Creating grass roots digital Coeur d'Alene resources: the COLRC[*]

Shannon Bischoff
Indiana-Purdue Fort Wayne

Ivy Doak
University of North Texas

Amy Fountain
University of Arizona

John Ivens
University of Arizona

Audra Vincent
Coeur d'Alene Tribe/University of British Columbia

The Coeur d'Alene Online Language Resource Center (COLRC) is a digital archive that interfaces with the World Wide Web via a series of websites that make accessible many of the known Coeur d'Alene language resources for scholarly and educational purposes. Following the best practices outlined in the TAPS Checklist (Chang 2010) and Bird and Simons (2003), a team of linguists, community members, and a computer engineer developed the resources (at minimal cost) building on the grass roots model outlined in Bischoff and Fountain (2013). The COLRC contains over 1,200 pages of unpublished field-notes and manuscripts recording Coeur d'Alene myths, tales, and histories. Additionally, it includes a searchable Coeur d'Alene/English root dictionary, affix list, and stem list, along with a number of audio recordings and other language resources. This paper presents elements of the COLRC and the questions derived from the best practices that shaped it.

KEYWORDS: Snchitsu'umshtsn, Coeur d'Alene, digital archive, online dictionary

1. Introduction

In the summer of 2009 co-author Bischoff and a highly motivated undergraduate student, Musa Yasin Fort, developed a series of websites that made accessible hundreds of pages of unpublished fieldnotes and typed manuscripts recording Coeur d'Alene myths, tales, and

histories in Coeur d'Alene and English, which were collected by linguist Gladys Reichard in the late 1920s. Coeur d'Alene is a Salishan language spoken in Idaho USA (iso 639-3 crd). These materials reflect the knowledge of Coeur d'Alene community members, who include Dorothy Nicodemus, Tom Miyal, Julia Antelope Nicodemus, and Laurence Nicodemus, who worked with Reichard. The series of websites developed by Bischoff and Yasin Fort also include more recent works such as a digital version of Lyon and Greene-Wood's 2007 Coeur d'Alene root dictionary. The goals of the 2009 project were to see if Bischoff and Yasin Fort could produce meaningful online linguistic resources in a short period of time, with no financial support and no prior training in web design. The results, accessible online[1], not only demonstrate that significant work could be done, but also that it could be done at very low cost in a relatively short period of time by non-experts in the area of web development.[2]

Despite the success of the project, Bischoff and Yasin Fort had neglected to construct the series of websites entirely in accord with the emerging best practices for digital archiving and the development of digital resources (emerging in the sense that these standards were beginning to reach a larger audience beyond the specialists creating such standards). It was decided to *rebuild* the original 2009 web resources in accord with such emerging standards as outlined in Bird and Simons (2003) and Chang (2010). In addition, in order that the resources could be developed in such a way as to be meaningful to Coeur d'Alene community members, it was decided to recruit a member of the community to be an active partner in the development of the new resources. Further, since much of the material on the websites had been collected by different scholars and in different formats over much of the twentieth century, it was necessary to have not only a leading expert in Coeur d'Alene linguistics but also in the history of the various legacy materials used in the development of the web resources.

For these reasons, Coeur d'Alene community member Audra Vincent and linguist Ivy Doak were asked to join the project. Vincent had gone through the Lakeside High School language classes as well as the North Idaho college level classes and knew the language. She had also worked for a time in the Tribal Language Program, so was aware of the community needs from the perspective of a community member, language learner and the perspective of the Tribal Language Program. Additionally, she has her B.A. in linguistics from the University of Washington and is currently working on an M.A. in Linguistics at the University of British Columbia. In short, she had a wealth of experience and expertise to contribute to the project.

Ivy Doak is the leading scholar of Coeur d'Alene today. She has done considerable field work in the community, worked extensively with the unpublished fieldnotes and manuscripts, as well as published numerous articles on various aspects of the Coeur d'Alene language. Her expertise regarding the language, culture, and the history of the various materials recording and discussing Coeur d'Alene made her an ideal partner for the project.

In addition to Vincent and Doak, a computer engineer, John Ivens, as well as a linguist and web design expert Amy Fountain were invited to participate to ensure quality in the design and building of the new digital resources. Ivens has had considerable experience working on a wide

---

1<http://academic.uprm.edu/~sbischoff/crd_ archive/start1.HTML>
2Cf. Bischoff and Fountain (2013) for greater explication of the project and our notion of *grass roots archiving*.

range of projects involving data management and web design. His familiarity with the situation for endangered languages here in the US also made him an ideal candidate to help with the project. Fountain had experience with a number of indigenous communities and community members through her work with the American Indian Language Development Institute. Her expertise in web design and management was also a natural fit for the project.

The goal of the newly assembled team, or developers, was to ensure the long term accessibility of the available Coeur d'Alene linguistic data by following current best practices (e.g. Bird and Simons 2003 and Chang 2010). The following resources were identified to be developed or refined:

- a searchable version of the Coeur d'Alene/English root dictionary produced by Lyon and Greene-Wood (2007);

- a searchable Coeur d'Alene /English affix list with links to entries in Reichard's 1938 grammar (Reichard's grammar appears in *The Handbook of American Indians Part 3* (Boas 1938) which has been uploaded and made available at the Internet Archive[3]);

- a searchable Coeur d'Alene stem list based on Reichard 1939;

- approximately 1,200 pages of Reichard's field notes and unpublished manuscripts in PDF and PNG format, with English versions of the tales from Reichard 1947 reproduced in PDF format;

- links to Doak's grammatical sketch, dictionary, and analysis of 12 of Reichard's narratives;

- links to Reichard's 1938 grammar (housed at the Internet Archive as noted above);

- links to Reichard's 1947 volume of translations of the narratives (also available at the Internet Archive[4]);

- a guide to the three major orthographies in use in Coeur d'Alene scholarly material ; and

- additional language resources, as they are discovered.

The goal was not only to make available the vast majority of known Coeur d'Alene (henceforth CRD) language materials but to ensure they were *properly archived*, in a manner allowing *appropriate access*, for future generations of Coeur d'Alene community members and scholars. Specifically, the team:

- developed a mission statement which included policy for long-term accessibility, maintenance, and expansion;

- converted all material into Extensible Markup Language (XML) to allow ease of search and retrieval of data;

3The Internet Archive is a non-profit digital library that houses various resources available via the World Wide Web. This includes Boas 1938 where Reichard's Coeur d'Alene grammar appears, available at the following web address: <http://www.archive.org/stream/rosettaproject_tqw_morsyn-2#page/n3/mode/2up>
4<http://archive.org/stream/analysisofcoeurd41reic#page/n5/mode/2up>

- created a document describing field methods used and the history of material available on the various websites—a history that was informed by the work of Falk (1999), Brinkman (2003), and Reichard (1947), in accord with best practices—that is, a document that records how the available resources originally came into being (e.g. through the field work of Reichard);

- added known audio files to the website in digital format, linked to transcriptions where possible;

- aligned all terms (e.g. in the online root dictionary, stem list, and affix list) with the General Ontology for Linguistic Description[5] (GOLD 2010);

- ensured that all image files are available in low- and high-bandwidth formats;

- created a metadata record for each item following the Dublin Core Element[6] conventions;

- generated presentational style for the site using Cascading Style Sheets (CSS), so that *presentational markup* was separate from *analytic markup*;

- rendered the new resources *discoverable*, for example, by linking them to the Linguist List and creating relevant metadata using the Dublin Core Elements;

- edited and/or provided discussion of a selection of CRD entries in terms of phonological analysis and written representation to ensure continuity of notation between Doak's body of CRD work and the various resources for ease of comparison and searchability; and

- tested usability with the community and linguists.

In this paper, we present a number of resources that were created for what we refer to as the *Coeur d'Alene Online Language Resource Center*, or *COLRC*.[7] We begin with a brief history of selected resources found in the COLRC and examples of what can be found online at the COLRC. We then discuss some of the questions regarding best practices, as outlined specifically in Chang (2010), that guided the project. We finish with some concluding remarks.

2. A brief history and examples of COLRC resources

In this section we present a selection of the resources found at the COLRC at times using selections from the History of the Materials[8] produced for the online site.

2.1   ***The guide to spelling and pronunciation[9]***

One challenge in compiling language materials that have been collected from a variety of sources over time is that the orthographic conventions used in the source materials vary.

5<http://linguistics-ontology.org/>
6<http://dublincore.org/documents/usageguide/elements.shtml>
7The COLRC can be accessed at the following website <http://academic.uprm.edu/~sbischoff/COLRC/>.
8<http://academic.uprm.edu/~sbischoff/COLRC/home/history.php>
9<http://academic.uprm.edu/~sbischoff/COLRC/spelling/>

Differences in data presentation can be a major obstacle in accessibility to different user communities.

There are three methods of presenting Coeur d'Alene language data found in the materials included in the COLRC. These are referred to as the *Reichard orthography*, which is based on the transcription system devised for Native American languages by Franz Boas and his colleagues (Doak & Montler 2000), and used by his students, including Gladys Reichard; the *Nicodemus* or *Tribal orthography*, the orthography used by native speaker Lawrence Nicodemus and officially adopted by the Coeur d'Alene Tribe; (see Doak and Montler 2000 for further discussion); and what Lyon and Greene-Wood (2007) refer to as the *Salishan orthography*, which is that used by the Salishan scholarly community. The Reichard and Salishan orthographies were developed for use primarily by linguists and anthropologists, but the Salishan system has also been adopted for community use by some Salishan language communities (Doak and Montler 2000).

Reichard's orthography pre-dates modern notions of phonemic transcription, and preserves a great deal of the phonetic variation she found in Coeur d'Alene, such as the regular assimilation of schwa to surrounding labial or alveopalatal segments. The Salishan orthography regularizes these variations and accounts for them by rule. The Reichard and Salishan orthographies also capture properties of pronunciation that are not represented at all in the Nicodemus orthography, such as the presence of schwa, and so they are of use in helping learners to pronounce Coeur d'Alene in a way that is as close as possible to the pronunciations of fluent speakers of previous generations (Doak and Montler 2000). A variation of the Salishan orthography has been adopted by Lyon and Greene-Wood (2007). [10]

The Nicodemus orthography is based on symbols that are easier to type than those used in the Reichard and Salishan orthographies, and is therefore more useful to community members who want to read and write the language regardless of access to specialized typefaces and fonts. It is also the orthography that the Coeur d'Alene Language Programs utilizes, and so its inclusion in the COLRC resources is crucial to the accessibility of these resources to the community.

One goal of the COLRC project developers is to represent all of the major resources of the COLRC in each relevant system, so that these resources are appropriately accessible to all those who may visit the site.[11] This required that the means for converting from one system to another be developed. Conversion of this sort is not a straightforward process. Therefore, the developers chose to utilize algorithms that had been developed by other scholars to assist in this part of the project.

Barthmaier (1996) developed an algorithm that could be used to convert the Reichard orthography to the more modern Salishan system. Lyon and Greene-Wood (2007) developed a system for converting from the Nicodemus orthography to Salishan as well. These were utilized

---

10Lyon actually refers to the orthography as the "Salish Orthography" (Lyon 2005:9). In the literature the family name is recorded "Salish" and "Salishan" (cf. Kuipers 2003 and Kroeber 1999 for use of Salish, and Boas and Teit 1985 and L. Thompson 1979 for the use of Salishan). Here we use Salishan throughout for clarity as Salish is the name of one of the family languages.

11Though the three systems used to represent the language are not all considered spelling systems, for convenience we may refer to them as orthographies later in this paper.

by the developers to convert from Reichard to Salishan and to Nicodemus. A guide to *equivalencies* across the three orthographic systems is presented at the COLRC (Figure 1) along with discussion of the process of rendering resources in the various forms. In all cases in which the developers have introduced conversion from one orthography to another, the site includes access to the original source for cross referencing on the part of any given user.

Reichard	Nicodemus	Salish
a	a	a
b	b	b
tc	ch	č
d	d	d
ä	e	e/ɛ
gʷ	gw	gʷ
h	h	h
i	i	i
dj	j	ǰ
xʷ	khw	xʷ

Figure 1 Examples of Orthographic Conversions

2.2   *The Coeur d'Alene Root Dictionary*[12]

   Lawrence Nicodemus's Coeur d'Alene Dictionary in Root Format, by John Lyon and Rebecca Greene-Wood (2007) is a reworking of a dictionary compiled by Lawrence Nicodemus and published by the Coeur d'Alene Tribe in 1975. The original dictionary, Nicodemus' *Snchitsu'umshtsn: The Coeur d'Alene Language*, appeared in two volumes, the first from Coeur d'Alene to English (Nicodemus 1975a, vol. 1) and the second from English to Coeur d'Alene (Nicodemus 1975a, vol. 2). The dictionary volumes were part of a larger project supported by the Institute of American Indian Arts (Nicodemus 1973:3) that included a textbook and an accompanying set of six audio tapes (Nicodemus 1975b). The project was a collaborative work produced and designed by Southwest Research Associates, Inc. (SRA), of Albuquerque, NM (Nicodemus 1975a:i, ii, 1975b:ii).

   Lyon and Greene-Wood's version of the dictionary is in a format that is conducive for comparative research in Salishan morphology. Similar root-formatted dictionaries exist for other Salishan languages (see, for example, Mattina 1987, Thompson and Thompson 1996). Like Mattina's (1987) *Colville-Okanagan Dictionary*, Lyon and Greene-Wood's version of the Nicodemus dictionary omits vowels from the root entries. In a language such as Coeur d'Alene, where vowel harmony, both progressive and regressive (Doak 1992; also Sloat 1966; Johnson 1975), and unstressed vowel reduction occur, it is often difficult to tell what the underlying vowel of a root may be without evidence provided by a stressed root form unaffected by harmony-inducing affixes. Abstracting away from the vowels, and presenting the consonantal

---

12<http://academic.uprm.edu/~sbischoff/crd_test/dictionary/>

skeleta of roots, provides an easy way to search for any root, the essential element of each Coeur d'Alene word. Lyon and Greene-Wood's format thus allows the researcher or language learner to base their inquiry on the root consonants.

The work of Lyon and Greene-Wood is presented at the COLRC as a list of the roots in Salishan orthography, with vowels extracted, followed by all the forms provided by Nicodemus 1975a based on those roots. Each form is transcribed with analysis marking lexical affixes (=) and other morpheme (+) boundaries. The Nicodemus spelling is also provided, along with the various definitions provided by Nicodemus (1975a). In the column presenting Nicodemus' definitions, Lyon and Greene-Wood indicate the classification of each definition with the following symbols: intransitive (†), transitive (‡), complex (//), and compound (§) entries. The presentation has been altered from its original form in Lyon and Greene-Wood 2007 for ease of use in a web browser. This is illustrated in Figure 2.

√bc	1	buc	buts	† boots. (n.)
	2	ec+búc+buc=šn	etsbutsbutsshn	// boots (to be wearing...). ((lit. He is wearing boots), n.)
	3	s+búc+buc=šn	sbutsbutsshn	boot. ((lit. a borrowed root), n.)
	4	s+búc+buc=šn+mš	sbutsbutsshnmsh	rubber boots (putting on...). (vt, pl.n.)

Figure 2 Selection from Lyon and Greene-Wood Root Dictionary as it appears on COLRC

The COLRC includes a *search* mechanism, shown in Figure 3, which allows the root dictionary to be searched in the Salishan orthography, Nicodemus orthography or English. Native browser search functionality (generally accessed by selecting CRTL f and thus allowing a webpage to be searched for a given string or word(s)), was deemed less-than-ideal for the resource, even though the dictionary is presented as a single text file. Using a built-in browser search would pose difficulties for users who didn't have an easy way to type the many special characters used in the different Coeur d'Alene orthographies. A built-in browser search would also not allow the user to limit search strings to one orthography or another, or to the Coeur d'Alene spellings (only), or the English glosses (only). There would also be no straightforward way to manipulate the search to include or exclude the various morpheme boundary markers in the Coeur d'Alene fields. The search mechanism developed for the site allows users to simply click on a special character in order to include it in the search string, it also allows users to designate an orthography or orthographies, to limit the search to English glosses, and/or to search over strings without reference to morpheme boundary marks.
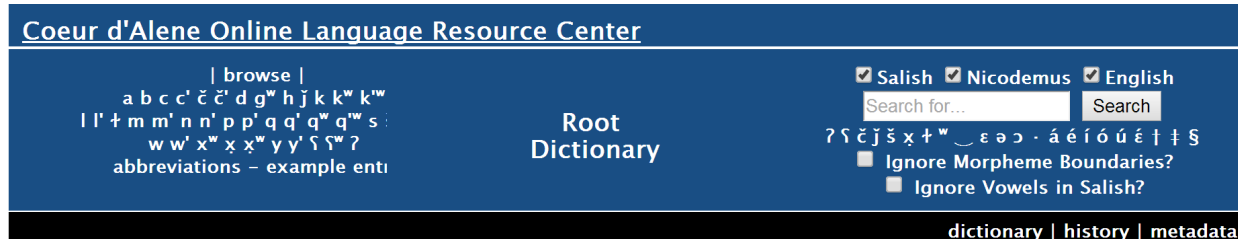
Figure 3 Root Dictionary Search Mechanism

2.3   *Texts*[13]

The unpublished field notes and typed manuscripts of Coeur d'Alene myths and tales presented in this archive were recorded in 1927 and 1929 by Coeur d'Alene community members and Gladys Reichard. The COLRC contains a biographical sketch of Reichard by Julia S. Falk, used by permission.[14] The texts, or narratives, cover what Reichard classified into "myths and tales" and "tales with historical elements."   The "myths and tales" are further divided into "Coyote cycle" and "myths not in Coyote cycle." In her English translation, Reichard (1947) notes the following:

> In this collection there are thirty-eight myths, that is, accounts of things as they happened before the world was as it is now; two tales or accounts of happenings in the historical period; and ten narratives of actual historical encounters which were remembered by living people or which happened not less than a hundred years ago. (5-6)

The Foreword to Reichard's 1938 grammar of Coeur d'Alene, sheds some light on how the data were collected. It is worth quoting at some length.

> The material presented in the Grammar of the Coeur d'Alene Language, together with a body of texts, was obtained on two field trips in the summers of 1927 and 1929 in Northern Idaho. These trips were made possible by grants from the Committee for the Study of Indian Languages, [and] Council of Learned Societies . . . In 1935 and 1936 it was possible to have Lawrence Nicodemus, a young Coeur d'Alene man, at Columbia University where the study was continued. The Columbia University Council for Research in the Humanities through a grant, made it possible to continue the work . . .

> The source of the texts was twofold. Stories were obtained from Dorothy Nicodemus, widow of Teit's chief informant . . . and from Tom Miyal. Dorothy's daughter-in-law, Julia Antelope Nicodemus, cooperated in grammatical analysis in a most interested

---

and stimulating way. Not only did she do all in her power to help, but she encouraged her son Lawrence to learn to write. It is to him I owe such careful phonetic differentiations . . . and other fine distinctions, which have since turned out to have grammatical and historical significance. Interest such as that displayed by Julia and Lawrence make this kind of work, not only a great satisfaction in itself, but add to it rare pleasure.

In her 1947 English translation of the narratives, Reichard provides greater detail regarding her collaborators from the Coeur d'Alene community. In chapter 2 of the volume she describes her work with Dorothy Nicodemus and Tom Miyal, her primary narrators. Brinkman (2003) provides further insights into the working relationships of the team that produced and analyzed the narratives and the setting in which the narratives were recorded. Brinkman notes (p.c.) that "Dorothy Nicodemus" actually appears as "Dorthy" on her tombstone. We do not make the change here for consistency with the names as they appear in relation to the Reichard materials. In addition he also notes that "Tom Miyal" was also known as "Tamiyel". Again, we do not change the names as Reichard produced for consistency and clarity in regards to the body of work, but feel it is important these facts be noted.

Page 2 of the 1947 English translations of the narratives describes Julia Antelope Nicodemus' contribution to the project. Again, it is worth quoting in some detail.

> I was fortunate in making the acquaintance of Mrs. Julia Antelope Nicodemus who was one of these [those that value their culture]. She was the daughter-in-law of Teit's chief informant, Nicodemus, and his wife, Dorothy, my informant. Julia did everything in her power to aid me in my work, for she quickly comprehended the problems of linguistic analysis and was greatly intrigued by them. Her work as interpreter is obvious in the translations . . . and grammar and, not only did she furnish all possible information of which she herself was possessed but she referred more difficult matters to her mother, Susan Antelope, and her brother, Maurice Antelope, with whom I did not work directly. She encouraged her son, Lawrence, to come to New York a few years later when he collaborated in the work of preparing the grammar. Without Julia's thorough understanding of the task and her valuable advice as to ways to going about it my results both linguistic and mythological would have been much more scanty.

> The two chief narrators, Dorothy Nicodemus and Tom Miyal, are described in Chapter II. Julia was my interpreter for their tales. She learned to write Coeur d'Alene and contributed the historical narrative Nos. 42 and 46, as her own compositions written in Coeur d'Alene.

Reichard (1947) has the following to say regarding Tom Miyal one of the primary collaborators when discussing plot in the narratives.

> There are elements which have nothing to do with plot [in the narratives], such as the touches which a lively narrator like Tom Miyal introduces for the sake of humor. Waterbird sticks the handkerchief given him by the chief's daughter into his coat pocket so that one corner shows. This element merely verbalizes a human conceit. The Land People phone up river to Snake. This is an amusing reference to the way white people do things. There are other modernizations which seem like purely stylistic elements but which have additional significance. For instance Waterbird became a dishwasher through shame at forgetting his appointment with the chief's daughter. (6-7)

Other than Reichard's own work (esp. 1938 and 1947), Raymond Brinkman's excellent dissertation on Lawrence Nicodemus (Brinkman 2003) provides informative discussion regarding Reichard, the Nicodemus family, and the recording of the narratives. In addition, Julia Falk provides two outstanding works (Falk 1999, Falk 1997) detailing the life work of Gladys Reichard with discussion of her work with the Coeur d'Alene, which Falk notes is viewed by Salish scholars today as excellent.

The organization and numbering of each text in the COLRC follows the numbering and organization of Reichard 1947. This numbering posed a problem, because text numbers differ across different versions of each text. It appears that the unpublished manuscripts were numbered as they were created. However, Reichard reorganized the narratives when the field notes were typed and again when they were published in English, and this sometimes changed the numbering. In addition, the titles found in the COLRC reflect Reichard 1947 and may differ from titles on field notes and typed manuscripts. The COLRC includes the Reichard 1947 number in the COLRC identifier for each narrative in its various forms (e.g. unpublished manuscripts, fieldnotes, or audio recordings). Furthermore, all the information about version numbers and alternative titles is recorded in the metadata and cross referenced using Dublin Core terms, e.g. *isVersionof* (cf. Figure 4).

An example of the variation in titling and numbering for fieldnotes and typed manuscripts appears in Figure 5. Here, the hand-written fieldnotes and the corresponding typed manuscript appear together in the same tab of a browser for ease of analysis (each can be viewed using a scroll bar). We see that the handwritten fieldnotes do not have a title, and are labeled with the roman numeral IV. In the typed version there is a title *Coyote Cuts Sun's Heart* and the number IV has been crossed out and replaced by III. The narrative appears as number 3 in the published English version of the narrative with the title *Coyote Overpowers Sun (Securing Sun Disk)*. The inconsistencies in numbers and titles were addressed by Reichard at the time of original publication of the English translations of these texts. Reichard (1947) explains that some of the narratives were given no titles by the narrators. In such cases she chose a title that reflected the content of the narrative.

In the COLRC, metadata records (as in Figure 4) are used to help track the different versions of each text, and all the different versions of a single text are grouped together in an HTML index page. Users can select hand-written field notes, typed manuscripts, or a top-and-bottom tiled view of both (as in Figure 5). Published English translations of each narrative can also be

accessed via the same index. 'Published English Translation' links take the user to either PNG versions of the published translations in the browser or PDF versions for download. The metadata records include links to the respective narratives that take the viewer to the pages of *An Analysis of Coeur d'Alene Indian Myths* (Reichard 1947) found at the Internet Archive[15] where the narrative translation can be found. In addition to the narratives published by Reichard, the 1917 publication of Teit's Coeur d'Alene "tales", which include different versions of a small number of the Coeur d'Alene texts recorded by the community scholars and Reichard, and which Reichard makes reference to in her 1938 grammar, was also found to be online at the Internet Archive, and thus a link[16] to the site was added to the COLRC, via the same index page. The hand-written field notes and typed manuscripts of the narratives provided in the COLRC were collected from photo-copies of Reichard's original manuscripts, were scanned to PDF, and also saved as PNG image files for viewing or download. Thus, the COLRC weaves together material never before made available via the web (the field notes and typed manuscripts) with other material that has been web-accessible for quite some time (the published English translations), allowing users to see exactly how each text was developed by the community scholars, Reichard and her contemporaries as it went from original, hand-written transcriptions all the way to publication in English.

Title: Coyote Overpowers Sun (Securing Sundisk) (fieldnotes)
isVersionof (published English translation): 3 Coyote Overpowers Sun (Securing Sundisk) (fieldnotes)
isVersionof (typed manuscript): III Coyote cuts Sun's Heart
Subject: Reichard Fieldnotes, Coeur d'Alene Narrative
Description: Coeur d'Alene narrative; Narrator: Dorothy Nicodemus; handwritten fieldnotes collected by Gladys Reichard; Numbered IV in notebook II; Date recorded 1927–1929 Idaho USA; Corresponds to Coyote cuts Sun's Heart typed manuscript numbered III and English translation numbered 3 in Reichard 1947 "Coyote overpowers Sun (Securing Sun Disk)" page 73 [http://archive.org/stream/analysisofcoeurd41reic#page/72/mode/2up].
Type: Text, handwritten fieldnotes
Source: Facsimile from unpublished Reichard Coeur d'Alene notebook II
Coverage: crd, Coeur d'Alene
Coverage: 1927–1929
Date: 2009
Modified: 2012
Creator (narrator): Dorothy Nicodemus
Creator (interpreter): Stella MacFarlane
Creator (linguist): Gladys Reichard
Creator (co-editor): Lawrence Nicodemus
Creator (co-editor): Julia Antelope Nicodemus
Creator (co-editor): Gladys Reichard
Format: PDF and PNG
Identifier: URL from digital archive deposited into (e.g. ELAR) (coming soon)
Identifier (COLRC URL): http://academic.uprm.edu/~sbischoff/COLRC/texts/3_fccsh/crdt27-29_fn3.pdf
Identifier (COLRC NO.): crdt27-29_fn3
Language (ISO639-3): eng-US, English
Language (ISO639-3): crd, Coeur d'Alene
Language: Coeur d'Alene with English gloss

Figure 4 Metadata using Dublin Core for Fieldnote version of *Coyote Overpowers Sun (Securing Sundisk)*

15<http://archive.org/details/analysisofcoeurd41reic>
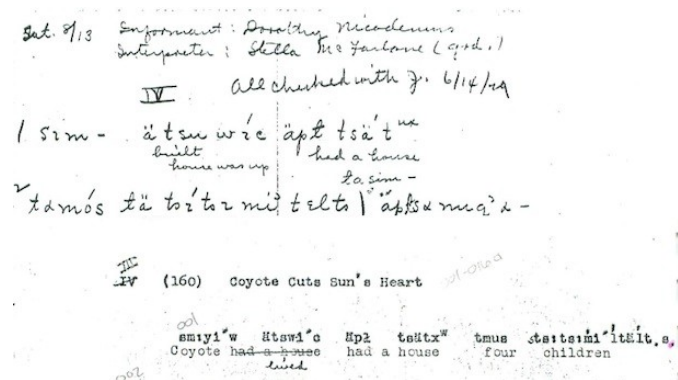16<http://archive.org/stream/folktalesofsalis00boas#page/119/mode/1up>

Figure 5 Dual View of Fieldnote and Typed Manuscript *Coyote Overpowers Sun (Securing Sundisk)*

2.4   *Stem List*[17]

In analyses of Coeur d'Alene, the 'stem' has been identified as an important analytical constituent of the word. Unlike roots, Coeur d'Alene stems include vowels. The stem list (cf. Figure 6) was originally published by Reichard in 1939 (Reichard 1939). In 2009 Bischoff and Yasin Fort created a facsimile of the original article using text files, HTML, Unicode fonts, and the Salishan and Nicodemus orthographies. The change from Reichard's orthography to the Salishan and Nicodemus orthographies includes conventions for representing certain phonological content (such as what have been referred to as *echo vowels*). In this way the facsimile is in part an interpretation.

The text files were updated by Fountain to HTML4 in 2012. A copy of the original (Reichard 1939), now in the public domain, can be found in the COLRC along with the searchable stem list created. In his 1966 Ph.D. dissertation Sloat re-analyzed Reichard's vowels and spelling to arrive at a Generative phonological account of each entry and thus a different spelling for most stems based on his interpretation of the vowels in the original publication by Reichard (1938). The fact that there is no *standardized spelling* for Coeur d'Alene, and the fact that phonological analysis has varied among scholars, have posed major challenges in representing the material online, and Bischoff and Yasin Fort's approach was to include the tribal orthographic representations, where this was possible. This was done by ensuring that, wherever possible, forms were presented in the orthography of the Tribe. The entries are organized in the same fashion as the root dictionary, with forms on the far left in the Salish orthography, those in the center in the Tribal orthography and finally the English gloss to the far right. The search mechanism for the stem list also follows that of the of the root dictionary, see Figure 7.

17<http://academic.uprm.edu/~sbischoff/crd_test/stem_list/>

Verbs

a

acqaʔ	atsqa'	go out, singular and plural
ac'x̣	ats'qh	look at
ayx̣ʷ(–t)	ayqhw(–t)	be tired
ax̣il	aqhil	do thus
aʕʷ	a(w	be much, many

ɛ/e

ɛpɬ	epɬ	there is, have
ɛw(–t)	ew(–t)	oppose
ɛm(–t)	em(–t)	share, feed

Figure 6 Stem List

Coeur d'Alene Online Language Resource Center

| browse |
verbs
adverbs, interjections, conjuncti
nouns

Stem Lists

☑ Salish ☑ Nicodemus ☑ English

[   ] Search

ʔ ʕ č j š x̣ ɬ x̣ ʷ ‿ ɛ ə c · á é í ó ú
☐ Ignore Vowels in Salish?

reichard's 1939 stem list | annotated stem list | metadata

Figure 7 Stem List Search Mechanism

2.5   *Affix List*[18]

Reichard's 1938 grammar included a variety of affixes. Bischoff and Yasin Fort extracted many of these affixes into a single file, using text, HTML, and Unicode fonts, for display on the web. The text files were updated by Fountain to HTML4 in 2012. The affixes were taken directly

---

18<http://academic.uprm.edu/~sbischoff/crd_test/affix_list/>

from Reichard's grammar and are simply listed in alphabetical order in categories that correspond to those in Reichard's grammar.

Each entry in the affix list contains a link to the original version of that affix's entry found online in Reichard's grammar at the Internet Archive.[19] The entries were transliterated into the Salishan and Tribal orthographies by Bischoff and Yasin Fort (using the process described above), and are followed by the English gloss and a link to the page in Reichard's grammar where each can be found. The affix list is not exhaustive. Time constraints were the primary reason for not including all the affixes found in Reichard's grammar. However, our list does contain over 200 affixes which we believe constitute the overwhelming majority of Coeur d'Alene affixes known. A selection from the affix list can be seen in Figure 8 and the search mechanism is presented in Figure 9.

There are numerous other resources in the COLRC (e.g. audio recordings, a working bibliography, links to various other CRD resources available online elsewhere), and we hope to add more, especially many of the pedagogical resources that have previously been created. Additionally, we hope to improve on what is currently available, including the addition of an updated version of the affix list that is more complete. What we have presented here are the major resources that we think can easily be incorporated into research or educational projects.

Directional Prefixes

ci–	tsi–	'first, before'	page 599 (420)
čic–	chits–	'hither (toward speaker)'	page 598 (412)
tɛ–	te–	'thither'	page 598 (416)
tkʷɛɬ–	tkweɬ–	'go about to definite place'	page 597 (410)
tɛp–	tep–	'on the way'	page 599 (418)
tus–	tus–	'as far as'	page 599 (419)

Locative Prefixes

cɛn–	tsen–	'under, off of'	page 596 (401)
č–	ch–	'on, attached to but not a part of, at a point'	page 595 (395)
čt–	cht–	R notes the meaning of this morpheme is not clear	page 595 (397)

Figure 8 Affix List

Figure 9 Affix List Search Mechanism

3   Best Practices

Here, we first present a broad view of *best practices* taken from Bischoff and Fountain (2013:179-181). In their work, they define the major concepts involved in the development of digital archives and access to the resources housed in such archives. Next, we look at the eight major questions raised by Chang (2010) that guided the development of the COLRC. These are posed as questions to the reader who might wish to develop online language resources in accord with the best practices outlined in Chang (2010), Bird and Simons (2003), and elsewhere. We encourage anyone interested in starting a similar project to explore Chang and Bird and Simons along with the other resources referenced below in some detail before embarking on a project of their own.

3.1   *Best Practices broadly construed*

The sites created in both phases of this project can be characterized broadly as *archives*, in that they are collections of materials that the developers intend to safely store over an extended timespan, and provide appropriate access for the foreseeable future (Austin et al. 2005). They are digital language archives – collections of texts, images, audio files and other artifacts related to the structure and functions of a particular community's language, rendered into electronic files for storage and access via the World Wide Web. Standards of *safe storage* and *appropriate access* for digital language archives have been the subject of much discussion in the literature, and the goal of the COLRC is to as closely as possible follow these standards, or best practices, while still ensuring that the project can be further developed and maintained without the need for an array of programmers or perpetual external funding.

Safe storage practices in digital language archiving involves data backup plans, data security measures and identification of robust and stable digital formats for web display (Bird and Simons 2003). Perhaps the most challenging of these is the identification of appropriate server space and server administration, since these require expensive and complex hardware as well as committed professionals in order to remain stable and available over a span of years. For smaller-scale projects that don't themselves have access to server rooms and database administrators, one solution may be to request support from local centrally supported server environments (for

example, those controlled by a tribal government, director of tribal web resources, or Tribal College), while developing their own protocols to ensure that project personnel regularly back up files, and store back ups in multiple locations.

Appropriate access can be an extremely complex issue for endangered language communities. Language materials can vary widely in their sensitivity, and community members' judgments about the sensitivity of resources can themselves be diverse. Intellectual property concerns can interlace with concerns about cultural sensitivity, personally identifiable data, and community beliefs about the appropriateness of web-accessibility in complex and nuanced ways. Small scale project developers must be scrupulously careful that they are sensitive to all of these factors in the design and implementation of their projects – and there is a growing, and helpful, literature on the topics of ethical, legal, and practical issues of establishing *appropriate access* to language resources (see, for example Anderson & Koch 2003; Boynton et al. 2006; Fitzgerald 2005 and 2009; Lewis et al. 2006; Liberman 2000; O'Meara & Good 2010; Penfield et al. 2008; Tatsch 2004 and Warner et al. 2009, to name just a few).

There is reason to believe that small-scale projects may be better positioned to positively address issues of appropriate access if community members are involved not only in the design but also in the implementation of that design in an online archive. Anyone working in a web-based environment should be aware that this environment renders superficial forms of data security quite easy to implement (for example, web pages can easily be password protected), but that it is very difficult (perhaps, for the small scale developer, at least), and most likely impossible to secure resources against the concerted efforts of 'hackers' and other bad actors in the digital world. Materials that are deemed too sensitive, or those for which intellectual property rights cannot be straightforwardly obtained, *should not be stored in web-accessible digital archives* (although sensitive material can be stored securely in digital format if allowing web-based access to that material is not a goal of the project).

In any such project, developers must also be prepared for community standards of appropriate access to change over time. Mechanisms for responsibly adding appropriate material, and for removing access from material that may have previously been approved for public distribution as these standards develop and change over time, must be established. Working closely with local agencies and experts such as those in tribal language programs and community technology offices is the most promising way to ensure that projects are developed in ways that are sustainable and appropriate.

3.2   *Best Practices: Questions to ask*

In this section we present eight questions to consider when developing online language resources. These are the primary questions we asked at the outset of creating the COLRC. They were developed for a workshop on creating digital online resources held at the American Indian Language Development Institute in the spring of 2011 in consultation with various scholars and community members. The questions resulted from looking at numerous resources but took their shape primarily from the work of Chang (2010).

1. *Do you have a mission statement that reflects a commitment to the long-term preservation of digital information?* Digital formats will change over time, servers will need to be maintained and replaced, HTML tags may change, and numerous other unexpected events may occur. A mission statement can help address such issues and ensure the longevity of your online resources. A mission statement can define partnerships, outline who is responsible for various aspects of your web resources, and how they will be managed and updated regularly. You may use a server provided by some organization within your community such as a language program, an archive, or a tribal college. If you utilize a server outside your community you will want to be sure to read the Protocol for Native American Archival Materials[20] and Chang (2010).

The COLRC contains a Mission Statement that outlines our commitment to the long-term preservation of digital information stored in the COLRC. The resources that interface with the World Wide Web via the various webpages are stored on a secure server provided by the University of Puerto Rico at Maygüez for an indefinite period of time. At the time of writing Indiana University-Purdue University at Fort Wayne is developing a server to be dedicated to the COLRC as well. Additionally, all resources are backed up on computers at various locations and on external memory devices. An advisory board has been created with members serving five year terms to ensure the maintenance and up keep of the resources during that time. The advisory board has also been tasked with developing a plan for the longer term preservation of the resources.

2. *What type of material do you want to place in the archive or on the website?* You will want to have a clear idea what types of material you would like to have available. For example, historical documents like texts, recordings, language lessons, calendars, community newsletters, links to resources, student language projects etc.. You will also want to ask what formats you will be working with. For example, PDF, JPEG, sound files or video. The goals and materials available will greatly guide these decisions. You will also want to familiarize yourself with copyright issues. The Protocol for Native American Archival Materials website link *Laws and Ethical Codes* will take you to relevant resources. Other community members in the language programs, archive, or legal services may be able to help you with this issue. Page 92 of Chang (2010) provides a good discussion of copyright issues.

In the creation of the COLRC the initial goals were to make available the various unpublished manuscripts and the 2009 root dictionary described above. As the project evolved and there was greater collaboration with the Tribal Language Programs and Coeur d'Alene scholars, knowledge of other resources, needs, and possibilities became apparent. Further, as the creators of the COLRC began to explore archives and various language resources additional Coeur d'Alene materials were revealed. This includes items housed at the Internet Archive mentioned above and sound recordings housed at the Indiana University Bloomington Archive of Traditional Music. This led to the expansion of resources included in the COLRC. In short, the COLRC is constantly evolving in terms of what material it contains and the needs of the various users.

20<http://www2.nau.edu/libnap-p/index.HTML>

3. *Who is your desired user or audience?* Who do you envision using your resources? Will these be used in the classroom? Will the resource be something for the entire community to access? If you look at resources presently online, you will notice that communities differ in terms of what types of materials are available and who has access. You will have to think seriously about censorship and accessibility. Your archivist will be an excellent resource when confronting these issues, if your community has one. Keeping in mind who will be using your resources will help in your decision making when building your resources.

The primary audience for the COLRC has been the Coeur d'Alene community, the Tribal Language Programs, and Salishan scholars. In the future, it is hoped that the COLRC can be further developed with a greater emphasis on pedagogical resources to better facilitate the Tribal Language Programs' goals.

4. *Who will work on the creation of the online resource and who will manage it?* There will no doubt be many community members interested in your resources. You will need to consider who you will partner with in your community and the role each partner will play in the creation and maintenance of your resources. Partnerships could vary. You may wish to create a group of volunteers or work with official tribal organizations. Consulting others who have done similar projects might help you best decide how to go about developing these important relationships. The ILAT listserve[21] is an excellent resource for finding individuals with various experiences and expertise when it comes to indigenous languages and technology.

Presently an advisory board consisting of the current COLRC developers has been established. The goals of the advisory board are to ensure the maintenance, further development, and longevity of the COLRC. The board includes a community member, Coeur d'Alene scholars, linguists, and a computer engineer. Board members have agreed to five year terms and have been assigned particular tasks with specific goals to meet during that time frame to ensure appropriate management and longevity of the resources.

5. *Will people be able to find your website online?* You will want to consult your tech-support staff to help you determine how best to make your site turn up in web searches or do a web search to find out how to best make the website discoverable: If that is your desire. There are a number of sites you can link your site to in order that others may find it. For example the Native Languages of the Americas[22] website is a well known place for links to tribal language resources.

The COLRC can be located with familiar search engines such as Google or Bing. In addition, links to the COLRC can be found on various other relevant sites, further facilitating discoverability for the COLRC. Also, the developers have actively shared the COLRC with the Coeur d'Alene community and various other groups and communities in order to make its presence known (e.g. at various national and international conferences and at the American Indian Development Institute 2013 Summer Session).

21<http://www.u.arizona.edu/~cashcash/ILAT.HTML>
22<http://native-languages.org/>

6. *How will you deal with technological change?* Formats for online and digital resources can change. For example, you probably no longer use floppy disks. You will want to consult with tech-support to develop a plan for when the time comes to change formats for material in your archive if your community has such support in the schools, government or council offices.

One of the tasks of the COLRC advisory board is to address relevant technological change in a case-by-case manner in each of the yearly reviews.

7. *Do you have enough people and resources to create and maintain your online language resources?* When creating your partnerships you will want to get firm commitments and develop clear responsibilities for all participants. You will want to be sure you have the human, technological, and financial resources to not only make your project happen, but to ensure its longevity.

In the initial stages of the COLRC development when it was only Bischoff and Yasin Fort in consultation with the Tribal Language Programs, there were not enough human, financial, and material resources to properly maintain and develop the original site further. However, there will always be concerns regarding the long term availability of human, financial, and material resources. The hope is that with an advisory board issues of resource needs can be addressed as they arise in a fruitful manner and that new relationships might be developed to help ensure long-term stability.

8. *Do you have your resources backed up?* Do you have a disaster plan in case the server your materials are on dies? You will want to back up all your materials in a variety of formats and on a variety of devices (for example a desktop computer, external memory device, CD, another server). Ideally, you may wish to form a partnership with another community where you allow each other to back up material on one another's servers. Again if possible, speak with your tech-support and archivist to determine the best means of preparing for disasters that might put your resources in jeopardy.

The resources that comprise the COLRC and that make those resources available via a web interface are stored on three servers in different geographic locations. In addition, said resources are backed up on a number of computers and external devices. A future goal is to ensure that all the resources found in the COLRC are deposited into other digital archives (excluding those that already are, such as the resources currently stored at the Internet Archive), such as the Internet Archive as it is impossible to fully ensure the longevity of the COLRC. A further goal is to ensure physical copies of the resources found at the COLRC are deposited in relevant *brick and mortar* archives.

Besides the work of Chang (2010), we have found that the Administration for Native Americans' *Native Language Preservation: A Reference Guide for Establishing Archives and Repositories*[23] to be another excellent resource for planning and developing digital resources. We define *excellent* here as not only being up to date and authoritative, but also accessible and full of clear examples for the non-expert.

23<http://www.aihec.org/resources/documents/NativeLanguagePreservationReference Guide.PDF>

4   Conclusions

The Coeur d'Alene Online Resource Center (COLRC) project aims to collect and to present in one location, for scholarly and educational purposes, all available Coeur d'Alene language resources. The project has compiled Gladys Reichard's original field notes, manuscripts, and published tales (1943); her grammar (1937); and several of her published scholarly papers: all appear on the COLRC site, either directly or through links to permanent repositories. Other resources accessible through the site are select compilations based on Reichard's original work, such as the stem list and affix list, and other original publications, such as Teit's 1917 collection of tales, Boas and Teit's 1930 ethnology, and Nicodemus' 1975a Coeur d'Alene dictionaries as interpreted by Lyon and Greene-Wood (2007). Links are also provided to online resources such as the Coeur d'Alene Tribe's official website and their Language Program pages, Lyon's publication of Nicodemus' card files in the *Northwest Journal of Linguistics*, and Montler and Doak's site where a grammatical sketch appears, and where work on text analysis and a corresponding dictionary are continuing. Other materials will be added as they become available, and as permissions are granted.

All of the data presented on COLRC were brought together following the best practices outlined in current works on data resources (Chang 2010; Bird and Simons 2003). Some of the issues we encountered in making decisions on annotation and presentation have been discussed here, and we would like to encourage others to follow our model in bringing multiple resources together for the use of native language communities and other scholars. In the past, many of the resources found in the COLRC would have been accessible only to a few, those who had access to specialized library collections. Grass roots projects such as the COLRC have the potential to significantly impact the communities they are designed to serve.

References

Anderson, Jane & Grace Koch. 2003. The politics of context: Issues for law, researchers and the creation of databases. In *Researchers, Communities, Institutions, Sound Recordings,* Linda Barwick

Austin, Peter K., Robert Munro & David Nathan. 2005. Archives, linguists and language speakers. Presented at the annual meeting of the Linguistic Society of America as part of the Open Language Archives Community tutorial sessions, January 6, Oakland CA.

Barthmaier, Paul T. 1996. A dictionary of Coeur d'Alene Salishan from Gladys Reichard's file slips. University of Montana M.A. Thesis.

Bird, Steven & Gary Simons. 2003. Seven dimensions of portability for language documentation and description. *Language* 79(3): 557–582.

Bischoff, Shannon T. & Amy V. Fountain (2013). Grass-roots development of web-based language archives: the Coeur d'Alene Archive. In Bischoff et al. (eds) *The persistence of language: Constructing and confronting the past and present in the voices of Jane H. Hill.* Cambridge: John Benjamins.

Boas, Franz (ed). 1938. *Handbook of American Indian Languages: Part 3*. Columbia University Press

Boas, Franz & James Teit. 1985. *Coeur d'Alene, Flathead and Okanogan Indians*. Ye Galleon Press: Fairfield, Washington. Reprint of the Annual report of the Bureau of American Ethnology to the Secretary of the Smithsonian Institution volume 45 (1927-28) pages 23-396.

Boynton, Jessica, Steven Moran, Anthony Aristar & Helen Aristar-Dry. 2006. E-MELD and the school of best practices: An ongoing community effort. In *Sustainable Data from Digital Sources: From Creation to Archive and Back,* Linda Barwick (ed.). Sydney: Sydney University Press.

Brinkman, Raymond. 2003. Etsmeystkhw khwe snwiyepmshtsn 'you know how to talk like a whiteman'. University of Chicago doctoral dissertation.

Chang, Debbie. 2010. TAPS: Checklist for Responsible Archiving of Digital Language Resources. MA thesis, Graduate Institute of Applied Linguistics.

Doak, Ivy G. 1992. Another look at Coeur d'Alene Harmony. *International Journal of American Linguistics* 58.1:1-35.

Doak, Ivy. 2009. Review of Lawrence Nicodemus's Coeur d'Alene Dictionary in Root Format, Edited by John Lyon and Rebecca Greene-Wood, 2007. AL 51.1:78-82.

Doak, Ivy & Timothy Montler. 2000. Orthography, lexicography, and language change. In *Endangered Languages and Literacy. Proceedings of the Fourth FEL Conference (Charlotte, North Carolina, September 21-24, 2000),* Edited by Nicholas Ostler and Blair Rudes,

Falk, Julia S. 1997. Territoriality, relationships, and reputation: The case of Gladys A. Reichard. *Southwest Journal of Linguistics* 16.1/2.

Falk, Julia S. 1999. *Women, Language, and Linguistics: Three American Stories from the First Half of the Twentieth Century*. Routledge: London.

Fitzgerald, Colleen. 2005. Documenting the documentation: The case of O'odham. Paper presented at the Conference on Endangered Languages and Cultures of Native America, University of Utah, April 8.

Fitzgerald, Colleen. 2009. Pathways for accessing legacy materials in Tohono O'odham. Paper presented at the 1st International Conference on Language Documentation and Conservation, University of Hawai'i at Manoa, March 14.

GOLD. 2010. General Ontology for Linguistic Description (GOLD). Ypsilanti, MI: Institute for Language Information and Technology (LINGUIST List), Eastern Michigan University. http://linguistics-ontology.org/.

Johnson, Robert E. 1975. The role of phonetic detail in Coeur d'Alene phonology. Washington State University doctoral dissertation.

Kroeber, Paul D. 1999. The Salish Language Family: Reconstructing Syntax. U of Nebraska Press.

Kuipers, Aert. 2003. Salish Etymologycal Dictionary. University of Montana Occasional Papers in Linguistics No. 16. Missoula: UM Linguistics Laboratory.

Lewis, William D., Scott Farrar & D. Terrence Langendoen. 2006. Linguistics in the internet age: Tools and fair use. In *Proceedings of E-MELD 2006 Workshop on Digital Language Documentation: Tools and Standards: The State of the Art.*

Liberman, Mark. 2000. Legal, ethical and policy issues concerning the recording and publication of primary language materials. In *Proceedings of the Workshop on Web-based Language Documentation and Description.*

Lyon, John M. 2005. An edition of Snchitsu'umshtsn: volume II: a root dictionary. University of Montana M.A. Thesis.

Lyon, John & Rebecca Greene-Wood, eds. 2007. *Lawrence Nicodemus's Coeur d'Alene Dictionary in Root Format*. UMOPL 20. Missoula.

Mattina, Anthony. 1987. *Colville-Okanagan dictionary*. UMOPL 5. Missoula.

Newman, Paul. 2007. Copyright essentials for linguists. *Language, Documentation and Preservation* 1: 28–43.

Nicodemus, Lawrence. 1973. The Coeur d'Alene Language Project Summary of Objectives and Contents. Presented at the Eighth International Salishan Conference. Eugene, Oregon.

Nicodemus, Lawrence. 1975a. *Snchitsu'umshtsn: The Coeur d'Alene language.* Spokane: University Press. In two volumes: I The grammar and Coeur d'Alene-English dictionary; II English-Coeur d'Alene dictionary.

Nicodemus, Lawrence. 1975b. *Snchitsu'umshtsn: The Coeur d'Alene language. A modern course.* Coeur d'Alene Tribe.

O'Meara, Carolyn & Jeff Good. 2010. Ethical issues in legacy language resources. *Language and Communication* 30: 162–170.

Penfield, Susan D., Angela Serratos, Benjamin V. Tucker, Amelia Flores, Gilford Harper, Johnny Hill Jr. & Nora Vasquez. 2008. Community Collaborations: Best practices for North American indigenous language documentation. *International Journal of the Sociology of Language* 191: 187–202.

Reichard, Gladys A. 1938. Coeur d'Alene. Franz Boas, ed., *Handbook of American Indian languages*. New York: J. J. Augustin, Inc. Part 3:515-707.

Reichard, Gladys A. 1939. Stem-list of the Coeur d'Alene language. *International Journal of American Linguistics* 10:92-108.

Reichard, Gladys Amanda with Adele Froelich. 1947. *An analysis of Coeur d'Alene Indian myths.* Philadelphia: Memoirs of the American Folk-lore Society, v. 41.

Sloat, Clarence. 1966. Phonological redundancy rules in Coeur d'Alene. University of Washington Ph.D. dissertation.

Tatsch, Sherry. 2004. Language revitalization in Native North America – Issues of intellectual property rights and intellectual sovereignty. *Collegium Antropologicum* 28 (Supplement 1):257–262.

Teit, James. 1917. Coeur d'Alene Tales. Franz Boas, ed., *Folk-Tales of Salishan and Sahaptin Tribes.* American Folk-Lore Society.

Thompson, Laurence C. 1979. Salishan and the northwest. Lyle Campbell and Marianne Mithun ed., *The Languages of Native America*. Austin: University of Texas Press.

Thompson, Laurence C. & M. Terry Thompson. 1996. *Thompson River Salishan Dictionary*. UMOPL 12. Missoula.

Warner, Natasha, Quirina Luna, Lindsay Butler & Heather van Volkinburg. 2009. Revitalization in a scattered language community: Problems and methods from the perspective of Mutsun language revitalization. *International Journal of the Sociology of Language* 198: 135–148.