INTRODUCING RDA

A Guide to the Basics after 3R

Second Edition

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PREFACE

The first edition of *Introducing RDA* was published in 2010. Ten years have passed and there have been changes to RDA, the standard, and to the RDA Toolkit. This edition of *Introducing RDA* is a guide to the basics "after 3R," that is, after the 3R Project.

The 3R Project is a short way of referring to the RDA Toolkit Restructure and Redesign Project. The project quickly became known as 3R: <u>RDA</u>, <u>Restructure</u>, <u>Redesign</u>. RDA has a different look and feel due to this restructure and redesign.

The 3R Project began in 2017 and took several years to complete. When I refer to RDA after 3R, the reference is not to RDA at a single point in time, but rather to the start of a new phase of RDA—RDA as it appears in the restructured RDA Toolkit. A beginning point for this phase is when the bulk of the major changes were completed with the stabilization of the English text in April 2019. "RDA after 3R" refers to RDA as it appears in the new RDA Toolkit after April 2019. When first released, it was called the "beta Toolkit." As of December 15, 2020, it is the regular, official RDA Toolkit. In this book, it is called the "new RDA Toolkit" to distinguish it from the original RDA Toolkit.

RDA after the 3R Project is not considered a new edition of RDA. RDA is an online integrating resource that is updated several times a year. RDA is developing all the time. RDA in the original RDA Toolkit and in the new RDA Toolkit is fundamentally the same. It is developed following the same objectives and principles. There are new aspects, but it also continues to support the same ways of working as in the original RDA Toolkit.

This edition of *Introducing RDA* is a complete revision of the first edition. Most of the original text was condensed and revised or removed to allow space for focusing on RDA in the new RDA Toolkit. This edition includes an overview of the major developments since the publication of RDA in 2010, focusing especially on developments that occurred during the 3R Project: the impact of the 3R Project itself, the results of aligning RDA with IFLA's Library Reference Model (IFLA LRM), and the outcomes of internationalization. This edition updates references to RDA text to match the wording and placement of those texts in the new RDA Toolkit (RDA September 2020). Images are from the December 2020 release of RDA Toolkit.

ABBREVIATIONS

AACR	Anglo-American Cataloguing Rules
AACR2	Anglo-American Cataloguing Rules, 2nd edition
BIBFRAME	Bibliographic Framework
FRAD	Functional Requirements for Authority Data
FRBR	Functional Requirements for Bibliographic Records
FRSAD	Functional Requirements for Subject Authority Data
ICP	Statement on International Cataloguing Principles
IFLA	International Federation of Library Associations and Institutions
IFLA LRM	IFLA Library Reference Model
IRI	Internationalized Resource Identifier
ISBD	International Standard Bibliographic Description
MARC 21	MARC = Machine Readable Cataloging
	MARC 21 = a harmonized MARC format used in many countries
ONIX	Online Information eXchange
RSC	RDA Steering Committee
RDF	Resource Description Framework

1 What is rda?

RDA, Resource Description and Access, is an international metadata standard designed to enable the discovery of library and cultural heritage resources in both traditional and linked data environments. It evolved out of the *Anglo-American Cataloguing Rules*, 2nd edition (AACR2), but RDA is quite different. It presents a new way of thinking about bibliographic data. It is based on a theoretical framework, it is designed as a standard for the digital environment, and it is developed as a global standard appropriate for use in many contexts. This chapter will give a brief overview of the key aspects that define RDA. These aspects are then explored in more detail in the following chapters. Before looking at these aspects, the chapter begins with a quick summary of the 3R Project to set the stage for the current edition of this book.

- 1.1 The 3R Project
- 1.2 Based on a Theoretical Framework
- 1.3 Designed for the Digital Environment
- 1.4 A Global Standard Appropriate for Use in Many Contexts
- 1.5 Impact

1.1 THE 3R PROJECT

For the cataloging community, the publication of RDA in 2010 marked a new approach to the recording of bibliographic data but it also introduced a new way of using the standard. RDA was designed to be used as an online tool. The content of the standard was published as part of an online web-based tool, RDA Toolkit.¹ The text of RDA had been prepared as a series of documents and these were then transferred into specially designed software in 2010.

As an online standard, it was straightforward to implement a process of regular updates and revisions to the content of RDA. This process began in 2011, with new amendments integrated into RDA beginning in April 2012. The yearly amendments to RDA instructions were the result of development work carried out through consultation and community input. There were also small "fast track" changes periodically throughout the year to correct minor problems such as typographical errors or incorrect links. This

pattern of revision continued until 2017, when the original RDA Toolkit was frozen and work began on the 3R Project.

In an online environment, the pace of change is fast. Provision had been made to update the text of RDA regularly, but the software also needed to be updated. By 2016, it was becoming evident that the RDA Toolkit site needed some renewal and reorganization. It was labor-intensive and cumbersome to revise the standard. For example, the original structure and instruction numbering were inflexible, making it difficult to move instructions to more logical places and to expand the content. The interface was becoming dated, and the site did not meet international accessibility standards. The outcomes of the 2016 annual meetings of both the RDA Board and the RDA Steering Committee note plans for a "Toolkit reorganization" project.²

The 3R Project was announced in October 2016 and began in 2017.³ The full name of the project was the RDA Toolkit Restructure and Redesign Project, but it was quickly nicknamed the 3R Project: RDA, Restructure, Redesign. The project covered changes in both the software and the content. On the technological side, there were changes to the way RDA instructions were stored; a thorough updating of the software; new efficiencies in design to streamline the editing and translating process; compliance with current accessibility standards; and modernizing the user interface. On the content side, RDA needed to be aligned with the most recent bibliographic conceptual model, the IFLA Library Reference Model (IFLA LRM).⁴

RDA after the 3R Project is still the same standard. The user interface in the new RDA Toolkit is very different, and the text of the standard is no longer presented as a linear e-book with a beginning, middle, and end. Much of the content is reorganized and appears in different places. There are areas that were expanded to make the standard more flexible and modular, taking into consideration both current requirements and expected future needs. Some wording was adjusted for consistency and to enable efficiencies for those who write, edit, and translate RDA text. The "guidelines" part of the standard was reorganized and expanded to support the new structure.

Although some elements are renamed, some instructions have different wording, and the organization of the content has been significantly altered, people who used RDA in the original RDA Toolkit will be able to continue to use RDA basically in the same way. For example, when recording data about a print book, one still records the date of publication, such as "2020." It is a discrete and precise data element, an element that describes the manifestation. Originally, it was treated as a descriptive characteristic, an attribute. Now *date of publication* is understood to be a relationship between a *manifestation* and a *timespan*. The data recorded in this element is a value of *timespan*.⁵ However, as a cataloger, I am still recording "2020." There may be an updated way of thinking about the data element, but I am still recording the same recognizable data.

The RDA Toolkit has undergone dramatic changes. RDA is an online integrating resource with updates seamlessly integrated into the text. RDA in the new RDA Toolkit is still the same standard. It is not considered a new edition of RDA, nor is it RDA 2.0.⁶

The standard does not prescribe one single way of doing things but offers choices so that different communities can apply RDA in ways that fit with their needs. But even with the variances created by following different options, at the root, the metadata shares the same element set, uses the same controlled vocabularies, and is aligned with the same conceptual model. Thus, there is a fundamental consistency that supports data interoperability.

1.2 BASED ON A THEORETICAL FRAMEWORK

The purpose of RDA as defined in the Introduction:

Resource Description and Access is a package of data elements, guidelines, and instructions for creating library and cultural heritage metadata that are well-formed according to international models.⁷

The defining feature of RDA is that it is based on a theoretical framework that shapes the structure and content of the standard and this framework comes from IFLA's bibliographic conceptual models.⁸ The key to understanding RDA is its alignment with IFLA's bibliographic conceptual models.

IFLA's bibliographic conceptual models are a way of understanding the bibliographic universe. They make explicit what is implicitly understood about bibliographic data; their purpose is "to reveal the commonalities and underlying structure of bibliographic resources."⁹ They identify the types of bibliographic data¹⁰ and functionality needed by users to support successful resource discovery. The models provide a theoretical and logically coherent basis on which to build an improved resource discovery experience for the user.

In 2010, when RDA was first published, it was aligned with the first two of IFLA's conceptual models, Functional Requirements for Bibliographic Records (FRBR)¹¹ and Functional Requirements for Authority Data (FRAD).¹² In 2015, some additions were made to RDA so that it also aligned with Functional Requirements for Subject Authority Data (FRSAD).¹³ FRAD and FRSAD were extensions of the FRBR model. Thus, as of 2015, RDA was essentially aligned with all three IFLA models that were in force at that time.¹⁴

In 2017, those three models became obsolete with the approval and publication of IFLA's new bibliographic conceptual model: IFLA Library Reference Model (IFLA LRM). Part of the 3R Project was to make the changes required to maintain alignment with the new

model, IFLA LRM. The new model introduced changes that were difficult to integrate within the 2010 structure of RDA, such as introducing new entities.¹⁵ The 3R Project provided an opportunity to extend the restructuring to include the revisions to RDA's structure required for alignment with IFLA LRM.

IFLA's models focus on the perspective and needs of the end user and this focus is expressed through the user tasks. The table below presents an excerpt from IFLA LRM table 3.1.

User Tasks Summary	
Find	
Identify	
Select	
Obtain	
Explore	

RDA adopts this same focus on the user. RDA references these same user tasks as a means to ensure that metadata will meet user needs. When RDA was originally published, the relationship between RDA elements and user tasks was explicitly mentioned throughout the instructions because it was a new approach. This perspective continues to shape the content of RDA in the new RDA Toolkit. However, many data elements can be used in different ways and almost all can be seen to support more than one user task. It was more efficient to summarize the user tasks in a "Guidance" section rather than explicitly noting relationships to user tasks throughout the text.

RDA, since its beginning, takes as its starting point the theoretical framework expressed in IFLA's bibliographic conceptual models. The practical instructions are organized according to this framework and the content of the instructions is shaped by the perspective of user needs and user tasks. When RDA was first published in 2010, this alignment with a theoretical framework was a new way of thinking about bibliographic data. It is no longer novel, but it continues to be a defining feature of RDA.

1.3 DESIGNED FOR THE DIGITAL ENVIRONMENT

The phrase "designed for the digital environment" was used to describe the purpose of RDA at a very early stage, in the Strategic Plan for RDA, 2005–2009.¹⁶ The changes in the cataloging environment between the 1960s and 2000s were enormous, not only because of the rapid proliferation of new types of publications, new forms of content, and new carriers for content, but also because of the move into a highly networked

online environment. This new environment qualitatively changed the way libraries and their users went about their work. Our understanding of the digital environment has continued to evolve into a more precise and nuanced understanding of the types of intellectual and artistic creations that can be produced and disseminated through the use of computers, and of new ways that machine processing and artificial intelligence can be applied to complex data with satisfactory results.

1.3.1 Bibliographic Information as Data

RDA's purpose is to support the production of robust or well-formed data¹⁷ that can be managed using both current and upcoming technologies. Well-formed data has a consistent structure that is recognizable both by humans and by computers. It is welldefined and unambiguous data.

RDA answers the question: what data should I record and how should I record it? RDA defines the elements required for description and access and gives instructions on formulating the data that is recorded in each element. Where AACR2 led the cataloger to produce strings of characters, RDA leads the cataloger or metadata creator to produce data that is parsed or segmented into clearly defined elements that can be interpreted by humans and machines. Humans can easily decipher long strings of information and resolve ambiguity. But computers cannot. Machine processing requires bibliographic information that is recorded as distinct and precise data elements. RDA elements may seem choppy after the paragraph style of ISBD (International Standard Bibliographic Description)¹⁸ and AACR2, but each element is unambiguously defined and contains one and only one particular kind of data. This way of recording data in a set of elements means that RDA data can be processed by computers in an effective way. It also means that RDA is not tied to a single encoding scheme or presentation style.

This does not mean that one can only use RDA in a high-tech environment. RDA offers different options for recording data according to the technological environment in which a metadata creator or cataloger operates.¹⁹ Thus, RDA is optimized for machine processing, but RDA data can also be recorded in ways that are compatible with simpler technological environments.

RDA was designed to make bibliographical information usable as data. It was not designed for one particular encoding scheme; the intention is that RDA data should be suitable for use with a range of different encoding schemes. RDA is intended to be the basis for a metadata element set that will make data visible and usable in library catalogs, on the World Wide Web or in a Semantic Web environment.

Some schemas are better suited for encoding RDA than others, but it is possible to encode RDA data using existing schema, such as MARC 21, and it is also possible to use more web-friendly encoding schemes such as RDF (Resource Description Framework).²⁰ RDA

will be encoded using new schema such as BIBFRAME (Bibliographic Framework)²¹ and future schema as well.

1.3.2 Extensibility

RDA provides an extensible framework for the description of all types of resources. It provides the principles and instructions to record data about resources that are currently known and resources that have yet to be developed. This was a key point in the original strategic plan for RDA: RDA was designed to "provide a consistent, flexible, and extensible framework for both the technical and content description of all types of resources and all types of content."²²

This extensible framework was an important feature in the development of RDA because it addressed a major stumbling block in its predecessor, AACR2. AACR2 did not have a structure that supported the description of new types of resources. AACR2 was originally developed as a cataloging code for print and paper-based documents. While rules for other media were grafted into the code, there was never a cohesive and logically consistent approach to the description of content, media, and carrier. This limitation made it difficult to extend AACR2 rules for the description of new types of resources, notably electronic resources.

RDA defines an extensive set of elements that can be used in many different combinations according to the needs of a metadata community. The move from long strings of bibliographic information to elements also makes it possible for other data communities to use all or parts of RDA's element set (as well as its controlled vocabularies).²³ Even as early as 2012, there were several examples where RDA elements were being used in linked data projects, such as projects at the British Library and the Deutsche Nationalbibliothek, along with data elements from other standards.²⁴ RDA is designed to be compatible with the structure of other metadata standards, particularly other standards optimized for Semantic Web use. This extends the usability of RDA and supports interoperability with data recorded according to other standards that share similar principles.

1.3.3 The Standard Delivered as a Web Tool

When RDA was published in 2010, the definitive version of the standard was the text within RDA Toolkit. The standard was delivered within RDA Toolkit along with tools and other resources to facilitate use of the standard in daily work. The standard was presented in an e-book format enabled with linking functionality for ease of use and exploration. The RDA Toolkit included mappings that indicated how to encode RDA elements with different encoding schema. Libraries and other institutions were able to share workflows and mappings, customize them, incorporate their local policies and

procedures, and store them as part of RDA Toolkit, often also making them accessible to the larger community of RDA users.

After the 3R Project, RDA Toolkit continues to include the authoritative text of the standard; it also continues to include tools that support the efficient integration of RDA into the daily work of metadata creation. The redesign of RDA Toolkit changed the presentation of RDA from a linear text displayed as an e-book to a web tool organized as a collection of data elements. The new structure of RDA Toolkit removes the conventions of a beginning, a middle, and an end, and supports a more web-like approach of jumping into the standard where one needs to be. The new RDA Toolkit has a more efficient software design. For example, it builds on the infrastructure changes first implemented in 2016,²⁵ whereby the definitions throughout the RDA text were all linked to the definitions in the RDA Registry.²⁶ A change in the Registry definition pushes the change to all the places in RDA where that definition may appear. The new RDA Toolkit maintains and amplifies this original functionality, providing the basis for efficient workflows and streamlined maintenance of RDA.²⁷

1.3.4 Optimized for the Linked Data Environment

One of the goals in creating RDA was to develop a metadata standard optimized for the linked data environment. Those involved in the original development of RDA were aware that libraries should be ready to take advantage of emerging technologies, not just for the web in general but also for the linked data environment of the Semantic Web.

Tim Berners-Lee and his colleagues provided a simple definition of the Semantic Web in 2001 when envisioning this new form of web content:

The Semantic Web is not a separate Web but an extension of the current one, in which information is given well-defined meaning, better enabling computers and people to work in cooperation . . . For the Semantic Web to function, computers must have access to structured collections of information and sets of inference rules that they can use to conduct automated reasoning.²⁸

RDA is designed to support the production of well-formed data that has a consistent structure, recognizable both by humans and by computers. The data should not just be structured but should also indicate relationships between data. This is the essence of linked data, the relationships that link data and that are machine-readable (using uniform resource identifiers or internationalized resource identifiers).²⁹ Linked data can join together data from different domains. Data within the Semantic Web can be used and reused in different and new ways that build knowledge and support exploration.

From the start, there was an intention to design RDA so that the data produced would be well-formed and interconnected, data that could be used as linked data.³⁰ There were

initiatives related specifically to the preparedness for linked data, beginning with a 2007 meeting hosted by the British Library to discuss the relationship between RDA and data models used by other metadata communities. The focus was on metadata models from communities that were intending to create metadata compatible with the Semantic Web.³¹ One of the anticipated benefits for the library community was "a metadata standard that is compatible with the Web Architecture and that is fully interoperable with other Semantic Web initiatives."³² Compatibility with the Semantic Web's framework enables library-created metadata to be used and reused across the web, integrated with the data of other communities, aggregated with data from other sources and manipulated accurately by computers. Computers can query and draw inferences from this data, use the relationships to integrate data from diverse sources and enable global data discovery.³³ Metadata from the library community has the reputation of being reliable data that can be trusted. Pushing this data to the Semantic Web contributes to the discovery of new relationships, the development of new knowledge, and the enhancement of exploration.

Coming out of the 2007 meeting, the developers of RDA aimed to focus on two goals or outcomes:

- 1. Definition of an RDA Element Vocabulary
- Disclosure on the public web of RDA Value Vocabularies using RDF/ RDFS/SKOS technologies ³⁴

The idea was to go beyond definitions of terms that were accessible only to humans but to transform these parts of RDA, the elements and the controlled vocabularies, into terminology written for the web using Resource Description Framework (RDF), identifiable by unique resource identifiers (Internationalized Resource Identifiers, or IRIs) and accessible for data applications and automated processing.

Work to achieve these outcomes began in 2007. The process required a certain amount of infrastructure work—representing the elements and controlled vocabularies using RDF, the development of the RDA namespace, called the RDA Registry, and mapping to other linked data namespaces. The namespace known as the RDA Registry (http://rdaregistry.info) is considered the official RDA namespace.³⁵ It was first populated in January 2014 with the RDA elements and controlled vocabularies (definitions, scope notes, and translations), sometimes called collectively RDA Reference.³⁶ With the redesign of the RDA Toolkit infrastructure, the RDA Registry is not considered a parallel and separate development but is now integrated into the dataflow so that RDA Reference data is made available through a synchronized workflow both for Semantic Web applications and for human use in the RDA standard within RDA Toolkit. RDA is now intrinsically linked to its namespace.³⁷

The intention of designing RDA for the digital environment has now advanced further as a result of the 3R Project.

1.4 A GLOBAL STANDARD APPROPRIATE FOR USE IN MANY CONTEXTS

RDA was designed by the library community for its use, but one of the goals was that RDA should also "be capable of adaptation to meet the specific needs of other communities."³⁸ This expanded scope applies both to cataloging and other metadata communities around the globe and to metadata communities outside the library.

1.4.1 An International Standard

RDA was designed for use in an international context. The predecessor standard, AACR2, was the product of international cooperation between four author countries: Australia, Canada, Great Britain and the United States. It had been translated into many languages and used in many countries beyond the four author countries. But it had a distinctively "Anglo-American" perspective, and its development was controlled by the four author countries.

RDA, as published in 2010, was also primarily the product of international cooperation between the four author countries: Australia, Canada, Great Britain, and the United States. However, RDA explicitly stated that the standard was "designed for use in an international context" (RDA 0.11.1). The inclusion of this statement underlines that RDA was being developed with recognition of its probable use by many countries around the world. RDA purposely aimed to shed the Anglo-American perspective of AACR2. The process of internationalization had begun with instructions adjusted so that they could be applied by communities that use different languages, scripts, numbering systems, calendars or measurement units. Also, during the original development process, the Joint Steering Committee for Development of RDA, the body responsible for the content of the standard, invited comments from international organizations and the national libraries and national cataloging committees of other countries; countries that had used AACR2; and also countries that had their own national cataloging codes.

The dialogue at the international level continued and increased after 2010. There was recognition that many "Anglo-American" viewpoints still remained entrenched in the text. The goal had started with the intention of making RDA usable in an international context. It has now broadened to making RDA a global standard enabling discovery of content.³⁹ RDA in the new RDA Toolkit has a new objective added to the four original ones: internationalization. Internationalization becomes a declared objective governing the design of RDA.⁴⁰

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During the 3R Project, the structure of the standard changed. One of the impacts of the change in structure was to demonstrate that RDA could be used in different ways by different communities. RDA defines a large set of data elements, and it also presents multiple options for recording data for each element. The shared element set supports data interoperability and data harmonization, but data can be recorded in up to four different ways. Elements can also be further extended or refined with local subtyping to fit local needs. The phrases "accommodating local cataloging traditions" and "accommodating local practices" began to appear in RSC presentations during 2018.⁴¹ This capacity to accommodate diverse practices opens the door for broader use by communities around the world.

In 2015, work began on developing a governance structure appropriate for an international standard.⁴² This was a development in parallel with the 3R Project but not directly related to it. However, it was also a sign of the ways in which the standard and its infrastructure were changing to accommodate a broad range of metadata communities. The new governance model explicitly aimed to expand representation in the decision-making bodies that controlled the standard.⁴³ At the same time, there was also a formalization of the relationship with communities that were translating RDA so that they would have a mechanism to provide input and feedback through the Translations Working Group. The increased reliance on working groups also provided additional avenues for input from more communities than previously.⁴⁴

The intention is now that RDA should accommodate the needs of different communities around the globe and that it should also be a standard developed through decisions made by representatives from every part of the globe. The changes in the standard to accommodate diverse practices and the changes in governance have moved RDA closer to achieving the goal of being a global standard.

1.4.2 Not Just for Libraries

One of the features noted above was the flexible and extensible framework that allows for the description of all types of resources, whether traditional library resources or resources from other cultural heritage communities, such as archives, museums, digital repositories, publishers, etc. RDA was also designed so that it would not be tied to one encoding standard. This makes it possible to use RDA in a broad range of contexts, in different implementation scenarios, and not just in traditional library management systems.

Though it comes out of the library milieu, RDA was designed with an awareness of other metadata communities and their resource description standards. The boundaries between metadata communities are meaningless to a user who searches in a networked, online environment. Data produced following the RDA standard can be stored and transmitted using a variety of encoding schema, including schemas in use within

other metadata communities. Likewise, by staying away from instructions about the presentation of the data, the door is opened to a potentially wider community of users, using RDA elements in new and different applications. In a linked data environment, library data can be used and reused with the data from other domains, such as museums or publishers. The greater the compatibility of data between metadata communities, the greater the benefits for the user.

1.5 IMPACT

RDA is a key step in the improvement of resource discovery because it guides the recording of data. The production of well-formed data is a vital piece of the infrastructure to support search and retrieval. RDA data alone will not improve navigation and display because the data must be used appropriately by well-designed applications, search engines and interfaces. Nevertheless, the recording of clear, unambiguous, well-structured data is an essential step in the improvement of resource discovery for the user.

RDA is designed to produce data that can be stored, searched, and retrieved in traditional library catalogs. RDA data is especially designed for use in the online environment, including the Semantic Web, where the data needs to be well structured so that it can be used, reused, and aggregated in new and unexpected ways, integrated with data from other sources, and possibly used by artificial intelligence software.

During RDA development, there is a constant awareness that the standard must function as a bridge between the past and future environments, and that not all libraries will progress into new environments at the same pace. RDA in the new RDA Toolkit offers an array of options, such as different recording methods. It is these options that make it possible to use RDA in a range of different implementation scenarios.

RDA was developed with awareness of other metadata standards. It lays the groundwork for data interoperability by aligning with international models and by following the language and conventions of the online environment, especially of the linked data environment.

RDA has been broadening its scope in response to international interest in the standard. The content of the standard is designed to be flexible, to offer choices and accommodate diverse practices. It is designed for use by an international audience, but it also maintains continuity for long-standing RDA users. The governance structure has been revised to support increased international participation in RDA development. Greater international use of the standard also increases data interoperability around the globe.

RDA positions the library community to take advantage of the online environment, and to make library data widely visible and discoverable.

11

NOTES

- RDA Toolkit (Chicago: American Library Association; Ottawa: Canadian Federation of Library Associations; London: Chartered Institute of Library and Information Professionals [CILIP], 2010-), https://www.rdatoolkit.org/.
- RDA Board, "Outcomes from the 2016 Meeting" (April 2016), www.rda-rsc.org/sites/all/ files/RDA%20Board%202016%20Outcomes.pdf; RDA Steering Committee, "Outcomes of the 2016 RSC Meeting" (December 4, 2016), www.rda-rsc.org/sites/all/files/RSC-Outcomes -2016.pdf.
- 3. "RDA Toolkit 3R Project," https://www.rdatoolkit.org/3RProject.
- 4. IFLA LRM is an internationally recognized bibliographic conceptual model, approved in 2017 as an official standard of the International Federation of Library Associations and Institution (IFLA): *IFLA Library Reference Model: A Conceptual Model for Bibliographic Information.* Pat Riva, Patrick Le Bœuf, and Maja Žumer (Consolidation Editorial Group of the IFLA FRBR Review Group). 2017. https://www.ifla.org/publications/node/11412.
- 5. These terms are defined and discussed in more detail in chapters 3 and 5.
- 6. "Why Isn't This Called RDA 2.0?," RDA Steering Committee, "Beta Toolkit/3R Project Frequently Asked Questions," www.rda-rsc.org/node/551#08.
- 7. Guidance > Introduction to RDA (RDA 84.74.84.88).
- 8. See chapter 3 for an explanation of IFLA's bibliographic conceptual models.
- 9. IFLA LRM 2.1.
- 10. *Bibliographic data* is used in its broadest sense, encompassing data that in some contexts is differentiated as bibliographic and authority data, such as in the MARC encoding environment.
- Functional Requirements for Bibliographic Records: Final Report, IFLA Study Group on the Functional Requirements for Bibliographic Records. (Munich: K. G. Saur, 1998); also online: https://www.ifla.org/publications/functional-requirements-for-bibliographic -records.
- 12. Functional Requirements for Authority Data (FRAD) is an extension of the FRBR model. Functional Requirements for Authority Data: A Conceptual Model. IFLA Working Group on Functional Requirements and Numbering of Authority Records (FRANAR), (Munich: K. G. Saur, 2009); also online: https://www.ifla.org/publications/functional-requirements-for -authority-data.
- 13. Functional Requirements for Subject Authority Data (FSRAD) is also an extension of the FRBR model. Functional Requirements for Subject Authority Data: A Conceptual Model. IFLA Working Group on the Functional Requirements for Subject Authority Records (FRSAR). (Munich: De Gruyter Saur, 2011); also online: https://www.ifla.org/node/5849.
- 14. Due to disparities and contradictions between the models, it was not possible for RDA to be exactly aligned with all three models. This is discussed in more detail in chapter 3.
- 15. *Entity* is a word used in many different contexts. Here it refers to the entities in an entity-relationship model, the modelling technique used to develop the IFLA bibliographic conceptual models. In a computing context, a simple definition is anything about which data can be stored (see Wiktionary definition, https://en.wiktionary.org/wiki/entity).

- Joint Steering Committee for Development of RDA, "Strategic Plan for RDA, 2005-2009" (5JSC/Strategic/1/Rev/2; November 1, 2007), www.rda-jsc.org/archivedsite/stratplan.html (last updated July 1, 2009).
- 17. Well-formed data means that "instructions are provided on how to record the values of elements, controlled vocabularies are used where appropriate, and the overall structure is governed by a formal model." Joint Steering Committee for Development of RDA, "RDA Scope and Structure." (JSC/RDA/Scope/Rev/4, 1 July 2009), cover page, www.rda-jsc.org/ docs/5rda-scoperev4.pdf.
- The International Standard Bibliographic Description is a standard developed under the auspices of IFLA to promote consistency when sharing bibliographic data. See www.ifla .org/en/about-the-isbd-review-group.
- 19. Cataloger and metadata creator are used interchangeably throughout the book. Metadata creator can be seen as a broader term that is less specific to libraries. Catalogers are metadata creators. Metadata creators can include those who create metadata in other domains as well.
- 20. For more information about MARC 21, see the MARC Standards website of the Library of Congress, Network Development and MARC Standards Office, www.loc.gov/marc/. For more information about RDF, see the W3C website, https://www.w3.org/RDF/.
- 21. BIBFRAME was initiated by the Library of Congress. For more information, see the Library of Congress BIBFRAME website, https://www.loc.gov/bibframe/.
- Joint Steering Committee for Development of RDA, "Strategic Plan for RDA, 2005-2009" (5JSC/Strategic/1/Rev/2; November 1, 2007), www.rda-jsc.org/stratplan.html (last updated July 1, 2009).
- 23. Also called vocabulary encoding schemes.
- Gordon Dunsire cites several examples in "RDA and the Semantic Web," Lectio Magistralis in Library Science, Florence, Italy, March 4, 2014 (Firenze: Casalini Libri, 2014), 36. Available online: http://digital.casalini.it/9788876560132.
- 25. "RDA Toolkit Glossary and RDA Reference" (RDA/Chair/17, August 7, 2016), www.rda-rsc .org/sites/all/files/RSC-Chair-17-fix.pdf.
- 26. The RDA Registry is the RDA namespace, http://rdaregistry.info. This is an essential part of making RDA elements and RDA vocabularies available for use as linked data.
- 27. For more information on the link between the Registry and the RDA Toolkit, see chapter 6, section 6.9.
- 28. Tim Berners-Lee, James Hendler, and Ora Lassila, "The Semantic Web," *Scientific American* 284, no. 5 (May 2001), 37, https://www.jstor.org/stable/10.2307/26059207.
- "Linked Data," World Wide Web Consortium, 2015, https://www.w3.org/standards/semantic web/data.
- Barbara Tillett, "Keeping Libraries Relevant in the Semantic Web with Resource Description and Access (RDA)," Serials, 24, no. 3 (2011), http://doi.org/10.1629/24266.
- 31. Dunsire, "RDA and the Semantic Web," 19. See also "How Does RDA Support Linked Data?," RDA Steering Committee, "RDA Frequently Asked Questions," www.rda-rsc.org/ content/rda_faq#10. See also early official documents, such as "RDA Scope and Structure,"

(5JSC/RDA/Scope/Rev/4, July 1, 2009), www.rda-jsc.org/archivedsite/docs/5rda-scope rev4.pdf.

- 32. Dunsire, "RDA and the Semantic Web," 20.
- 33. "Linked Data," World Wide Web Consortium, 2015.
- 34. See "Work Begins on RDA Vocabularies," www.rda-jsc.org/archivedsite/rdavocabularies .html. RDF = Resource Description Framework; RDFS = Resource Description Framework Schema; SKOS = Simple Knowledge Organization System. All three are compatible with Semantic Web technologies.
- 35. A namespace is part of preparing for the Semantic Web environment because it provides a way to ensure that the identifiers being assigned are unique and will remain unique; the namespace also reflects provenance (and hence reliability) if one uses a name that clearly identifies the source, such as "rdaregistry.info."
- 36. See https://www.rdaregistry.info/rgAbout/rdaref/.
- 37. "The RDA Registry is the source of Toolkit data for element and controlled terminology labels, definitions, scope notes, translations, and mappings, so it is integral to the operational production of the Toolkit and other RDA related publications," RDA Steering Committee, "Beta Toolkit/3R Project Frequently Asked Questions," www.rda-rsc.org/node/ 551#06.
- 38. Long term goal 1 in the Strategic Plan for RDA, 2005-2009.
- 39. The RDA Board's vision statement on the Board's home page (www.rda-rsc.org/rdaboard).
- RDA. Guidance > Introduction to RDA > Principles and objectives governing RDA. Internationalization (RDA 94.23.91.09).
- 41. For example, see Gordon Dunsire and Ebe Kartus, "Accommodating Local Cataloguing Traditions in a Global Context" (paper presented at the Diversity of Data Conference, Kuala Lumpur, August 23, 2018), https://www.rdatoolkit.org/IFLA; Gordon Dunsire, "Cataloguing with RDA" (presentation, 1er. Coloquio sobre RDA en América Latina, National Library of Mexico, Mexico City, November 14, 2018), www.rda-rsc.org/sites/all/ files/Dunsire%20Cataloguing%20With%20RDA%202018.pdf.
- 42. The governance structure is covered in greater detail in chapter 2.
- RDA Board, "RDA Governance," www.rda-rsc.org/sites/all/files/RDA%20Governance%20 Model%20revision%202019%20Dec.pdf. See also "RDA Governance Review Takes First Step in Implementation," www.rda-rsc.org/RDAgovernancefirststep.
- 44. See also chapter 2, section 2.4.

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