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## Editorial

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Today's language archives, especially those involved with documentation and endangered languages, exist in a world where there is constant change not only in the technologies we use but also in the methodologies of the fields we serve. As we respond to these changes in technologies and the expectations of us, new opportunities and new problems arise.

The current issue of LAN works within this theme: Dieter van Uytvanck et al discuss the potential for map-based access of language resources to enhance our audience and our effectiveness. Bernard Howard reviews an audio recorder that continues the trend to compactness while maintaining quality and flexibility. On the other hand, David Nathan draws attention to the increasing use of video and raises doubts about how it is currently handled and resourced.

The next issue of LAN will publish further discussion on the subject of video, so please send any responses to that – or any other – matter to us.

*David Nathan, Paul Trilsbeek, Marcus Uneson*

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## Endangered Languages

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### DoBeS Project: Tongues of the Semang

*Niclas Burenhult*

MPI for Psycholinguistics, Nijmegen

The Semang are a cluster of small forager groups inhabiting the rainforests of the Malay Peninsula, and they belong to the scattered and ancient Southeast Asian populations sometimes referred to as 'Negritos'. Their languages belong to the Aslian branch of the Mon-Khmer language family, and roughly coincide with its Northern Aslian subbranch. The number of speakers for each language ranges between 100 and 1,000, and the total number of Semang is estimated at around 3,000. All these languages are endangered as their speakers are becoming increasingly settled and assimilated into neighbouring farming communities. Documenting the languages of the Semang is not only an important end in itself but also a prerequisite for our understanding of both historic and contemporary contact, spread and extinction of languages, cultures and people in the Southeast Asian region. Aslian languages have interesting and unusual features, e.g. rich phonemic systems, a complex productive morphology, peculiar systems of argument-coding, a distinct 'expressive' word class, and rich lexicons.

The DoBeS project 'Tongues of the Semang' was launched in 2005 to document language and indigenous knowledge in the Semang context. The aim of the project is three-fold:

- to survey the current linguistic situation of the Semang communities, providing an assessment of their relationships and degree of endangerment;
- to document and describe the grammar and lexicon of Lanoh, a highly endangered and so far unstudied language spoken by some 360 Semang in the Perak Valley, Peninsular Malaysia; and
- to study and document in-depth aspects of indigenous biological knowledge among the Jahai, a language community of about 1,000 Semang in Perak and Kelantan, Peninsular Malaysia.

The project is run by Prof. Stephen C. Levinson and Dr. Niclas Burenhult (both based at the Max Planck Institute for Psycholinguistics, Nijmegen). The ethnobiological study will be conducted in collaboration with Dr. Frank Wiens (Dept. of Psychopharmacology, Central Institute of Mental Health, Mannheim) and Dr. Jan Beck (Kuala Belalong Field Studies Centre, University Brunei Darussalam, Brunei).

**Suggestions and contributions welcomed at:**  
[LAN@mpi.nl](mailto:LAN@mpi.nl)

**Next deadline for copy:**  
**April 15, 2007**

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# Archiving

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## Digital Video in Documentation and Archiving

David Nathan  
SOAS

At the DELAMAN meeting in November 2006 ([1]) one of the topics discussed was the archiving of video documentation. There are many problems presented by video, from its original shooting, to processing and archiving, and providing access. Two central issues emerge: how video can be appropriately used for language (and music) documentation, and the cost and complexity of video. While definite answers or recommendations could not be reached, some initial directions were suggested.

### Video as a documentation methodology

Video has been widely proposed as a useful medium for language documentation (e.g. Woodbury 2003, McConvell 2003). The reasons put forward are undisputed (particularly in visually-oriented cases such as signed languages and music/dance); nevertheless, they ought not lead to concluding that video provides a complete or ideal vehicle for language documentation. While video can capture facial expressions and other paralinguistic behaviour, and some locational, directional and contextual information, it can only capture what is "in frame". It should not tempt researchers to overlook other equally relevant information such as social roles and histories of participants, and broader settings in time and space ([2]).

Most film-makers who have worked with ELAR tell us that video should be used to "tell a story", rather than to provide some kind of evidentiary corpus. Unfortunately for language documenters, the shape of such "stories" and their genres are relatively unexplored, leaving researchers with little guidance about planning, shooting, and editing, let alone what eventual purpose may be sought of the video material/production. A core problem is that the term "video" is as broad and indefinite as "audio", or "paper"; it does not distinguish the medium from the range of technologies, genres and usages that can be associated with it. For example, a project could aim at producing a completed documentary or educational video, where significant amounts of editing and creativity are required and as little as 10% of the original footage appears in the final product. At the other end of the scale, low quality video clips could be shot and then used as stimulus materials for eliciting audio of spoken narratives which form the

primary documentation material. Different aims will govern the selection of techniques and methodologies for planning, shooting, editing and deploying video.

### The costs

Creating, processing, and storing video is vastly more costly in every imaginable way compared to other media (except perhaps interactive multimedia). It is more intrusive in the field situation (not only for language consultants but also for the researchers' transport, operation, and powering of the equipment). It is ravenously hungry for resources (human and machine) in editing, production, distribution, and storage, because the technologies for digital video are complex, in constant flux, and data volumes are extremely high.

Our DELAMAN archives' current approach to video reveals a conundrum. Like other archives, as a matter of general policy we aim to hold endangered language and music materials of the highest possible quality in order to support preservation and future usages. For audio and video, this includes editing and repurposing, which in turn implies holding high-resolution, uncompressed, well-recorded, material. However, currently, following the lead of DoBeS, we are typically accepting files in MPEG2 or MPEG4 format. Holding uncompressed (or less compressed) video file formats would be preferable, but we do not have the resources to do so. In any case, even highly compressed MPEG files are bulky, so that with fixed or limited resources, we are only able to archive a limited number of hours of video, and, if these hours have to compete for space with text and audio, they do so on an extraordinarily skewed basis.

As a result, the current reality is that the kind of service we can provide for archiving video is qualitatively not the same as that which we aim to provide for all other materials, including text, audio, and images.

### Preparing for the future

Some ways forward can be briefly suggested. The language documentation community (including speaker communities) urgently needs to evaluate and articulate the roles video can/should play, its priority as field activity and documentation outcome, and what level of skills and resources it is willing to acquire and apply. Informed by this discussion, as well as by industries that use video professionally (film, television), additional training of researchers, preferably within undergraduate and graduate courses, should be made available (some DELAMAN archives are already providing basic video training).

Our archives need to work out criteria, policies and goals for accepting video now and in the future, not only because of its very specific needs, because more and more documentation projects are using it, and because video formats are increasing in data size (with the emergence of high definition formats), but also because our current capability with video is inconsistent with broader goals of preservation. Stop-gap measures

might include offering depositors a certain amount of space for storing high quality video (e.g. DV, AVI) where justified (for example, a fully edited/produced quality resource), together with an additional amount of storage space for compressed video (e.g. MPEG2, 4). This would have the benefit of encouraging researchers to be discriminating in their use of video. Another measure would be to recommend physically preserving all master video tapes (and periodically making digital copies) for the short to medium term with a view to re-encoding them in future superior formats. It is unclear whether this should be done on a centralised basis (since facilities are in a better position to provide managed storage conditions and public catalogues) or by depositors (since the resources needed for capturing video are so great that it may depend on the combined efforts of many). The rapid decrease in cost per gigabyte for hard disk storage suggests that depositors should consider local storage for high resolution, uncompressed digital video, especially for materials awaiting editing/production.

Even if video technologies improve greatly in the near future, they can only complement documentation's methodology, expertise and goals for it. The current funding environment, where many researchers propose to make dozens or hundreds of hours of video recordings in bids to secure grants, is fertile ground for addressing these problems but also a disaster waiting to happen. Future users may not thank us for a swathe of poorly shot and edited, highly compressed and barely watchable video material.

## References

- McConvell, Patrick. 2003. Multilingual, multiperson, multimedia: linking audio-visual to text material in language documentation.  
<http://hdl.handle.net/2123/1429>
- Woodbury, Tony. 2003. Defining documentary linguistics. In Peter K. Austin (ed.), *Language Documentation and Description*, Volume 1, pp. 35–51. SOAS

## Links

- [1]: <http://www.delaman.org/meeting2006.html>
- [2]: <http://www.hrelp.org/events/workshops/delaman2006/docs/nathan-video-madness.ppt>

## Using Google Earth to Access Language Resources

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### Introduction

Over the past ten years Geographic Information Systems (GIS) have evolved from a highly specialised niche technology to one that is used daily by a wide range of people. This article describes geographic browsing of language archives, which provides intuitive exploration of resources and permits integration and correlation of information from different archives, even across different research disciplines.

In order to facilitate both exploration and management of resources, digital language archives are organised according to criteria such as language name, research topic, project information, researchers, countries, or genres. A set of such criteria can form a tree-like classification scheme, such as in the MPI-IMDI archive ([1]), which in turn forms the main method of searching and querying the archive resources. Searching for information can be difficult for occasional users because effective use of these search-fields typically requires specialised knowledge.

We assume that many non-specialist users of language resources will search by language name, language family, or geographic area, so that geographic navigation would offer a very powerful search method. We also assume that such users are familiar with maps, and that geographic browsing is more intuitive than browsing classification trees, so these users would prefer to start with a large scale map and then zoom in to find the data that interests them. Therefore, classification trees and geographic maps provide complementary methods for accessing language resources to meet the needs of different user groups.

We selected Google Earth (GE) as a geographic browsing system and overlaid it with linguistic information. GE was chosen because it is available via the web, it has good navigation controls, it is familiar to many web users, and because the overlaid linguistic information can be formulated in XML, making it comparatively easy to interchange with other geographic systems.

### Using Google Earth

Several language archives already offer some kind of geographic browsing, each hosting its own resources and using its own geographic presentation application. Figure 1 shows examples from the ANLC ([2]), AILLA ([3]), Lacito ([4]), and Rosetta ([5]) archives. Their one common feature – the geographic locations of speech communities – provides the basis for diverse resources

**LAN back issues available at:**  
<http://www.mpi.nl/LAN>

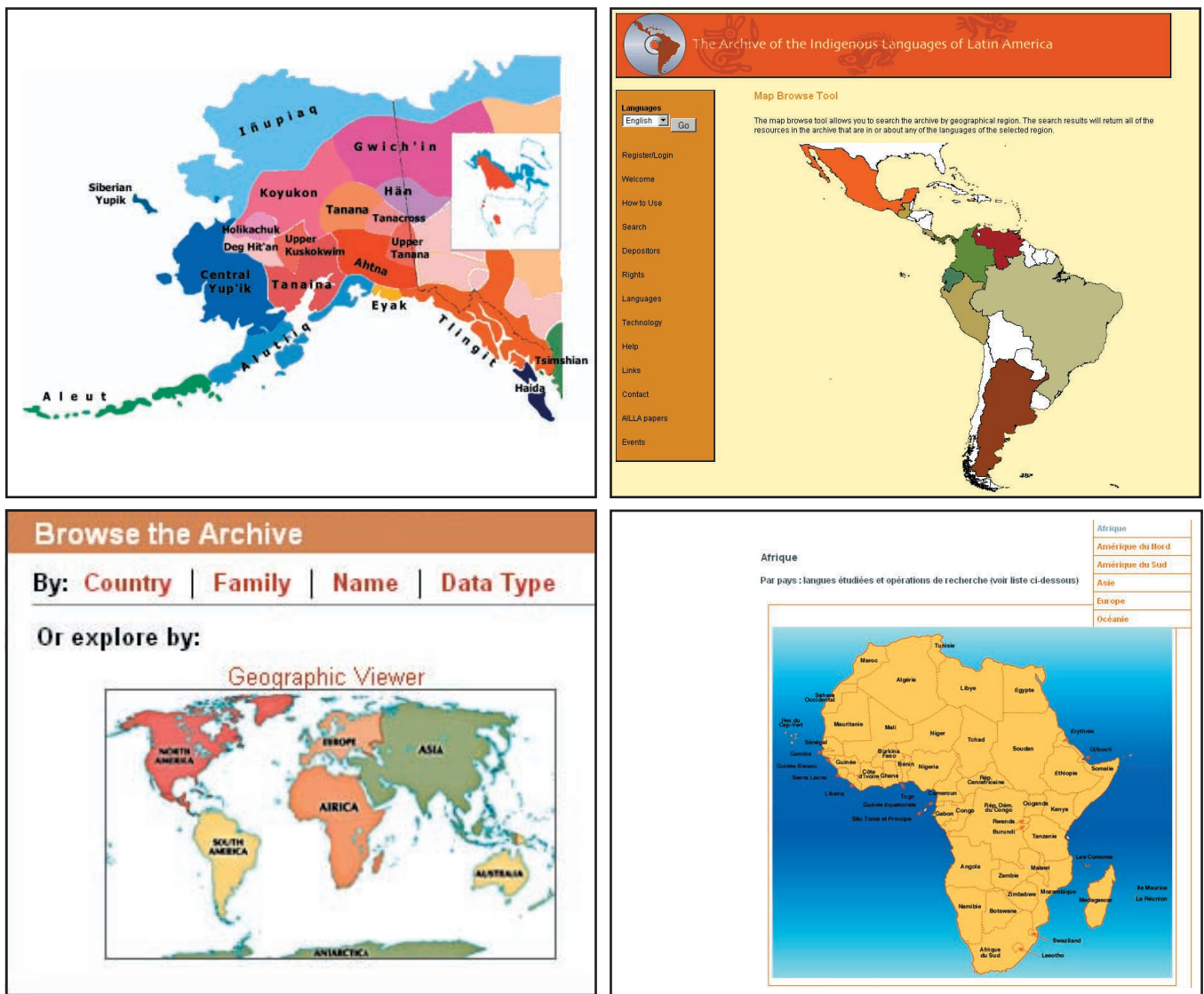


Figure 1. Examples of geographic browsing in language archives. Clockwise from top left: ANLC, AILLA, Lacito, Rosetta

for a particular language to be integrated.

Currently available geographic information systems include ArcGis (a commercial product), GRASS (free, open source), World Wind (free, open source), and web-based image maps. Some of these have disadvantages such as incomplete geographic coverage or the need to install specific plug-ins.

A relatively new player in the world of GIS is Google Earth (GE). We chose GE to integrate language resources for the following reasons:

- GE has access to very high resolution maps which are regularly updated;
- GE uses a user-friendly interface with an attractive rotating 3-D globe;
- GE has an active community developing new tools to work with it;
- GE runs on Windows, Mac OS X, and Linux operating systems;

- GE uses an XML-based format (KML) which facilitates distribution and interoperability with other GIS applications;
- GE is a stand-alone application, not requiring plug-ins;
- GE provides extensive editing of its “placemarks”, which can also incorporate HTML and links to web pages.

Google has, of course, ultimate control over GE, and in general, language archives should not be dependent on proprietary software. However, the dependency is limited, since GE is only used to present linguistic data generated from existing sources. Furthermore, data is generated as XML, making it easy to subsequently transform to representations used in other geographic applications.

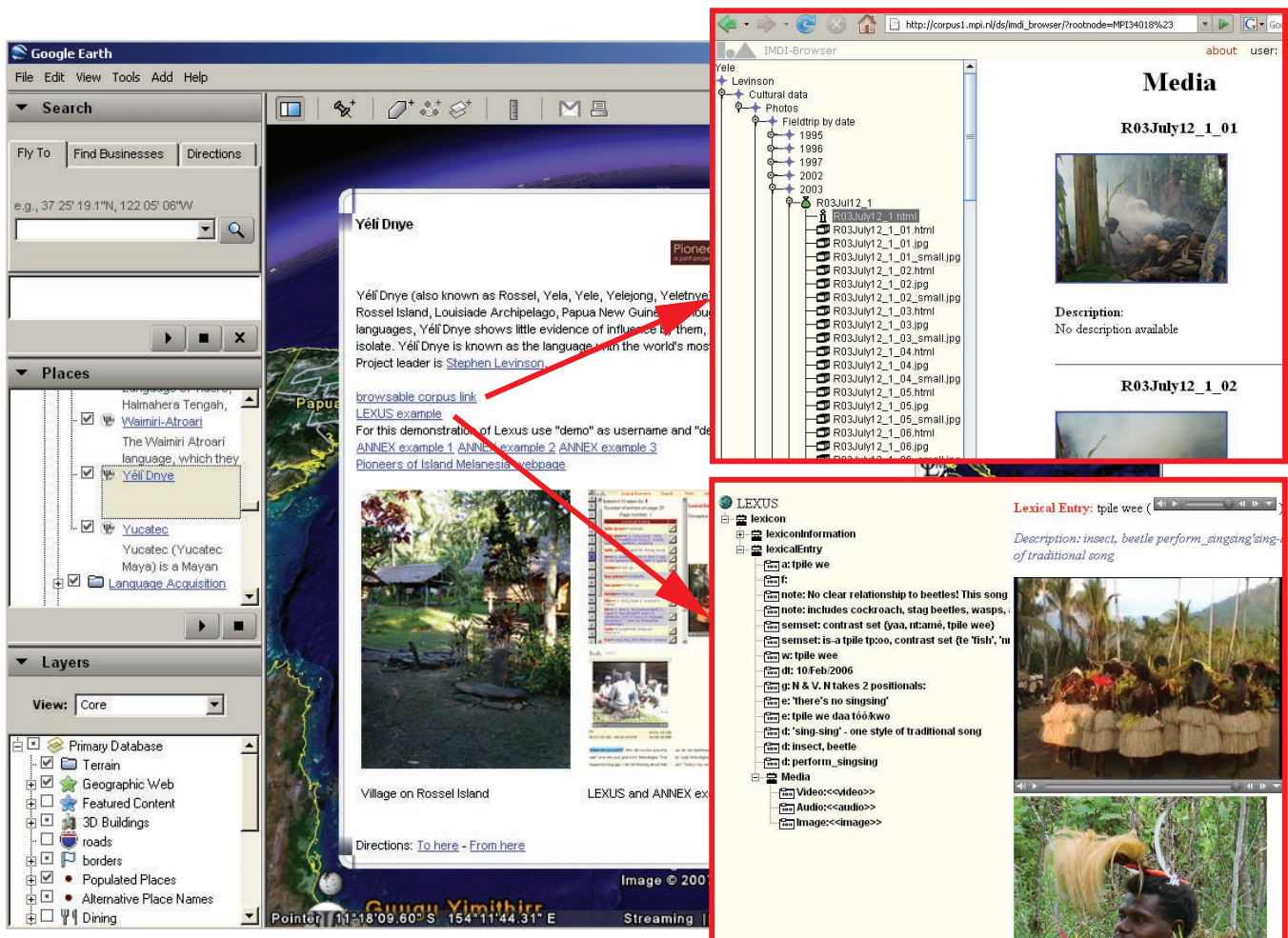


Figure 2. Google Earth user interface, with Yéli Dnye example

More tangible disadvantages include:

- GE maps vary in age (typically 1 to 5 years);
- GE requires broadband for fast data streaming (however, it is faster than some other GIS which use Java applications in web pages);
- GE cannot display all characters;
- GE is US-centric.

### Linking placemarks to corpus nodes

Using GE, we created an overlay containing geographic placemarks for all of the languages and a few projects for which there are top-nodes in the MPI-IMDI archive ([2]). We used different placemark icons to distinguish between the resources of the DOBES, MPI, and other archives. Clicking on a placemark pops up a window which can contain text and links to websites or to various parts of the MPI-IMDI archive. In this way, geographic browsing cross-cuts organisational levels within and across archives to provide seamless access to resources.

Figure 2 shows GE on clicking an MPI placemark for Yéli Dnye (Rossel Island, near Papua New Guinea;

data from MPI researcher Steve Levinson). The popup contains an image as well as links to a LEXUS multimedia lexicon, ANNEX examples (web based annotation exploration), archive data, and a personal webpage.

GE provides an edit mode for creating and modifying placemarks. Placemarks can be edited using XHTML, or plain text to assist users without XML knowledge. An advanced edit mode provides more detailed options. The GE overlay is stored as a zipped XML file (.kmz) which can be unzipped and opened in any text or XML editor.

### A geographic view on a corpus

An alternative approach was taken in collaboration with Niclas Burenhult, who is doing fieldwork in Malaysia and has made recordings in various locations. By connecting these locations in GE it is possible to represent his fieldtrip as a geographical path (the red line) labelled with sequences of placemarks (Figure 3). Each placemark contains a reference to a node in the IMDI corpus. Clicking on a placemark will start the IMDI browser to access the relevant resources (after the user is authenticated). Such an approach could be extended to create other views of a collection of resources, such

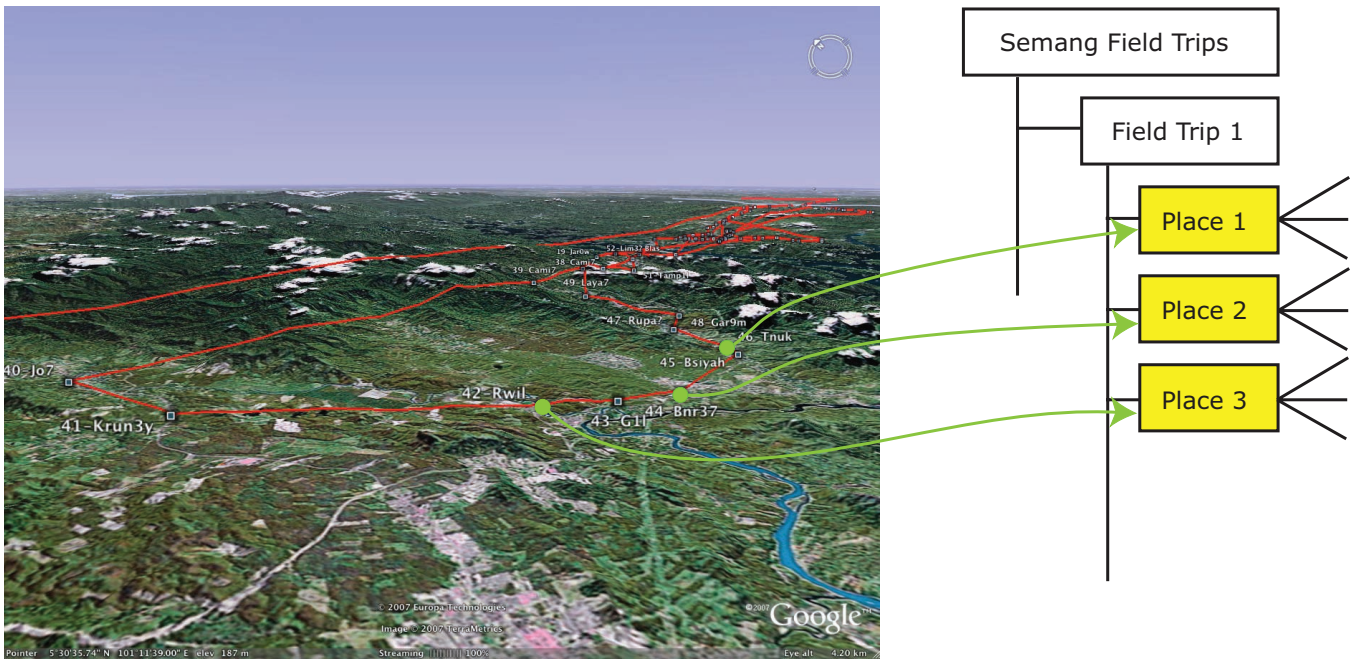


Figure 3: Geographic view on a corpus

as showing areas to indicate language boundaries or graphs to provide demographic information.

### Conclusion

Geographic browsing is not a computational or analytical tool; rather it is a way to visualise and access data via a geographical metaphor. It complements the searching of fields and classification trees to provide a seamless and powerful access path to archived resources. Linking archive resources to placemarks enriches those resources with a simple but useful extra layer of information: their geographic location/distribution. It is more informative to view resources placed on a map than to merely read their latitude and longitude data because relationships between information can be inferred. The geographical paradigm also allows the seamless integration of data across archives based on geographic location. To implement all this, Google Earth provides a powerful but flexible and easy-to-use application.

To be sure, a number of important questions remain:

- Languages are spoken in areas that can be unclear, may overlap, and may be contested; is it appropriate or possibly advantageous to represent language locations by a point on a map?
- In projects that study a number of languages, or that record the same language in different countries, how can the projects and languages best be represented?
- Could placemarks that reveal locations of where recordings were made cause problems, for example in difficult political situations?

- The exact location for many old recordings is not known, so should a “prototypical” place be selected?

Despite these questions, the geographic paradigm offers many new possibilities. We have started to use it and believe that it will be widely adopted.

### Note

Readers who wish to have placemarks added to the MPI GE collection or have comments about the current MPI placemarks, please contact [Alex.Dukers@mpi.nl](mailto:Alex.Dukers@mpi.nl).

### Links

[1]: <http://corpus1.mpi.nl>

[2]: <http://www.uaf.edu/anlc>

[3]: <http://www.ailla.utexas.org>

[4]: <http://lacito.vjf.cnrs.fr>

[5]: <http://www.rosetta-project.org>

[6]: <http://www.languagesites.org>

GE download: <http://earth.google.com>

GE KML tutorial: <http://earth.google.com/kml/index.html>

## Technical Section

### Review: Edirol R-09

Bernard Howard  
SOAS

#### Introduction

The Edirol R-09 is a compact solid state audio recorder. It was released in January 2006 and follows the R-01 (reviewed in LAN No. 6). Its main features are its size, built-in microphones, and up to 24-bit uncompressed audio recording and playback (wave/mp3). Although it suffers from small controls and some possibly flimsy construction, we found it to have a useful battery life and to be capable of making high quality recordings.

#### Construction and controls

The R-09 measures 102 mm high, 61 mm wide and 27 mm deep, and it weighs only 100 g. Its hard plastic body features two built in microphones and various controls for digital audio recording and playback.

On the front (Figure 1) is the illuminated main display panel, which shows playback and recording times, levels etc., and provides feedback for the button-operated menu system. At 25 mm by 15 mm, this display is quite small (those who need glasses for reading will need to use them) but is very bright and sufficiently readable, even in daylight. A peak level indicator is provided as a separate LED. Also on the front is a small button for the finder/menu control (giving access to file selection and the menu system), and other buttons for reverb and play mode.

Also on the front are the recording and playback transport controls, on a four-way rocking panel. This is quite large and easy to control, although the panel rattles slightly (see below).

The left side has the power switch, input level up/down buttons, and the DC power input socket covered by a thin rubber flap. The buttons' labelling is not very easy to read, being simply formed from the raised black plastic of the body (e.g. see Figure 2), so a user should be

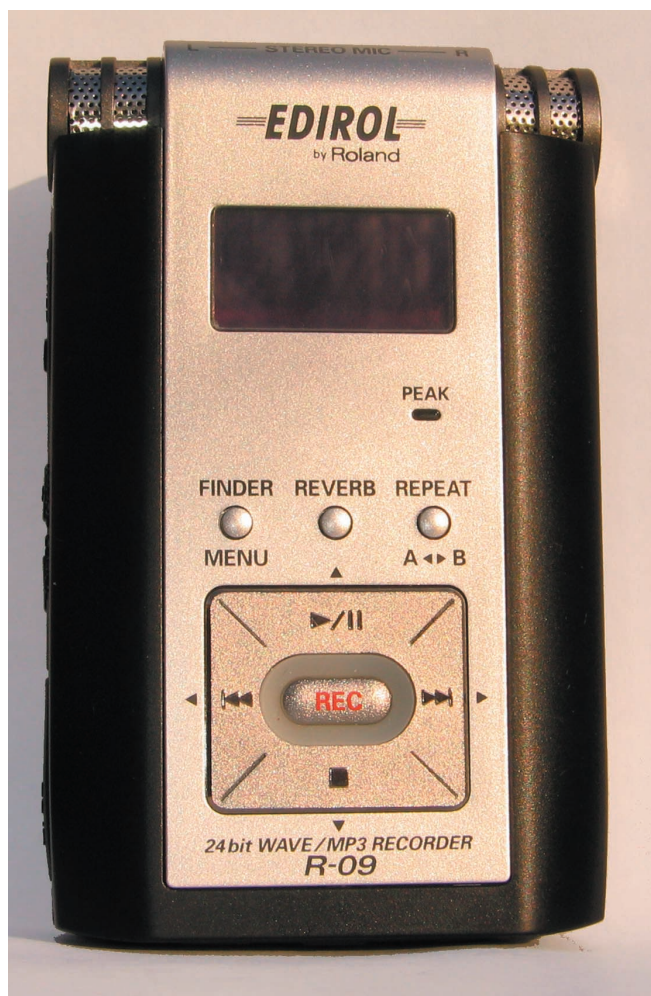


Figure 1. Front view

well-practised with the R-09 before going to recording situations.

On the right side (Figure 2) is a 3.5 mm minijack output socket for headphone and optical out. When an optical link is plugged into the socket, the output is automatically set to optical mode. Output level, like the input level, is via two buttons (up/down). In addition, there is a hold switch which disables the other buttons; this is useful, for example, to prevent the unit being turned off or recording stopped accidentally. On the top of the unit (Figure 3), between the microphones, are 3.5 mm minijack sockets for Line in and Microphone (with



Figure 2. Right view



Figure 3. Top view



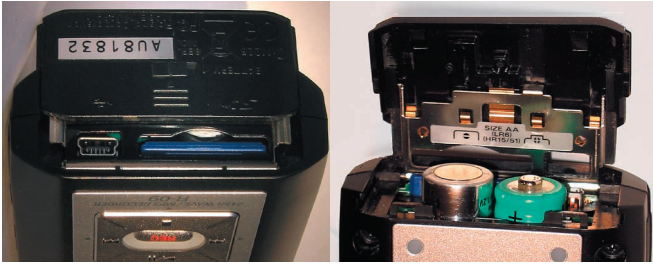


Figure 4. Cover partly open, to reveal SD card and USB socket

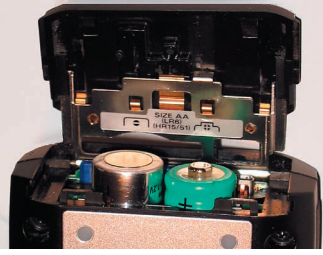


Figure 5. Cover fully open

an option for plug in power as used for some Sony microphones).

Further controls are found on the rear of the unit: AGC on/off, mono/stereo switching for an external microphone, low cut on/off, and microphone gain low/high. These functions are not disabled by the hold switch.

The base of the unit forms the cover for accessing the 2 x AA batteries, SD memory card and USB socket. This cover is a complicated device that both slides and hinges. It is slid half way to access the SD card and USB socket (Figure 4). Then, to access the batteries, a tiny release button has to be operated after which the cover can be slid further open when it then hinges up and reveals the batteries. Opening and closing this cover is tricky, and it looks likely to break, especially since it is likely to get a lot of use in accessing the memory card and/or USB socket (Figure 4–5).

## Recording

The R-09 has an extensive range of recording formats, with 4 different WAV modes and 7 MP3 modes. WAV modes include 44.1 kHz 16 bit (CD quality) and 48 kHz 24 bit, which will appeal to some audiophiles. MP3 modes range from 64kbps to 320kbps (the latter sounded indistinguishable from WAV for voice and music, although WAV should be used for linguistic purposes wherever possible).

We tested recording at 16 bit, 44.1 kHz using the internal microphones, to make a recording of conversation with speakers at varying distances from the recorder. The recording was of very acceptable quality, with some underlying hiss but with clear uncoloured sound and a good stereo image. The internal microphones appear to be better than those of the Marantz PMD 660 or PMD 671 (some of the previous criticism of the Marantz recorders has been directed at the microphone preamps rather than the microphones themselves).

The R-09's internal microphones are omnidirectional, so better voice recordings in most situations will be made by using a good quality external microphone. As was the case with the Edirol R-01, the external microphone preamplifier output is a little low, making it difficult to achieve optimal recording level for some microphones, such as the Sony ECM-MS957, unless

the microphone is close to the speaker's mouth. Nevertheless, we found that recordings made with a Sony ECM-MS957 were perceptibly more detailed than those made with the R-09's internal microphones, with attenuated background sounds due to the microphone's cardioid pickup pattern.

When using its internal microphone, the R-09 is subject to some handling noise. It is no more vulnerable to hand contact/movement than most microphones, but does suffer from a sharp rattle from the main transport control if it is touched while recording.

The R-09 provides for real-time monitoring of recording via the headphone socket, which is useful to pick up problems such as clipping or poor connections. Monitoring may also be optically output to a computer or minidisc recorder, for example, to make a backup recording.

When recording is stopped the R-09 names the track, with a name such as R09\_0001.WAV, R09\_0002.WAV, etc. These names cannot be edited; however if existing tracks are downloaded to the unit, their correct names are displayed.

## Recording quirks

Outdoor recordings using the internal microphones suffered from considerable wind noise. Since the R-09 does not have a foam windshield, the manufacturer's manual suggests using the low cut switch to reduce the wind noise; however this is not effective, and would be better dealt with by purchasing an aftermarket windshield.

Surprisingly, if recording in mono, there is no increase in available recording time, as the R-09 records the same signal to both channels.

We conducted a test to simulate battery failure during recording, by removing the batteries. Results varied: in MP3 96kbps mode, audio was preserved right up to about one second before the battery was removed; in other MP3 modes the last few seconds were lost. However, when recording in WAV mode, only an empty file was saved and the recording was lost. Therefore when recording in WAV mode (as recommended for linguistic field recordings), make sure the batteries have sufficient charge to avoid loss of data.

## Battery life

We found that a pair of fully charged 1800mAh NiMH batteries could power the R-09 for a quite generous 5 hours of continuous recording or nearly 6 hours of playback (2700 mAh batteries lasted 8 hours). Battery life can be extended slightly by using the menu settings to reduce the main screen's display time and brightness.

When its batteries are running low, the R-09 displays a warning approximately one minute before it turns off. For this to work correctly, it is important to set the appropriate menu option to tell the R-09 whether it is using alkaline or NiMH batteries. The R09 cannot recharge batteries, so a separate charger unit needs to be carried.

## Memory card

The R-09 comes with a Roland-branded SD card of only 64MB, but can take a maximum size of 2GB. A firmware update (available at [1]) increases this to 4GB. The recording time, using a 2GB card, ranges from 110 minutes for 48 kHz WAV format to over 60 hours for the lowest bit rate MP3. The manual does not list card compatibility, so take care when buying extra SD memory cards to make sure they will work with the R-09.

## Conclusion

We found the Edirol R-09 to be a good all-round performer. The built in microphones are good in comparison to some of its competition. Its small size, low weight, good battery life, use of increasingly inexpensive SD memory cards, together with its ease of use, make it an attractive choice for fieldwork use. Our fieldworker in Nigeria reports that his R-09 has been working well despite the high temperature and humidity.

Its weakest point is the card/battery compartment cover. It is tricky to operate, and it seems weak. Since it provides access to the memory card, USB and batteries, and the unit cannot charge rechargeable batteries, the cover will need to be opened frequently. With care it may survive; however, if you are buying a second-hand R-09, the cover should be closely inspected.

With careful handling the Roland Edirol R-09 should be an asset to the field researcher. While it is likely to be less durable than machines such as Marantz PMD 660, this is reflected in its price which at the time of writing was £267, as compared to £375 for the larger and heavier Marantz PMD 660.

## Links

[1]: <http://www.edirol.it/europe>

Edirol www: <http://www.edirol.net>

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## Recent Developments on the Video Camera Market

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The world of video cameras (camcorders) is continuously subject to innovation and change; however, occasionally there are periods when these occur at a more rapid pace. During recent years we have seen a number of technological advances that may significantly change

the way people work with digital video. What does this mean for semi-professional video users such as field linguists or anthropologists? In this article I will elaborate on a couple of these developments.

## Hard disk drive (HDD) and solid state camcorders

One important change that occurred last year was the introduction to the consumer market of camcorders that use hard disk drives or solid state (flash) memory as their main recording medium, rather than tapes. The MiniDV tape format is 12 years old and is still the dominant format for consumer camcorders. While camcorders using DVD disks have gained somewhat in popularity during the last couple of years, they have not offered any challenge to MiniDV.

The use of hard disks and flash memory can significantly simplify the whole workflow of getting material into a computer, as we have already seen with digital audio recorders (see articles in LAN 6). Instead of first recording onto a tape, then capturing it on the computer and finally transcoding into a more manageable format, material can now be recorded directly to its final format and then simply and quickly copied over to a computer via USB cable. This saves a lot of time: at least one time the recording duration because the capturing step is not required and approximately once more the recording duration because the transcoding step is avoided. Unfortunately, however, in practice the situation is often not quite that simple, due to the file formats and codecs that are used on some cameras. For example, many models use standard MPEG2 compression but combine it with Dolby Digital or AC3 audio, or package these audio and video streams into a non-standard file format container that may not be handled by common video playback and editing software.

## High Definition (HD) video

While new to the consumer market, development of High Definition (HD) standards began in the late eighties and HDTV was first broadcast in the United States in October 1998. Only during the last couple of years have we seen a rapid increase in TV sets and camcorders on the consumer market that support these High Definition standards. HD video differs from "Standard Definition" (SD) video in its image resolution. Digital HD video nowadays has a resolution of 1280 x 720 pixels or 1920 x 1080 pixels (full HD), compared to 720 x 576 (SD PAL) or 720 x 486 (SD NTSC) pixels. HD video also has a 16:9 aspect ratio, as opposed 4:3 for SD video (16:9 aspect ratio is possible in SD by widening pixels or making use of a "letterbox").

HD video contains much more image detail than SD video due to its higher resolution. Consumer camcorders, however, make some compromises in order to achieve their higher resolution. Below I describe a number of HD video formats.

### *HDV*

HDV is a tape-based HD video format, making use of standard MiniDV tapes. In order to achieve increased resolution on the same tape, higher compression is used. While DV video is compressed by a factor of 5 (compared to its “raw” size), HDV uses MPEG2 compression, which is typically 4 times more compressed than DV. This level of compression is achieved by not storing every individual video frame, but instead storing only one complete frame per group of frames (usually groups of 12) and then storing only the differences across the 11 intermediate frames. Under most circumstances, this will cause little image degradation, although if there is a lot of fast movement the image can become more blurred. In fact, the compression factor of MPEG2 is variable, and some cameras use less compression, resulting in better image quality.

There are some drawbacks. Errors on tapes have more severe consequences for MPEG2 because the frames are dependent on each other. In addition, the audio in HDV is compressed. Unlike the uncompressed linear PCM audio of DV video, HDV audio uses the MPEG 1 layer 2 compression algorithm, a psycho-acoustically based compression algorithm that deletes those parts of the signal that are inaudible to human auditory perception. Therefore, for documentary linguistics, where it is generally not recommended to use compressed audio formats, the HDV format may not be the optimal choice.

HDV cameras for the consumer market are currently produced by Sony and Canon.

### *AVCHD*

AVCHD is an HD video format developed by Sony and Panasonic. It makes use of the AVC (Advanced Video Coding) codec, also called H.264 or MPEG4 part 10. This codec is comparable to MPEG2 but is more efficient, achieving similar image quality but requiring only half the data rate. Audio can be either Dolby Digital compressed (similar to mp3) or linear PCM uncompressed audio; however none of the AVCHD camcorders on the market today offer the latter option. The video and audio streams are then combined into an MPEG2 transport stream. Currently, there is no available software that supports AVCHD, except for the player that Sony bundles with their camcorders. It is expected, however, that some media players and video editing applications will support the format in the future.

Sony produces four AVDHD camcorder models; one with a hard disk, and three that record on DVDs. Panasonic has announced two models as well, one that records on SDHC flash memory cards and one that records on DVDs.

### *MPEG2 HD*

MPEG2 HD makes use of the existing MPEG2 video and audio encoding standards and the MPEG2 transport stream packaging format. It differs from the traditional MPEG2 standards in that it uses a higher image resolution and a bit rate of up to 30 Mbit per second.

JVC recently announced a high-end consumer camcorder that uses MPEG2 HD and records onto a 60 GB hard drive.

### **“Dumbed down” consumer camcorders**

In the past, high-end camcorders on the consumer market were very suitable for semi-professional use, offering many manual controls and features such as external microphone inputs. Today, however, more and more models, even high-end ones, lack these features and are aimed at a simpler “point and shoot” usability. It might be that this is only a temporary phase; in its latest models Sony has re-introduced external microphone inputs. If the “dumbing down” trend continues, however, documenters may be forced to equip themselves with more expensive low-end professional cameras. Unfortunately, these cameras are typically much larger and heavier, making them less suitable in many fieldwork circumstances.

### **Conclusions**

It is difficult to make general recommendations about a technology that is undergoing such major changes. It is unclear which formats will be supported by the major video editing software in the near future, and therefore will truly simplify workflow in the same way that solid state recorders did for audio recording. Those who currently own a MiniDV camera would be best advised to hold on to it for at least another year and then evaluate the current market support for the various formats. For those who do need a camcorder now, there are some points to consider:

- Do you need to record uncompressed sound? If so, your main option at this moment is to use a standard MiniDV camera, although it is not easy to find one nowadays that has an external microphone input. Alternatively, you could buy an HDV camera and use it in “Standard Definition” DV mode instead of HDV mode, in which case it does record uncompressed sound.
- Do you need HD video? For some purposes, the higher resolution of HD video is an advantage, e.g. for capturing gestures or facial expressions, or for making near-broadcast-quality documentations of cultural events. However, if you do not really need it, as in the case of typical linguistic work where

sound is more important than image, you could decide to stick with SD video for some time.

- What recording media are most suitable? Hard disk drives and solid state media are very convenient to use, but require the capability to offload data to a computer when their capacity is reached. If you do not have this capability, it is better to use MiniDV tapes, which are cheap and easy to obtain; you can take as many as you need into the field.

The MPI for Psycholinguistics regularly evaluates new cameras that appear on the market for their suitability for linguistic fieldwork – see <http://www.mpi.nl/DOBES/audio-video/>.

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## News in Brief

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### Language Archive Server Installation in Kiel

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In January, the MPI for Psycholinguistics installed a server with their language archiving software at the Department of General and Comparative Linguistics, Christian-Albrechts-Universität, Kiel, Germany. This server contains the same archiving tools as the MPI archive servers in Nijmegen, making it possible to host and manage a local IMDI archive in Kiel and to make the archived data available via the web.

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