Investigating the role of digital language resources in the ecology of Australian Indigenous languages

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Acknowledgments

- Professor Michael Christie
- Professor Helen Verran
- Professor Jane Simpson
- Dr Susy Macqueen
Outline

- Introduction
- Digital language resources for Australian languages
- Theoretical framework
  - Affordances
  - Boundary objects
- Sites of research
- Research design
Digital tools 'to save languages'

By Jonathan Amos
Science correspondent, BBC News, Vancouver

19 February 2012 | Science & Environment

Facebook, YouTube and even texting will be the salvation of many of the world’s endangered languages, scientists believe.

Of the 7,000 or so languages spoken on Earth today, about half are expected to be extinct by the century’s end.

How Technology Can Save Rapidly Dying Languages

Forty percent of the world's 7,000 languages are at risk of disappearing, but a new movement of apps and online services are trying to keep them alive.
Digital language resources for Australian languages

- Software programs
- Websites and web apps
- Mobile and tablet apps
- Interactive whiteboard resources
- Multimedia CD-ROMs or DVDs
- Interactive dictionaries, wordlists, phrase books, flash cards
- eBooks, computer games
- Radio programs and audio podcasts

(First Languages Australia, 2014)
Examples of digital language resources
Digital language resources for Australian languages

- Language learning
- Language description and documentation
- Language archiving
- Result of a range of aspirations and practices
- Involve various representations of Australian languages in the digital realm
- Digital tools do not contain ‘knowledge’ but simply information (Christie, 2004)
- Assumptions about the nature of language inherent in digital representations
Language ecology

- “the study of interactions between any given language and its environment” (Haugen 1972)
- Reaction to abstract notion of language as monolithic, decontextualised, static entity
- Language as emergent in social activities and practices
Technology as saviour

- “An endangered language will progress if its speakers can make use of electronic technology” (Crystal, 2000, p. 141)
- Over 95% of languages have already lost the capacity to ascend digitally (Kornai, 2013)
- Technology as necessary but not sufficient for language maintenance
- “Apps don’t save languages, people do” (Bowern 2012, Dickson, 2016)
Digital access in remote Australia

- Common claim that Indigenous people are symbolic of ‘digital divide’ in Australia

- Major obstacles
  - Access, affordability, security, skills (IRCA 2016)
  - English literacy, power supply, space (Rennie, Crouch, Wright & Thomas, 2013)
  - Misappropriation, decontextualisation (Dyson & Underwood, 2006)

- Availability doesn’t ensure access or guarantee uptake (Leung 2014)
Evaluation of digital resources

- Funding allocated to creation of new resources (Simpson 2006)
- Little evaluation activity – not required (Saracevic, 2004)

What is being evaluated? How?
- Usability
- Usefulness
- Uptake
- Usage
- Impact

Who is being asked?
Research question

- What role are digital language resources playing in the ecology of Australian languages?
Aims

1. To explore the origins of two digital language resources in order to identify their imagined purposes and the assumptions inherent in their development

2. To tell the story of their implementation and actual uses from different perspectives

3. To elicit responses from different user groups about the affordances and constraints of the resources, and their role in the ecology of Indigenous languages

4. To better understand and support the ways in which digital language resources come to life and are mobilised under Aboriginal authority.
Significance

- Exploring the assumptions about the nature of language and technology inherent in these digital language resources, and evaluating their use in different contexts, will inform future development of digital language resources.
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Theoretical framework

- **Affordances**
  - Based on work in vision and perception in 1970s (Gibson 1979)
  - Affordances as ‘relationships of possibility’ (van Lier, 2007:53)
    - but are independent of the individual's ability to perceive this possibility
  - Humans have the capacity and motivation to alter their environment in order to take advantage of certain affordances to suit them better
Affordances in language

- Language learning as a process of perceiving linguistic affordances and using them for communicative interaction (van Lier, 2000)
- Affordances as potential – not always realised (Aronin, 2014)
- The affordance is not the object itself, but relationship between the user/actor and the object (van Lier, 2000)
Affordances for digital language resources

- Archival – making available
- Emblematic – claiming presence
- Interactional – inviting engagement
  - To whom? Under whose authority?
  - For what purpose/s?
- Constraints
  - Decontextualisation - alienation from the original context of knowledge production
  - Risk of misuse, misappropriation
Copyright and IP concerns

- Mismatch between perspectives on copyright and intellectual property
- Indigenous Cultural and Intellectual Property (ICIP)
  - Not covered under Australian law
  - Only protected when copyright applies
- Challenge of making language resources available while protecting Indigenous rights

(Janke & Quiggin 2005; Janke 1998; Janke & Iacovino 2012; Anderson & Christen 2013)
Boundary objects

- "an analytical concept of those scientific objects which both inhabit several intersecting social worlds ... and satisfy the informational requirements of each of them" (Star & Griesemer, 1989, p. 393)

- "a sort of arrangement that allow different groups to work together without consensus" (Star, 2010, p. 602)
Boundary objects

- Interpretive flexibility allows different groups to share
  - Common meanings
  - Different perspectives
  - Without requiring consensus
- Object inhabits space between social worlds (or communities of practice) – enables negotiation and collaboration without demanding agreement
- Allows coherence across social worlds
- Enables analysis which takes all social worlds seriously
Connecting boundary objects and affordances

- Tiwi elder
- Librarian
- Archivist
- Digital humanist
- Indigenous teaching assistant
- Creator
- Community member
- Turtle lover
- Linguist
- Anthropologist
- Ethno-botanist
- Visual artist
- Emerging reader
- Non-Indigenous teacher in Canberra

(Kerinaiua, 1996)
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- Research design
Sites of research

- Two digital language infrastructures
- My involvement
Living Archive

www.cdu.edu.au/laal

- Digitisation of language materials from the NT
- ARC LIEF project between CDU, NT Dept Education, Batchelor Institute, NT Library, Catholic Ed, ANU
- 50 NT languages

Background

• Bilingual education program in NT from 1973 (Devlin et al, 2017)
• 20+ Literature Production Centres creating resources for bilingual classrooms
• Programs defunded
• Books in many places were being lost, damaged or destroyed
Contents of archive

- Written and illustrated materials from remote NT communities
  - Ancestral knowledge and life
  - Everyday life and contemporary stories
  - Language / literacy teaching – primers, readers
  - Translations from English & other languages
- 3310 books publicly available
- +1500 awaiting permission
- Preservation format (TIFF), presentation (PDF, txt)
Usage of archive

- Designed for engagement and collaboration
- Open access – no login required
- Anecdotal reports of usage
- Who is using the Archive? What are they doing with it?
- Are Indigenous people engaging with it? How?
Digital language resources in LAAL

- Material from 1970s to now
- Textual material – little audio or video
- Original books rarely used in classrooms (Christie 1995)
- Tension of ideologies of knowledge and language as represented in digital archives
- Underlying assumptions of archive developers at odds with those of users and those represented?
- Language resources as boundary objects
Role of archives

- Collect resources and store safely
  - Past-orientation and future-thinking
- Curation and control are political (Derrida, 1995)
- Cultural heritage archives – colonial overtones
- Connections with communities represented
- Call to “design digital libraries that admit alternate futures” (Nowviskie, 2016)
- Archive as collection of boundary objects becomes boundary infrastructure (Star 2010, p.602)
Digital humanities

- Intersection of digital technologies and the disciplines of the humanities (literature, history, philosophy)
- New means of analysing materials
- Creative ways to represent knowledge
- Use of data for corpus analysis
- Tools for visualisation and analysis
Digital Shell

- Address lack of opportunities to learn Indigenous languages at Australian universities
- Difficulties inherent in developing new courses
- Proposal to develop a digital shell
  - used by any language group to share knowledge
  - linguists, educators and language authorities work together
  - identify language materials, negotiate access, authority
- Seed funding from Australian government (Bow, 2017)
Pilot – Bininj Kunwok

- Language family from West Arnhem Land, NT
- Actively involved in language resource development
- Social media (Facebook page, Twitter)
- Kunwinjku materials in the Living Archive
- Mailing list of people receiving “Karriborlhme Kunwok!”
- Call out for volunteer learners
Pilot program 2016

• 4 units of Kunwinjku delivered over 12 weeks
• Videos of Bininj talking about topics
  • Some subtitled in English or Kunwinjku
• Lessons explored details of these topics
  • Skin / kinship systems
  • Grammar and vocabulary
• Audio files for vocabulary, pronunciation
• Reading materials from Living Archive
• WordPress and LearnPress
<table>
<thead>
<tr>
<th><strong>UNIT</strong></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theme</strong></td>
<td>Introductions</td>
<td>Family matters</td>
<td>Coming &amp; going</td>
<td>Karrinahnarren</td>
</tr>
<tr>
<td><strong>Cultural info</strong></td>
<td>Skin systems</td>
<td>Skin &amp; family</td>
<td>Grandparents/grandchildren</td>
<td>Staying safe / showing respect</td>
</tr>
<tr>
<td><strong>Vocabulary</strong></td>
<td>Skin names, verbs, nouns</td>
<td>Kin terms (reference, address)</td>
<td>Kin terms, animals, places,</td>
<td>Kin terms, verbs, nouns</td>
</tr>
<tr>
<td><strong>Useful phrases</strong></td>
<td>Introductions</td>
<td>What do I call you? etc</td>
<td>‘Speak slowly,’ ‘I don’t understand,’ etc</td>
<td>‘Is it OK to go there?’ ‘Who do I ask?’</td>
</tr>
<tr>
<td><strong>Grammar</strong></td>
<td>Basic sentences, 1sg</td>
<td>2sg, 3sg, verbs</td>
<td>Q&amp;A, past tense, plural pronouns</td>
<td>Dual, trial, inc/exc, negative</td>
</tr>
<tr>
<td><strong>Pronunciation</strong></td>
<td>Overview, spelling</td>
<td>Vowels</td>
<td>Nasals, h, retroflex</td>
<td>Stops, r / rr, diphthongs</td>
</tr>
<tr>
<td><strong>Reading</strong></td>
<td><em>Duruk kanan...</em></td>
<td><em>Kkokok wam ..., Kakkak nang ...</em></td>
<td><em>Wurdwurd birriwam ..., Baleh yabok?</em></td>
<td><em>Kkokok dja ..., Yun yikarrme</em></td>
</tr>
</tbody>
</table>
## User Statistics

<table>
<thead>
<tr>
<th>Activity</th>
<th>No</th>
<th>% (of 130)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Introductions</td>
<td>43</td>
<td>33%</td>
</tr>
<tr>
<td>2 Family</td>
<td>27</td>
<td>21%</td>
</tr>
<tr>
<td>3 Come &amp; go</td>
<td>19</td>
<td>15%</td>
</tr>
<tr>
<td>4 Respect</td>
<td>12</td>
<td>9%</td>
</tr>
</tbody>
</table>

### Expressions of interest
- Total: 154

### Consent forms
- Total: 131

### Logged in
- Total: 130*

*I going to talk about these words we use: "mawah", "makkah", "mamam", "kakkak".*
Feedback brings out affordances for learners

• “if you don’t have the language you can’t learn the cultural stuff”
• “It has given me a feeling of connection to the community”
• “it's actually helping me to build my sense of identity as a person, where I fit in here”
• “I think of Amhem Land and Kakadu when I speak it, it's a nice association”
Affordances for Bininj authorities

“I want to learn to read and write Kunwinjku so I can teach my children, the next generation. And Balanda can learn Kunwinjku too, so we can share and work together here at Gunbalanya. And so we can communicate with each other in language. And teach children together, teach them in our language and in English, what they call "both ways learning". Also it can help Balanda to know how to be safe on our country, to avoid sacred or dangerous places, and so we can learn from each other more.” Cheryl Nadjalabumbum
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- Sites of research
- Research design
Research approach

- Ethnography of infrastructure (Star, 1999)
  - “a call to study boring things”
  - Using traditional ethnographic tools (interviews, observations, etc) to study non-human constructs

- Ground-up approach
  - “Uses collaborative knowledge work to generate new methods, new objects, new practices and new worlds” (Christie 2013, p.3-4)
Method

- Critical reflections on practice
- Critical evaluation of Archive and Shell
  - Evaluating the uses of the Living Archive
  - Expanding the Digital Shell
    - Collaboration with language centres and language committees
  - Pilot expanded BK course – feedback
- Ethnographic observations of community practices using and creating digital language resources
Online survey of visitors

- Why did you come here today?
- Did you find what you were looking for?
- How was your experience?
- Transaction Log Data (beyond Google Analytics) (Keegan 2007)
Evaluation tool

• Balanced Value Impact Model (Tanner 2012)
• Framework for evaluating digital cultural heritage projects
Expanding the Digital Shell

• To other language groups
Expansion & extension

- Extend 4 BK units to 12 as full semester course
- Include assessment tasks
- Interaction with Bininj
- Beta pilot 2018/2
- Full delivery 2019/1
- Negotiations with CDU
Ethnographic research

- Visit remote communities to observe and discuss use (or non-use) of digital language resources
- Working with Indigenous authorities relies on their availability and interests
- Boundary objects and ethnography of infrastructure as sources of new insights which take seriously Aboriginal views of language ecology/ies and the role of digital resources
Proposed chapter outline

- Ch 1 – Intro & overview
- Ch 2 – Origins
  - Critical reflection of origins of 2 digital language resources
  - Ethnography of infrastructure
- Ch 3 – Pedagogical uses
  - Uses of LAAL in school & other contexts
  - Pilot and expansion of Digital Shell
- Ch 4 – Uses in Aboriginal life
  - Boundary objects
- Ch 5 – Uses in academic life
  - Digital humanities context – uses of tools
- Ch 6 – Conclusions
Thesis by publication???

- Exploring the Living Archive
- **Copyright and permissions** – JCEL (in preparation)
- Uses of the Living Archive (ASA/ITIC)
- Text, genre and literacy (ACAL conference 2017)
- Evaluation of the Living Archive – (Puliima, LREC 2018)
- Developing a Digital shell
  - **BK pilot project** (ALS 2016, ICLDC 2017, LLT?)
  - Expansion of shell (LDC?)
- Digital language resources as boundary objects
- Affordances of digital language resources for Aust lgs
# Timeline

<table>
<thead>
<tr>
<th>DATE</th>
<th>ACTIVITY</th>
<th>WRITING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb – May 2017</td>
<td>ANU Coursework</td>
<td>Thesis proposal, OLT report</td>
</tr>
<tr>
<td>June</td>
<td>Ethics</td>
<td>BK pilot paper</td>
</tr>
<tr>
<td>July</td>
<td>Prepare fieldwork</td>
<td>Finish copyright paper</td>
</tr>
<tr>
<td>Aug – Sept</td>
<td>Fieldwork</td>
<td>Prepare Archive survey</td>
</tr>
<tr>
<td>Oct – Dec</td>
<td>Conferences</td>
<td>Write up fieldwork/uses</td>
</tr>
<tr>
<td>Jan – Mar 2018</td>
<td>Evaluation of Archive</td>
<td></td>
</tr>
<tr>
<td>Mar – June</td>
<td>Extend BK course</td>
<td>Write up evaluation</td>
</tr>
<tr>
<td>July – Aug</td>
<td>Fieldwork, survey</td>
<td></td>
</tr>
<tr>
<td>Sept – Dec</td>
<td>Pilot BK course</td>
<td>Write up survey results</td>
</tr>
<tr>
<td>Jan – Mar 2019</td>
<td></td>
<td>Write up pilot results</td>
</tr>
<tr>
<td>Mar – June</td>
<td>Roll out BK course</td>
<td></td>
</tr>
<tr>
<td>July – Sept</td>
<td></td>
<td>Write up BK course</td>
</tr>
<tr>
<td>Oct – Dec</td>
<td></td>
<td>Final writing</td>
</tr>
</tbody>
</table>
Limitations

- Non-Indigenous researcher
  - My own biases
  - Privileged, female, educated, middle class
  - Don’t speak the language
- Subjectivity – investment in both sites
- Focus only on two sites
  - Difficulties of generalising to other domains
  - No model to follow
Contribution to knowledge

• By examining two digital language infrastructures, I aim to identify the role of such resources in the ecology of Australian languages
• Evaluation of digital language resources
• Engaging Indigenous and non-Indigenous people in evaluating language resources
• Ethnography of digital language infrastructures
• Creation of new course materials for Indigenous languages
• Methodological approaches to evaluation
References

References

- Dickson, G. (2016, October 6). Taking Indigenous languages online: can they be seen, heard and saved? [The Conversation].
References

• Simpson, J. (2006, November 16). Money - I can’t stop thinking about it [Transient Languages & Cultures].