "description of …" in the primary direction (from **Work**) become sub-properties of the proposed subject relationship element.

Recommendation 2: Bring the RDA descriptive relationships designators into line with FRSAD by allowing only **Work** to be the domain of primary descriptive relationship designators for WEMI entities (and the range of their reciprocal designators) as indicated in Table 4, and by adding sub-property relationships to the new subject relationship element.

The Working Group recognizes that Recommendation 2 removes accommodation for one of the use cases that the "described in" relationship was intended to support. The "described in" relationship is the reciprocal of the "description of …" relationship. The use case is illustrated by the descriptive practice that was specified in AACR2 1.7B15, References to Published Descriptions, using the MARC field 510. Such references to published descriptions or citations are very frequently included in records for rare materials; there is even a published list of Standard Citation Forms for Rare Book Cataloging, the third edition of which is being prepared for publication.

These references provide detailed information that supports the identification of the particular resource (WEMI) being described. While many of the bibliographies and catalogues that are referenced exist in only one expression (and therefore the "described in" relationship with range **Work** is adequate), many exist in multiple expressions and the reference must often be to a specified **Expression** of the **Work**.

However, the semantics of the term "described in" are significantly different in this case. Recommendation 2 ensures the term means the reciprocal of "description of". The term "described by" can have the same meaning; this is another example of the problems of relying on labels. The nuances between "in" and "by" are those of extent: "in" indicating "part" and "by" indicating "co-extensive". Also, the term "description" can refer to unstructured or structured data about a thing. Recommendation 2 is consistent with unstructured data (a **Work**) which is co-extensive with its Thema, that is, WEMI.

The use case is consistent with a structured or unstructured description which is part of a specific **Expression** of a **Work** which is not intended to be about the particular subject of the description (the specified WEMI). Less ambiguous terms for a structured description are "metadata", "bibliographic record", "bibliographic reference", "citation", etc. The RDA element **Preferred Citation** is a **Manifestation** attribute, and therefore has a literal containing the text of the citation as its range. RDA refers confusingly to such a citation as an *unstructured description*. The definitions of the relationship designators **appendix** and **appendix to** contain the phrase "list of references". These have overlapping semantics.

The need to maintain RDA support for the "citation" use case and the overlap in semantics with at least one RDA element and several relationship designators suggests the development of a set of designators that relate WEMI to the *Work* or *Expression* containing the citation, such as "cited in" and "cites" for the reciprocal. These will be cross-entity designators with the issues discussed above. However, this does not preclude the addition of an attribute element for each of WEMI that accommodates the text of the citation to the *Work* or *Expression*, in a similar way to *Preferred Citation*. The generic label of the element might be *Reference to Published Citation* (or *Reference to Published Description* if "citation" is too narrow). A proposed definition is "A citation for a published description of a …".

Recommendation 3: Add to RDA the elements: *Reference to Published Citation (Work)*, Definition: "A citation for a published description of a work.", domain: *Work*; *Reference to Published Citation (Expression)*, Definition: "A citation for a published description of an expression.", domain: *Expression*; *Reference to Published Citation (Manifestation)*, Definition: "A citation for a published description of a manifestation.", domain: *Manifestation*; *Reference to Published Citation (Item)*, Definition: "A citation for a published description of a item.", domain: *Item*.

Recommendation 4: Develop a set of designators that relate WEMI to the *Work* or *Expression* containing the citation.

Relationship hierarchy

The hierarchy of current RDA relationship designators under the proposed high-level relationship element is shown in Table 6.

Triple	Domain	URI	Range
GWTWAnalysis has subject GWTW	W	P1????	
-GWTWAnalysis has descriptive work relationship with GWTW	W	P10230	W
--GWTWAnalysis is description of GWTW	W	P10100	W
---GWTWAnalysis is analysis of GWTW	W	P10140	W

Table 6: Hierarchy of RDA subject relationship and designators.

Table 6 uses the example of the work "Gone with the wind" (GWTW) and a work that is an analysis of the work "Gone with the wind (GWTWAnalysis). The refinement level of the hierarchy is indicated by the number of hyphens (-) indenting the sample data triple using the relationship.

The order of the hierarchy is determined by the human-readable semantics in definitions and scope notes, and the machine-readable semantics in domains and ranges. In particular, the rule for domains and ranges is:

A specified domain/range class is finer than *a super-class of the specified domain/range class* is finer than *no specified domain/range class*.

There is no requirement to deprecate existing range statements for coherency or consistency, as shown in Table 6.

Following Recommendation 1, new relationship designators should not specify a range class. The domain class should be the RDA *Work* entity.

Recommendation 5: New subject relationship designators should not specify a range, unless this is required for a specified purpose such as consistency with legacy relationships.

New designators following Recommendation 5 will have no specified range, and will therefore fit into the hierarchy at the first level of refinement of the subject relationship element. A new designator cannot fit into the current hierarchy shown in Table 6 at a finer level than the *descriptive work relationship* because it has a specified range of *Work*.

Any new subject relationship designators at a finer level of granularity will require a separate hierarchy in RDA.

Labels

If Recommendation 2 is not accepted, the matrix in Table 2 shows that the labels with the pattern "descriptive entity relationship" are not consistently matched to the relationship hierarchy.

The current pattern of qualifying similar designators by their domain cannot be applied to the new designators, because the domains are the same, but the ranges are different. An extension of the current pattern would result in double qualifiers; for example:

New 1 Label: "described in (expression) (work)"

This is not user-friendly, and is ambiguous; is there a difference with "described in (work) (expression)"?

Recommendation 6: If Recommendation 2 is not accepted, refer the labelling of the relationship designators in Table 1 to the discussion on element labels designated as task 3 for 2014 for the JSC Technical Working Group.

Recommendations

Recommendation 1: Add a primary relationship element to the RDA element set with the label "Subject", definition "The subject of a work", and domain *Work*. The corresponding Registry property will have rdfs:label "has subject", skos:definition "Relates a work to the subject of a work", rdfs:domain rdac:C10001, and no range.

Recommendation 2: Bring the RDA descriptive relationships designators into line with FRSAD by allowing only *Work* to be the domain of primary descriptive relationship designators for WEMI entities (and the range of their reciprocal designators) as indicated in Table 4, and by adding sub-property relationships to the new subject relationship element.

Recommendation 3: Add to RDA the elements: *Reference to Published Citation (Work)*, Definition: "A citation for a published description of a work.", domain: *Work*; *Reference to Published Citation (Expression)*, Definition: "A citation for a published description of an expression.", domain: *Expression*; *Reference to Published Citation (Manifestation)*, Definition: "A citation for a published description of a manifestation.", domain: *Manifestation*; *Reference to Published Citation (Item)*, Definition: "A citation for a published description of an item.", domain: *Item*.

Recommendation 4: Develop a set of designators that relate WEMI to the *Work* or *Expression* containing the citation.

Recommendation 5: New subject relationship designators should not specify a range, unless this is required for a specified purpose such as consistency with legacy relationships.

Recommendation 6: If Recommendation 2 is not accepted, refer the labelling of the relationship designators in Table 1 to the discussion on element labels designated as task 3 for 2014 for the JSC Technical Working Group.

Justification

The recommended amendments and additions to RDA elements and relationship designators provide a consistent and coherent framework for assessing future proposals for treating aspects of the subject relationship in RDA.

Impact

The recommendations result in changes to the semantics and definitions of some relationship designators, but do not require changes to the instructions beyond the editorial policy of duplicating Glossary definitions in the text.

The addition of a primary relationship element requires supporting text, etc. in the RDA instructions. It will have a significant impact on the utility of RDA.

Summary of changes

Add a primary relationship element and four attribute elements to the RDA element set.

Amend relationships designators to allow only *Work* to be the domain of primary descriptive relationship designators for WEMI entities

Marked up copy

Marked up changes are given in Table 4. Additions are specified in the recommendations. Marked up copy of RDA is not provided.

Appendix

Table 1: RDA relationship designators for descriptive relationships in WEMI entities

Label	Definition	Scope note	Domain	Range	URI	subPropOf	inverseOf
description of (expression)	An expression described by an expression of a describing work.		Expression	Expression	rdae:P20072	rdae:P20234	rdae:P20202
described in (expression)	An expression of a work that describes an expression.		Expression	Expression	rdae:P20202	rdae:P20234	rdae:P20072
descriptive expression relationship	An expression of a work that is described in or is a description of the expression.		Expression	Expression	rdae:P20234	rdae:P20205	rdae:P20234
New 7	A manifestation described by an expression of a describing work.		Expression	Manifestation		n/a	New 6
New 8	An item described by an expression of a describing work.		Expression	Item		n/a	New 5
New 1	A work that describes an expression.		Expression	Work		n/a	New 2
New 2	An expression described by a describing work.		Work	Expression		n/a	New 1
New 3	An expression of a work that describes a work.		Work	Expression		n/a	New 4
New 4	A work described by an expression of a describing work.		Expression	Work		n/a	New 3
description of	A work described by a		Work	Work	rdaw:P10100	rdaw:P10230	rdaw:P10118

(work)	describing work.						
described in (work)	A work that describes a described work.		Work	Work	rdaw:P10118	rdaw:P10230	rdaw:P10100
descriptive work relationship	A work that is described in or is a description of the work.	Descriptive works include descriptions, critiques, evaluations, reviews, commentaries, etc.	Work	Work	rdaw:P10230	rdaw:P10198	rdaw:P10230
description of (item)	An item described by a describing work.		Work	Item	rdai:P40030	rdai:P40052	n/a
description of (manifestation)	A manifestation described by a describing work.		Work	Manifestation	rdam:P30023	rdam:P30211	n/a
New 5	An expression of a work that describes a manifestation.		Manifestation	Expression		n/a	New 8
descriptive manifestation relationship	A work that is a description of the manifestation.		Manifestation	Work	rdam:P30211	rdam:P30048	n/a
New 6	An expression of a work that describes an item.		Item	Expression		n/a	New 7
descriptive item relationship	A work that is a description of the item.		Item	Work	rdai:P40052	rdai:P40046	n/a

Table 2: Cross-entity matrix for RDA descriptive relationship designators

Domain\Range	Work	Expression	Manifestation	Item
Work	described in (work)/ description of (work) [descriptive work relationship]	New 2/New3	description of (manifestation)	description of (item)
Expression	New 1/New4	described in (expression)/ description of (expression) [descriptive expression relationship]	New 7	New 8
Manifestation	descriptive manifestation relationship	New 5	n/a	n/a
Item	descriptive item relationship	New 6	n/a	n/a

Table 3: Cross-entity matrix for RDA/FRSAD descriptive relationship designators

Domain\Range	Work	Expression	Manifestation	Item
Work	described in (work)/ description of (work) [descriptive work relationship]	New 2 => (description of (expression))	description of (manifestation)	description of (item)
Expression	New 1 => described in (expression)	n/a	n/a	n/a
Manifestation	descriptive manifestation relationship => described in (manifestation)	n/a	n/a	n/a
Item	descriptive item relationship=> described in (item)	n/a	n/a	n/a

Table 4: Amendments to RDA for FRSAD compatible relationship designators for descriptive relationships in WEMI entities.

Label	Definition	Scope note	Domain	Range	URI	subPropOf	inverseOf
descriptive work relationship	A work that is described in or is a description of the work.	Descriptive works include descriptions, critiques, evaluations, reviews, commentaries, etc.	Work	Work	rdaw:P10230	rdaw:P10198	rdaw:P10230
description of (work)	A work described by a describing work.		Work	Work	rdaw:P10100	rdaw:P10230	rdaw:P10118
described in (work)	A work that describes a described work.		Work	Work	rdaw:P10118	rdaw:P10230	rdaw:P10100
description of (expression)	An expression described by ~~an expression of a describing~~ work.		~~Expression~~ Work	Expression	~~rdae:P20072~~ rdaw:P1????	~~rdae:P20234~~	rdae:P20202
described in (expression)	An ~~expression of a~~ work that describes an expression.		Expression	~~Expression~~ Work	rdae:P20202	~~rdae:P20234~~	~~rdae:P20072~~ rdaw:P1????
~~descriptive expression relationship~~	~~An expression of a work that is described in or is a description of the expression.~~		~~Expression~~	~~Expression~~	~~rdae:P20234~~	~~rdae:P20205~~	~~rdae:P20234~~
description of (manifestation)	A manifestation described by a describing work.		Work	Manifestation	~~rdam:P30023~~ rdaw:P1????	~~rdam:P30211~~	rdam:P30211
~~descriptive manifestation relationship~~ described in	A work that ~~is a description of the~~ describes a manifestation.		Manifestation	Work	rdam:P30211	~~rdam:P30048~~	~~rdam:P30023~~ rdaw:P1????

(manifestation)							
description of (item)	An item described by a describing work.		Work	Item	~~rdai:P40030~~ rdaw:P1????	~~rdai:P40052~~	rdai:P40052
~~descriptive item relationship~~ described in (item)	A work that ~~is a description of the~~ describes an item.		Item	Work	rdai:P40052	~~rdai:P40046~~	~~rdai:P40030~~ rdaw:P1????

Table 5: RDA/FRSAD relationship designators for descriptive relationships in WEMI entities.

Label	Definition	Scope note	Domain	Range	URI	subPropOf	inverseOf
descriptive work relationship	A work that is described in or is a description of the work.	Descriptive works include descriptions, critiques, evaluations, reviews, commentaries, etc.	Work	Work	rdaw:P10230	rdaw:P10198	rdaw:P10230
description of (work)	A work described by a describing work.		Work	Work	rdaw:P10100	rdaw:P10230	rdaw:P10118
described in (work)	A work that describes a described work.		Work	Work	rdaw:P10118	rdaw:P10230	rdaw:P10100
description of (expression)	An expression described by a work.		Work	Expression	rdaw:P1????		rdae:P20202
described in (expression)	A work that describes an expression.		Expression	Work	rdae:P20202		rdaw:P1????
description of (manifestation)	A manifestation described by a describing work.		Work	Manifestation	rdaw:P1????		rdam:P30211
described in (manifestation)	A work that describes a manifestation.		Manifestation	Work	rdam:P30211		rdaw:P1????
description of (item)	An item described by a describing work.		Work	Item	rdaw:P1????		rdai:P40052
described in (item)	A work that describes an item.		Item	Work	rdai:P40052		rdaw:P1????