The Sony NEX-VG30 video camera: A review for use in language documentation

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1. INTRODUCTION. The NEX-VG30 is a video camera manufactured by the Sony Corporation beginning in late 2012. It can be considered a semi-professional or a high-quality amateur camera, and can be used as a hand-held camera or placed on a tripod using a standard connector foot. The NEX-VG30's most outstanding features include the ability to: capture high quality images (both as video or still photography) thanks to a large image sensor and a shallow depth of field (DOF); accept a variety of optical lenses; and capture audio in surround sound for potentially more authentic audio recordings of the linguistic situation. Video and still images are captured directly onto a solid-state SD-card, avoiding the common problem of a motor creating noise and significantly simplifying the transfer of imagery to a computer. The camera is shown in Figure 1.

Figure 1. The NEX-VG30EH

This review critically examines this camera, particularly considering the advantages and disadvantages of using it to document linguistic events during fieldwork.[1] This discussion is based on my own experiences using this camera and its predecessor (the NEX-

[1] For a thorough discussion of factors to consider when selecting a camera, I highly recommend Hammond 2011, particularly the section titled 'Choosing a camera.'

VG20) gathered while just experimenting with it[2] and in actual fieldwork situations for my own project documenting the Pite Saami language,[3] as well as from the English-language operating guide for the UK.[4]

Some of the main features of the NEX-VG30 are summarized here, while more details about each of these aspects are found below. The NEX-VG30 records HD video at a resolution of up to 1920x1080 pixels (at a wide-screen ratio of 16:9). The camera has a very shallow depth of field (DOF) (due to the large sensor, particularly in combination with the lens included with the NEX-VG30H/EH versions), replicating human vision with great accuracy. Finally, the NEX-VG30 features an interchangeable lens system, which means that any optical lenses featuring Sony's 'E-mount' system can be fitted to the camera. Practically speaking, just as with any single lens reflex camera, the choice of lens can be made based on requirements of any specific recording situation (assuming one has access to a variety of lenses), such as a zoom lens or a wide-angle lens. Concerning the lens settings of the camera, both fully automatic and fully manual modes are available. The internal microphone can record in either surround sound or stereo, or an external microphone can be attached via a 3.5mm stereo mini-jack connection; in any case, the camera records audio using the Dolby Digital system for compression. Video and still images are captured to a solid-state SD card. The still photography mode essentially turns the video camera into a DSLR camera.

The remainder of this review goes into more detail concerning the camera. The various models of the camera are covered in §2, while §3 deals with the camera ability to use different lenses. Video and audio recording with the camera are discussed in §4 and §5, while §6 presents utilizing the camera for still photography. Practical aspects concerning the interface, power supply, price as well as the camera's weight and bulk are covered in §7 through §10. A summary is provided in §11.

2. CLARIFICATION OF THE VARIOUS VERSIONS OF THE NEX-VG30. The NEX-VG30 comes in four versions: the NEX-VG30, NEX-VG30E, NEX-VG30H and NEX-VG30EH. The versions without 'E' are for NTSC systems, while the versions with 'E' are for PAL systems.[5] This is particularly relevant if you want to play video directly from the camera to a television because the television must operate with the same system (NTSC or PAL[6]) as the camera. In general, only the NEX-VG30 model appropriate for a particular country's standard is available in that country. Otherwise, the raw video can be converted to the appropriate format using compression software or when exporting the video from a video editing program.

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[2] I am indebted to Rogier Blokland and Michael Rießler for allowing me to borrow their project's NEX-VG30 for this review.

[3] Cf. the Pite Saami Documentation Project, funded from February 2013 through January 2015 by the Endangered Languages Documentation Programme.

[4] A PDF version of the UK operating guide is available for download at http://pdf.crse.com/manuals/4440805111.PDF.

[5] Anyone interested in the difference between PAL and NTSC systems can find plenty of information on the internet, e.g. at https://en.wikipedia.org/wiki/PAL-PAL_vs._NTSC.

[6] NTSC and PAL are the two most common video encoding standards. The choice of standard varies between countries.

The models without 'H' come without an optical lens, so an E-mount lens (or an A-mount lens using an adapter) must be procured separately for the camera to work, while the models with 'H' include a Sony E PZ 18-200mm F3.5-6.3 OSS lens; this lens is discussed in §3 below. Table 1 summarizes the four versions of the camera.

Model name	Video standard	Lens included
NEX-VG30	NTSC	no
NEX-VG30E	PAL	no
NEX-VG30H	NTSC	yes
NEX-VG30EH	PAL	yes

TABLE 1. The four versions of Sony NEX-VG30

Note that there are only two significant differences between the NEX-VG30 and its predecessor (the NEX-VG20). First of all, the NEX-VG30 introduces a motorized zoom lens, as opposed to a manual zoom ring on the NEX-VG20's lens. The body of the NEX-VG30 has a seesaw button to control the power zoom, and the lens accompanying the 'H' versions has a power zoom motor and button. See §3 for more on zooming.

Secondly, the NEX-VG30 includes a newer version of Sony's hot-shoe connection (the contact plate on the camera used to mount accessories). The NEX-VG20 featured the 'auto lock' accessory shoe (an older cross-platform standard) for connecting external accessories such as a flash, while the NEX-VG30 has Sony's new so-called 'multi interface shoe,' which can also be used to attach an external XLR microphone via Sony's XLR adaptor kit (not included). See §5.3 for more on using the XLR adapter kit.

3. INTERCHANGEABLE LENSES. One of the main features of this camera is its ability to be used with a variety of optical lenses, much like any SLR camera, for still photography. Any lens from Sony's line of 'E-mount' lenses can be attached directly, while lenses from the 'A-mount' series can be attached using an adapter (not included). This makes the camera particularly adaptable to specific fieldwork settings, assuming the field worker has multiple lenses at his/her disposal. For instance, a wide-angle lens could be used for small, indoor spaces to capture a larger number of speakers, while a standard lens could be used when working with only one or two speakers.

The NEX-VG30H/EH models come with a Sony E PZ 18-200mm F3.5-6.3 OSS lens. This is a very high-quality lens. In fact, the image quality, depth of field and flexibility between wide-angle (18mm) and zoom (200mm) settings[7] are so impressive that I have never been tempted to consider using a different lens. Indeed, in preparing this review, only this lens was taken into consideration. To help clarify, the lens' name is decoded in Table 2.

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[7] For those readers unfamiliar with some of the photography terminology used here, DOF or 'depth of field' is essentially how many layers of an image are in focus, and 'focal length' is basically the same as the zoom setting. The internet is full of resources on such topics, both for professionals and amateurs (Wikipedia tends to be written more for professionals than laypeople); for instance, the first section on www.amateurphotographer.co.uk/how-to/tech-explained/536453/depth-of-field-explained describes depth of field and focal length.

Abbreviation	Explanation
E	E-mount series
PZ	power-zoom
18-200mm	18-200mm range of focal distances
F3.5-6.3	maximum aperture (3.5 for wide-angle, 6.3 for zoom)
OSS	Optical SteadyShot™ image stabilization

TABLE 2. Decoding the name of the lens included with the versions NEX-VG30H/EH

This default lens can be set to change its focal distance (i.e., zoom) between 18mm and 200mm automatically or manually. The power zoom setting has three speed settings on the lens, which control how quickly the focal distance is adjusted. A seesaw button on the camera body can also be used to adjust the zoom, but it does not have various zoom speed settings.

Adjusting the focal length (zooming) invariably creates some unwanted noise during a recording, so it should be avoided whenever possible while recording, particularly if the active microphone is attached to the camera (such as the internal microphone or any microphone attached to the accessory shoe). However, if the zoom is used while filming, the following points should be kept in mind. The power zoom is much smoother than zooming manually by turning the zoom ring on the lens by hand. However, when the power zoom is used, a small motor noise is produced. While this noise is generally not loud enough to inhibit recording clear spoken language at a normal volume and distance from the camera, it is nonetheless a distraction and a sound that is clearly not part of the actual situation being recorded. Manual zooming is in itself much quieter, but the close proximity of the zoom ring to the microphone means that initially placing your hand on the ring typically creates a small noise which is recorded. Furthermore, it is difficult to turn the ring very far without touching the internal microphone, which also creates an unwanted noise on the recording, while potentially slightly moving the camera and creating a distracting movement in the video as well. In general, I would recommend refraining from zooming while the camera is recording, unless the active microphone is not near the camera. With this in mind, the power zoom feature of the NEX-VG30 does not seem to be an advantage when using the camera for documentary linguistics.

The default lens' widest setting of 18mm for focal distance is useful for filming multiple participants at close range. For instance, in an extreme case, I was able to set up the camera on a tripod on the front floor of a small utility truck and record two people sitting on the two front seats conversing, illustrated in Figure 2. The recording was done in a 16:9 ration wide-screen format, and there was not any obvious distortion to the image.

Figure 2. Using the widest setting on the default lens (18mm), two people can be filmed in the front of a utility truck without distortion and from a very short distance.

4. VIDEO RECORDING. The NEX-VG30 records video in '1080p,' also known as 'Full HD,' which means video can be captured at a resolution of up to 1920 pixels wide and 1080 pixels high (at a wide-screen ratio of 16:9).[8] Furthermore, the NEX-VG30 contains an 'APS-C-sized CMOS image sensor,' which allows the camera to have a very shallow DOF, replicating human vision with greater accuracy than do lesser quality cameras without a shallow DOF. In other words, those objects in the background (or even in the foreground) which are not the subject in focus are less in focus, creating a more realistic feeling of depth to an image. With this in mind, the potential for capturing excellent quality (according to current standards) images with this camera is very high, which in turn can increase the accuracy in documenting visual details of a linguistic situation. In my experience, the quality of video recordings captured by this camera are excellent, not only because of the high resolution of the images themselves, but also due to the shallow DOF, which is much better at replicating the world as seen through the human eye than video cameras without a shallow DOF. Even in low-light recordings, the camera performs surprisingly well.

4.1. AUTOMATIC AND MANUAL SETTINGS. There are a number of automatic settings that are set as defaults on the NEX-VG30. The auto focus and facial recognition[9] features are quite reliable, however I recommend learning how to override these features (for instance using the spot focus feature) in case they do not work well in a particular setting. One serious downside to the shallow DOF is that, when the item in focus is not the subject of the recording, then the actual subject of the recording is likely not at all in focus; this is problematic because it nearly defeats the purpose of using video to begin with. The camera

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[8] For those readers unfamiliar with some of the video terminology used here, the internet is full of resources on such topics, both for professionals and amateurs (Wikipedia tends to be written more for professionals than laypeople). For instance, www.videomaker.com/article/15362-video-formats-explained has a fairly straightforward description of video formats.

[9] Facial recognition causes the camera to automatically focus on human faces as opposed to other objects.

is set to automatically configure a number of settings: exposure (sensitivity to brightness), gain (for video; the amount of recording sensitivity concerning background detail) or ISO (film speed for still photography), shutter speed and white balance. These settings can be set manually as well (in both video and still photography modes), thus allowing the camera operator to have full control of the image being captured by the camera. However, adjusting these features manually is not particularly intuitive, and requires some time spent studying the camera's operating guide and practicing its implementation as it involves a variety of buttons, both on the camera body and on the viewing screen. The NEX-VG30 comes with Sony's 'SteadyShot' feature,[10] which only works if the attached lens has this feature as well (the default lens does have it; cf. §3). This feature compensates to a limited extent for unstable movements that occur while filming without a tripod.[11] Although I would recommend using a tripod whenever possible, the 'SteadyShot' feature does an acceptable job reducing shakiness in the video, thus resulting in footage which is more pleasant to watch.

4.2. VIDEO RECORDING FORMAT. Video is recorded by the NEX-VG30 in AVCHD format, which is "a high definition digital video camera format" (Sony Corporation 2012: 100). However, AVCHD is in fact only a file structuring standard, and the actual raw video recordings are located deeper within the AVCHD container folder, which itself is located in the 'PRIVATE' folder on the storage medium (an SD card). Specifically, the original video files are located in the 'STREAM' folder within the 'BDMV' folder in the AVCHD container folder. On Windows 8, the AVCHD container folder is simply displayed in Windows Explorer as a folder like any other folder, which can then be navigated through down to the actual raw video materials. On Mac OSX Mavericks, it is more complicated to get to the actual video files: the AVCHD container folder appears in Finder as a QuickTime file, which QuickTime then extracts the video files from for viewing. However, to access the files directly, you have to choose 'Show Package Contents' for the AVCHD container from the options menu (right click) in Mac's Finder, then again 'Show Package Contents' for the resulting 'BDMV' folder, and this will then show the 'STREAM' folder (among others) as a normal folder, which finally contains the raw video files.

The raw video material is stored as an 'mpeg transport stream' with the extension '.mts.' This is an MPEG-2 format, however not all archives will necessarily accept it. If an archive does not accept .mts files, then the raw data must first be converted into an acceptable format before archiving. There are a number of video format conversion programs available, both as freeware and for sale.[12] In addition, the free media player VLC[13] can play .mts video files directly.

Data are recorded directly onto an SD solid state memory card. An SD card is not included with the camera, and there is no internal memory, so in order to start recording, an appropriate SD card must be acquired. Class 4 or faster is recommended. I have been using a class 10 speed (40-45 MB/sec) SD with 32 GB of storage, and it has always been

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[10] As if to clarify, the glossary in the operating guide defines 'SteadyShot' as an "optical-shift biaxial-linear-drive and hall effect sensor."

[11] When using a tripod, the 'SteadyShot' feature should be turned off.

[12] Cf. Hammond 2011: 76-78 for an overview of 'FFmpeg libraries,' a free open-source infrastructure for transcoding raw video files into a format acceptable across platforms.

[13] The VLC media player can be downloaded at www.videolan.org/vlc/index.html.

reliable for shooting at a 50i frame rate in standard HQ. A test with a class 4 speed (15 MB/ sec) card with 2 GB of storage captured the highest quality video (PS at 50p frame rate) without any problems.[14]

The operating guide includes a table of expected recording time of video for various sizes of SD cards and for various recording modes (p. 64). For instance, more than seven hours of 50i frame rate standard HQ video is predicted to fit on a 32GB SD card. In my experience using a 32GB card for this quality video, this seems quite accurate, and I have never even come close to filling the SD card before a recording was finished. However, I also have my computer with me in the field and I copy film material to my computer and a back-up hard drive as soon as possible, thus allowing me to remove older material from the SD card as needed. For field workers who expect to record more than seven hours without being able to copy the video materials to another medium, it is worth bringing along an appropriate number of empty SD cards. SD cards are very small and lightweight, but SD cards with a large capacity and high speed are relatively expensive, although the prices tend to drop regularly.[15] Note that there is only one memory card slot, so if the current card needs to be removed when it is full, then the recording must be stopped first (removing the card while recording will ruin the recorded data). With more than seven hours of normal recording time on a 32GB card, it should not be difficult to ensure that there is enough space on a card to avoid having to stop mid-recording to swap memory cards.

4.3. CAPTURING VIDEO. Starting to record video on the NEX-VG30 is quick and easy in the fully automatic mode. When the camera has been switched on, it is in video mode by default. To begin recording, there is a button at the back of the camera (easily accessible using your right-hand thumb when holding the camera in your hand), or on the top towards the front of the camera, which is easier to access when the camera is on a tripod. A button on the remote control, which is also included with the NEX-VG30, can be used to initiate recording from farther away. Pushing any of these buttons again will stop the recording. Some aspects of the video can be set manually while filming, but becoming familiar with the manual adjustment of settings is essential as such adjustments are not necessarily intuitive, nor do these resemble similar adjustments on most DSLR cameras. Furthermore, such adjustments involve touching the camera, which has a high potential for creating unwanted noise and movement.

5. AUDIO RECORDING. The NEX-VG30 features an internal surround sound microphone, but is also able to record using an external microphone attached via a 3.5mm jack or an XLR microphone attached to Sony's XLR adaptor kit (not included). Audio is captured in Dolby Digital 5.1-channel surround sound or Dolby Digital 2-channel stereo. The camera features a headphone jack so that headphones can be attached in order to monitor the audio recording, an essential feature for linguistic documentation. The pros and cons of using the NEX-VG30 for recording audio are discussed below.

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[14] For details on the recording times when using a rechargeable battery pack, see §8.

[15] The same SanDisk 32GB/class 10 SD card I bought for EUR 33 (US$ 45) one year ago now costs EUR 25 (US$ 34).

5.1. SURROUND SOUND AND LANGUAGE DOCUMENTATION. The internal microphone can record in either 5.1-channel surround sound or 2-channel stereo (both in Dolby Digital format). Both stereo and surround sound audio recreate the original linguistic/acoustic event with much more accuracy and authenticity than a mono microphone. Particularly when combined with video, multi-channel audio can locate sound in the acoustic space to align with movement in the visual space, making watching a video more realistic when played back through appropriate speakers. While stereo recording has been around for a long time and proven itself to be advantageous for these reasons, the NEX-VG30 provides documentary linguists with relatively affordable access to surround sound recordings. The surround sound microphone can be seen in Figure 3.

FIGURE 3. The two accessory shoes (the 'multi interface shoe' is on the right) and the internal surround sound microphone (without the wind screen) on the NEX-VG30

When shopping for a camera for my project, I was initially enthralled by the idea of being able to record in surround sound, which to me promised audio/video results with even more authenticity, and which were even closer to the original event than when using a stereo microphone. However, this initial enthusiasm has worn off due to the reality of using the NEX-VG30's surround sound microphone.

To begin with, surround sound can only be utilized if a few practical problems are overcome. First of all, if the video material is to be edited, then the editing software has to support surround sound audio (both to import it and to export it).[16] Secondly, surround sound audio requires a set of surround sound speakers for its output to be utilized, and a surround sound speaker set-up is not nearly as common or practical as stereo. Fortunately, most players can instantly convert a surround sound stream to stereo or even mono, so playback is not thwarted if no surround sound speakers are available. With this in mind, it

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[16] I use the video editing program Final Cut Pro X, which supports surround sound; however, being a professional editing tool, it is relatively expensive and has a significant learning curve. Cf. Meakins 2009; this is a review of an older version of Final Cut, but the discussion is valid for the current version as well, despite significant changes to the interface.

seems best to record in surround sound if possible, and convert to stereo (or even mono) as needed, since converting down is not a problem, but converting up from mono or stereo to surround sound is not possible.

One typical use for surround sound is in action movies featuring car chases and explosions and shown in high-tech cinemas, probably featuring 3D video as well, all in order to create a feeling in the viewer of actually being in the situation portrayed on the screen. In theory, this is an ideal that language documentation should strive for as well. The documentary linguistics equivalent would be to create a recording in such a way that the consumer of the recording feels as if he or she were experiencing the actual linguistic situation as it was originally. However, the surround sound in Hollywood action movies is edited to culminate in activities visible in the video imaging as well. In other words, any acoustic signal coming from behind the viewer is directly relevant to the scene in front on the screen. In a typical documentation situation, any audio from an activity happening behind the camera is not part of the linguistic situation in focus for the recording. But the surround sound microphone is sensitive to acoustic signals originating behind the camera as well, albeit to a lesser degree than those in front of the camera. As a result, any movements of the camera operator (including breathing, coughing, sitting down, etc.), who is typically the field linguist as well, are included in the recorded acoustic signal, and recreated upon play back in a surround sound theater. In other words, watching language documentation in surround sound includes hearing, from behind, any noises made by the camera operator, even if these are not particularly loud. In fact, this is a more authentic experience of the original event, but with an added focus on the individual doing the documenting, which may not be desired.

To avoid this, the NEX-VG30 can be set to record in stereo, which relocates the focus of the audio recording to activities in front of the camera. Although noises coming from behind are also recorded, they are no longer located behind the observer in the acoustic space, and they are not quite as present in the recording as when recording in surround sound.

Ultimately, the increase in authenticity presented by recording in surround sound is not really as promising as it might seem for documentary linguistics due to a lack of practical implementation of surround sound, as well as due to a slight increase in focus on audible activities behind the camera which may not be worth focusing on in the linguistic event being recorded. Using the stereo setting on the NEX-VG30 is likely a more reasonable and perfectly acceptable solution.

5.2. AUDIO RECORDING FORMAT. The NEX-VG30 only records in Dolby Digital 2-channel stereo or Dolby Digital 5.1-channel surround sound. Both of these compress the audio signal, and are thus lossy. While the quality of this compressed standard is quite good, anyone at all concerned about collecting lossless, uncompressed audio for acoustic phonetic analyses should use an external recording device able to record in a lossless format (such

as WAV) instead of, or in addition to, using the audio recorded by the NEXVG30.[17] Even if a WAV-version of the audio captured by the camera can be saved using other software, do not forget that any acoustic data from the initial recording event lost due to Dolby Digital compression is utterly irretrievable, and this is a serious disadvantage to this camera for documentary and field linguistics. Indeed, the fact that audio is stored in a lossy format may be the most significant reason not to choose the NEX-VG30 for linguistic documentation. However, for any purpose not related to acoustic phonetic analyses (whether linguistic, purely presentational or otherwise), the NEX-VG30 captures very authentic audio.

5.3. COMPATIBILITY WITH EXTERNAL MICROPHONES. External microphones can also be used with the NEX-VG30. Attaching an external microphone effectively turns off the internal microphone. An external microphone can be attached via a 3.5mm stereo connection located on the camera body's handle, or via the 'multi interface shoe' mentioned in §2. The two accessory shoes are visible in Figure 3.

An XLR-adaptor kit (model XLR-K1M) is available from Sony and is often mentioned as an accessory for the NEX-VG30. Indeed, the 'multi interface shoe' can accommodate this kit, and effectively connects the mono XLR microphone included in the kit, or any other XLR microphone to the camera. The adaptor kit features two audio channels, each of which is fed by an XLR connection. Each channel has separate controls for volume, boost, and whether it is a line feed, microphone or microphone needing phantom power. The kit also comes with a mono XLR shotgun microphone (the Sony ECM-XM1). Unfortunately, attaching the XLR-adaptor kit to the NEX-VG30 is exceptionally awkward, not at all intuitive, and even requires the use of a small adaptor for the device itself.

The ability to use other microphones with the camera should be a significant advantage of the NEX-VG30 in language documentation. However, due to the fact that the NEX-VG30 only records in Dolby Digital, which is a lossy format (as discussed in §5.2), the camera should not be used as the main recording device when high quality, lossless audio is required. In such cases, the NEX-VG30 could be used as a supplementary recording device, mainly used to capture video and the general acoustic soundscape. With this in mind, the internal microphone is more than sufficient for capturing accurate and high-quality (although compressed) audio, and I see no need to use any external microphone attached to the camera for language documentation, as external microphones would be better connected to an external device recording lossless audio.

5.4. MOTOR NOISE. One advantage to the NEX-VG30 is that it records to a solid state medium (SD memory card), thus avoiding the motor noise that plagued previous digital camcorders that recorded to Mini-DV cassettes. However, the camera does have two motors, which are potential sources of unwanted noise. First of all, the power zoom motor is quite loud (as mentioned in §3), although generally not so loud that a person speaking

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[17] However, as Hammond (2011:71) points out, the risk of using a different device to record audio is that it may differ slightly in its time alignment, thus causing the audio recorded by another device to not be in sync with the audio and video recorded by the NEX-VG30; any asynchrony will become obvious in the audio before visual misalignment will be seen. In my experience using an Edirol R-09 audio recording to supplement the NEXVG30's audio stream, the divergence of the time alignment becomes audible after approximately eight minutes.

cannot be understood. Secondly, the automatic focus makes slight adjustments to the lens when movements in depth occur in the scene being recorded. This motor is not as loud as the power zoom motor, and will likely only disturb a discerning ear.

6. THE NEX-VG30 AND STILL PHOTOGRAPHY. Setting the NEX-VG30 to still photography mode essentially turns it into a high quality DSLR camera, which takes 16 megapixel images in 4:3 ratio (the standard for still photography). These are captured in either JPEG or 'raw' formats, or in both simultaneously. The images are then retrievable by accessing the folder 'DCIM' on the SD card, and should be accessible this way on any computer without special software. The lens included with the NEX-VG30H/EH versions (described in §3) captures exceptionally nice images, due partly to the shallow depth of field. The camera can be set for fully automatic mode, or individual settings can be controlled manually as well, albeit not particularly conveniently, as outlined in §4.1. Still photographs cannot be taken while capturing video, although there is an option in the menu to capture a frame from a video as a still image. First and foremost, the NEX-VG30 is a video camera, but with a bit of patience, it can be used as a very nice digital SLR camera as well.

7. INTERFACE. The NEX-VG30 is operated using a combination of buttons on the camera body and/or remote control, and the LCD touch-screen. Most settings are accessible via the touch-screen, although some operations also have buttons on the camera body. The power zoom function can only be operated via either the seesaw lever on the camera body or on the lens itself (if a power zoom lens is being used, such as the one included with the versions NEX-VG30H/EH). Many of the buttons are not particularly intuitive (such as the 'manual' or 'focus' buttons), and some practice is necessary to be able to use them quickly. A number of buttons are only accessible when the touch-screen is open. However, two start/stop recording buttons are conveniently placed, as is the button used to take still photographs.

The buttons on the LCD touch-screen are quite small, and having small fingers or using a touch-screen pen are advantageous. For settings that the operator uses frequently or needs to change quickly during a recording situation, it is best to familiarize oneself with their location within the menu.

8. POWER. When the camera is not connected to wall power, there are two sizes of rechargeable batteries than can be used to provide power. The small battery included with the camera is the Sony NP-FV70. The Sony NP-FV100 rechargeable battery (available separately) significantly increases operational time without plug-in power, but also increases the weight of the camera. On average, the NP-FV70 will last for about one and a half hours, while the NP-FV100 will power the camera for more than three hours, although many factors can shorten this time as well (such as colder ambient temperatures, frequently using the zoom or switching modes, etc.). Either battery is recharged by leaving it in the camera (with the power switched off) while connected to an electrical source. As a result, the camera cannot be used while a battery is recharging, so careful planning is needed to ensure access to the camera regularly during a short period of time. In field sites without a consistent source of power, planning when to use the NEX-VG30 as a camera and when to use it as a battery charger is particularly important. Charging the NP-FV70 takes a bit more than three

hours, while the NP-FV100 requires six and a half hours (Sony Corporation 2012: 16). Alternatively, a separate battery charger can be used instead (not included with the camera).

9. PRICE. The price of the NEX-VG30 may be a further obstacle for some projects. As of late January 2014, the NEX-VG30EH version is listed at EUR 1930 on amazon.de, while the NEX-VG30H version is on sale on amazon.com for US$ 2500. However, shopping around may result in better prices.

10. WEIGHT AND BULK. The NEX-VG30EH (including the power zoom lens) weighs approximately 1,290g (2lb 13oz), and measures 102 x 132 x 294mm (4 1/8 x 5 1/4 x 11 1/2 in). The lens makes up about half the weight. This camera is not as large or heavy as professional cameras, but is certainly larger and heavier than many more affordable handycams. Anyone really concerned about saving space and weight due to restrictions during travel may consider the camera too heavy and bulky, but in my experience, it is not cumbersome at all. The camera bag I use is just large enough to fit the camera with the lens attached (but without the lens hood or eyecup attached) and carry all necessary accessories (extra SD cards, the remote control, electric and video cables, an extra rechargeable battery and a small LCD spotlight); this camera bag fits in a padded Pelican case (carry-on luggage model 1510) with space for all my audio equipment as well.

11. SUMMARY: IMPLEMENTING THE NEX-VG30 IN LANGUAGE DOCUMENTATION.
The semi-professional Sony NEX-VG30 is potentially a very useful camera for documenting linguistic events. However, not all that glistens is gold, and the camera has a few drawbacks that should be considered before deciding to acquire one.

Overall, the image quality is exceptional, but the fact that audio can only be recorded in a lossy format may be a significant enough reason to not use it because the resulting recordings may not be suitable for acoustic phonetic analyses or archiving. Furthermore, the price may prevent the camera from being a practical solution for some projects. The differences between the NEX-VG30 and its predecessor (the NEX-VG20) are not significant for language documentation work, and if a NEX-VG20 can be found at a discounted price, I would recommend getting it as a perfectly acceptable alternative.

Pros	Cons
• very high quality imaging	• audio recorded in a lossy format (!)
• surround sound microphone for authentic audio	• motor noise from optical zoom
• headphone jack for monitoring	• slight motor noise from automatic focus
• solid state medium for quick and easy transfer of recordings	• no direct XLR microphone connection
• solid state recording without general motor noise	• functions either as camera or battery charger
	• relatively expensive

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