Experiments on a technology for spirit communication

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Summary. *In a particular form of Electronic Voice Phenomena (EVP), the spirits communicate by changing the properties of pre-recorded unintelligible speech which is played in the background and re-recorded. Experiments suggest that the spirit entities recover an excitation signal from successive segments of background speech in order to reconstruct an approximation of the original glottal pulses. The amplitude of the latter can evidently be controlled, and the train of pulses is used to energize an adjustable filter simulating a human vocal tract. The result is the production of new words that need not be at all like the analyzed background speech. The simulated vocal tract process may also generate whispered speech in the absence of voiced background speech.*

1. Introduction

Electronic Voice Phenomena, or EVP, is a general term that refers to communication with spirits using some kind of electronic equipment. Recently, some striking results have been reported by a team of researchers in the U.K., and their work is described on a website called "The Amazing Portal". The website clearly explains the methodology employed and some of the results obtained. Questions posed by the experimenter are answered by voices as well as by unambiguous Morse code which is easily converted to text. The voice and Morse code communications are sent by spirit technicians who are also doing their own experiments.

Although electronic equipment is required to produce EVP, it is important to recognize that the physical experimenter is an important component in the communication process. The person provides the energy required to connect to the spirit world, and so her state of being can affect the process. The successes of the Amazing Portal team became possible after two years or more of experimentation.

The team is introduced on the website. Alison Kirkbride, the second author, typically poses questions and records the answers. She is accompanied by three others; Domenic Capaldi who has had a long interest in EVP, and Eric Cole and Peter Willoughby who experiment with reception of the Morse code.

A number of the spirit technicians have been identified as people who have transitioned to the spirit world in the recent past. The names of some are listed on the website. For example, the scientist Thomas Townsend Brown is well-known in some circles for his discovery of the Biefield-Brown effect, which is now suspected to be the basis of a covertly developed aircraft propulsion system. He transitioned to the spirit realm in 1985. Another technician is George W. Meek who transitioned in 1999. Meek is known for his development of audio and visual technology for communicating with spirits. Also on the list are several other accomplished scientists and radio engineers.

The first author expressed his admiration of the obtained results to Alison Kirkbride, and after several exchanges he became involved in the experiments described below. Eventually, the experiments suggested how the observed effects might be produced. As we will see, a strength of the methodology is that the communication need not always be intelligible in order to study how the process works. This is helpful since listeners may not agree on what was said under less than optimal conditions.

2. The communication process

In brief, the spirit technicians communicate by changing the properties of pre-recorded, background sounds while they are in the process of being played and re-recorded.

The Amazing Portal approach places special requirements on the nature of the pre-recorded sounds to be played as background. Currently, the most effective background is unintelligible speech obtained from recordings of a foreign language reversed in time. The recordings are carefully examined to ensure they do not accidentally contain intelligible English words.

The methodology requires two audio devices, one to play the background speech, and another to re-record it. Alison starts recording the ambient sounds in the room, poses her question to the technicians, and starts playing the background file through speakers for about half a minute. Then the player and recorder are stopped. Comparison of the re-recorded data with the original background data repeatedly shows that some of the background sounds are replaced with intelligible English words and phrases. These can often be taken as a reasonable response to the question posed at the beginning. However, one may also hear words that appear to belong to a different context, and these could be interpreted as spirit technicians talking to themselves or each other. Even when the response is unintelligible, it can still be taken as a communication from the spirit realm. This is the only available explanation for why it differs so obviously from the expected background sounds, and is supported by the content of the received messages.

3. Experiments on background quality

The Amazing Portal team, in collaboration with the spirit technicians, had already determined the nature of the background audio that would allow communication to occur. The requirement of speech-like audio in the background offers a way to investigate the mechanics of the communication process. In the following subsections, we vary the properties of the background audio in order to examine how the technicians change it in their attempts to form intelligible speech.

3.1 No background

Years ago, the project began without using any background sounds at all. This condition was replicated recently in order to reproduce those experiments. The resulting recorded file, which should have had no audio content, contained a sequence of irregularly spaced clicks. These sounds, when played back at a quarter of the original speed, appeared to have the quality of whispered speech. The sequence of sounds had the pattern of stress and intonation of normal English speech.

3.2 Current optimal background

The impetus to use reversed foreign speech as background developed from the rudimentary 'clicks' communicated by the spirit technicians who attempted to offer advice. In Alison's words, "*It took a couple of years to finally understand the advice. I asked questions, for example, 'how can we assist you to come through stronger/clearer?' and in the responses heard 'speech' or 'foreign' and 'voice', etc. Over a period of time we took the words we could understand and tried to piece them together. We eventually realized that they were trying to point us in the direction of using a background file*". When reversed foreign speech was played in the background, responses containing voiced speech rather than whispers were obtained immediately. Initially, the responses consisted of only one or two words, but they grew to longer sentences over the last three years.

Many of the responses are amazingly intelligible, while others arouse differences of opinion. This is the current state of the art, and the focus of the research is to understand how the English speech is produced in order to improve the quality even more.

3.3 Tonal background (Spiricom frequencies)

The Amazing Portal methodology is conceptually similar to that developed by George Meek and Bill O'Neil in the form of the Spiricom device. This device produced a droning sound generated by a set of 13 tone generators. O'Neil often spoke while this sound was being generated, and one day another voice from an invisible person began to speak with a very monotone but understandable voice. The spirit behind the voice was identified as Dr. George Jeffries Mueller. Apparently, he used the energy in the generated sound to produce speech. O'Neil and Mueller spoke for more than 20 hours between 1979 and 1982, with Mueller helping to optimize the device. There are a number of conversations to be heard on the World ITC website.

The frequencies employed by the Spiricom device were 131, 141, 151, 241, 272, 282, 292, 302, 415, 433, 515, 653, and 701 Hz. For our experiment, a complex sound was synthesized using tones at these frequencies, each at the same amplitude. The resulting digital audio file was created using a sampling rate of 44100 Hz. The created sound had a droning quality that differed noticeably from the Spiricom recordings. Nevertheless, Alison used it as the background sound in her communication with the spirit technicians. If they were using acoustic energy in the room to construct voiced speech, could they use the combined Spiricom tones to do this?

Three experiments were performed and none produced speech. Nevertheless, the re-recorded Spiricom droning sound differed from the original in each case, and there may have been at least one attempt at speaking a word. The most obvious changes were variations in amplitude. In several places, the amplitude was either raised or lowered to a very low level. An example is shown in Figure 1. Figure 1a is an audio sample showing the constant amplitude of our version of the Spiricom sound. Figure 1b is a re-recording of the same audio which shows how the audio amplitude was modified during the communication attempt.

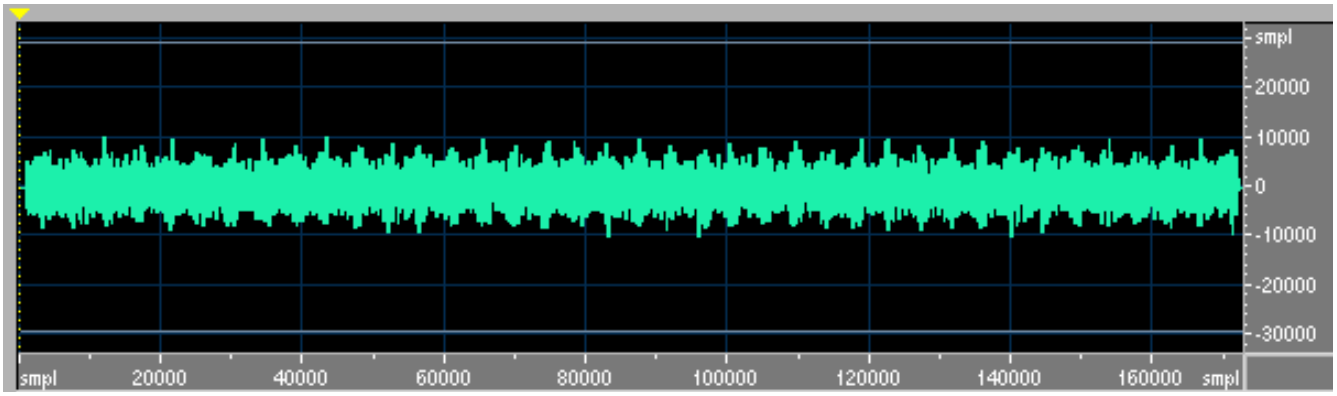

Figure 1a. Constant amplitude in the background audio file.

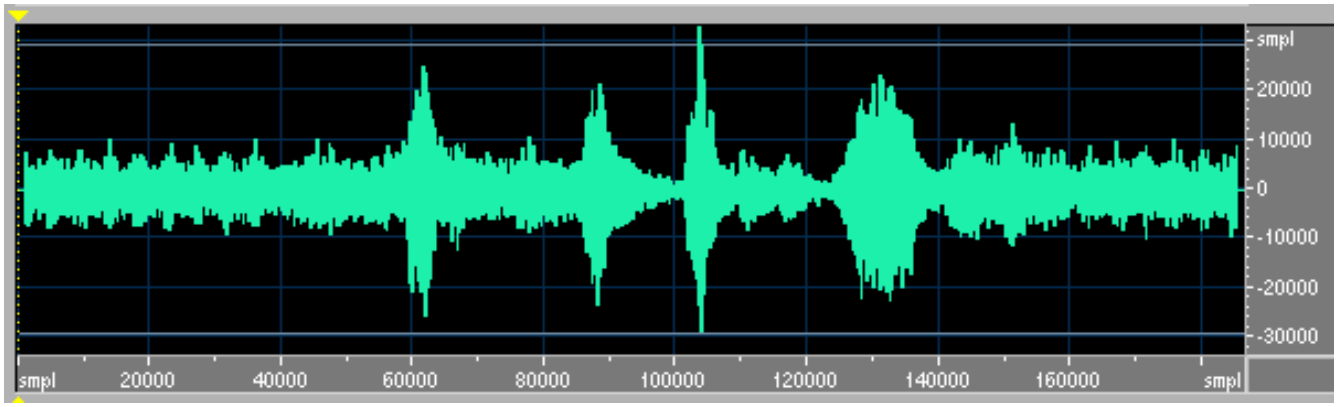

Figure 1b. Variations in amplitude presumably caused by a spirit technician.

There were also subtle changes in the spectrum of the re-recorded audio. The Spiricom tones were created at a constant amplitude, so the corresponding peaks in the spectrogram are always the same everywhere in the original background recording. But in the re-recorded audio, a small shift in pitch can be perceived in a few

places, and this is reflected in a change in the spectrogram. The sample spectrograms in Figure 2 show changes in the heights of several frequency components where a brief change in pitch was heard. This and subsequent spectral analyses used a Fast Fourier Transform with a window size of 4096 samples.

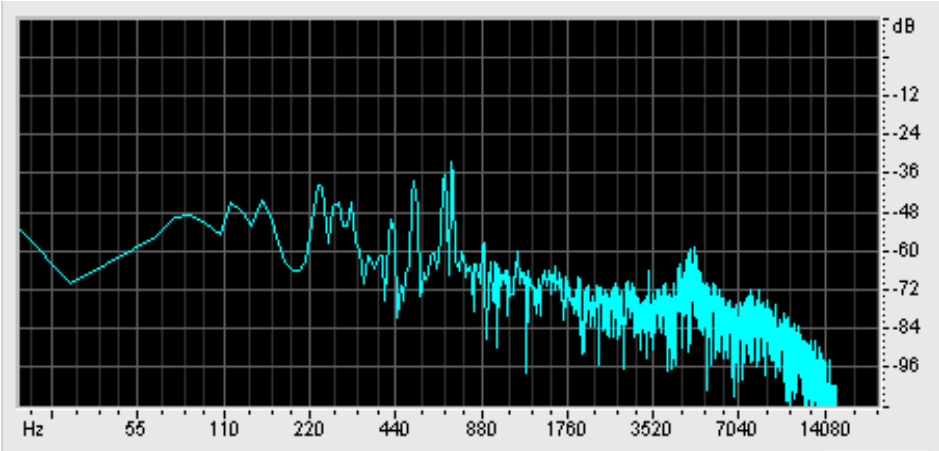

Figure 2a. A spectrogram of the unmodified Spiricom audio data.

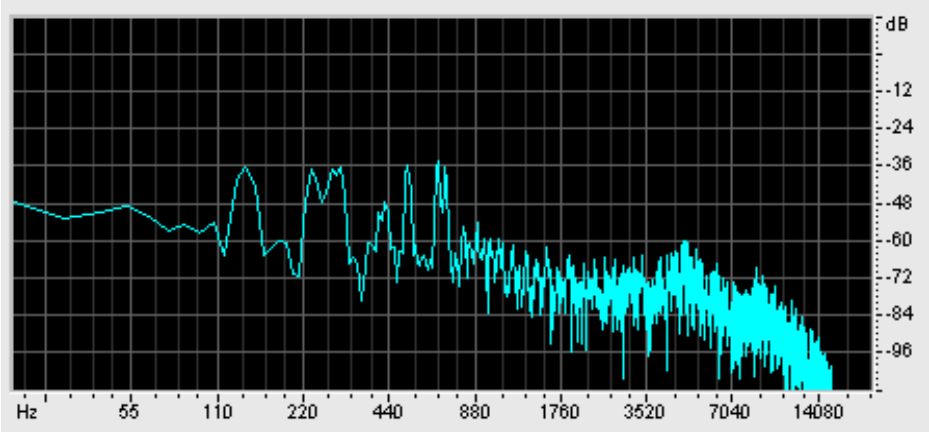

Figure 2b. The spectrogram of the Spiricom audio at a pitch change.

In spite of the relatively low spectral resolution, Figure 2a shows peaks in the spectrogram corresponding to most of the chosen Spiricom frequencies. The spectrogram of Figure 2b was taken from a location where the pitch of the droning sound lowered slightly. The energy of the peak at about 140 Hz is about 10 dB higher than it is at the same frequency before the pitch lowered (Figure 2a), and this could account for the perceived frequency shift. The rest of the spectrogram is relatively unchanged.

Rather large changes to the background audio were the peaks in the envelope noted earlier in Figure 1b. Each of these has a sibilant quality, indicating spectral dominance of higher frequencies. This is confirmed in the spectrogram shown in Figure 3. Recall that the highest Spiricom frequency was 701 Hz. It is clear from comparison with the spectrograms of Figure 2 that the power at frequencies above the highest Spiricom frequency was increased by as much as 30 dB. A 10 dB increase in power is also seen at the upper Spiricom frequencies. Note also that the enhanced lower frequency peak near 140 Hz in Figure 2b is also present in Figure 3.

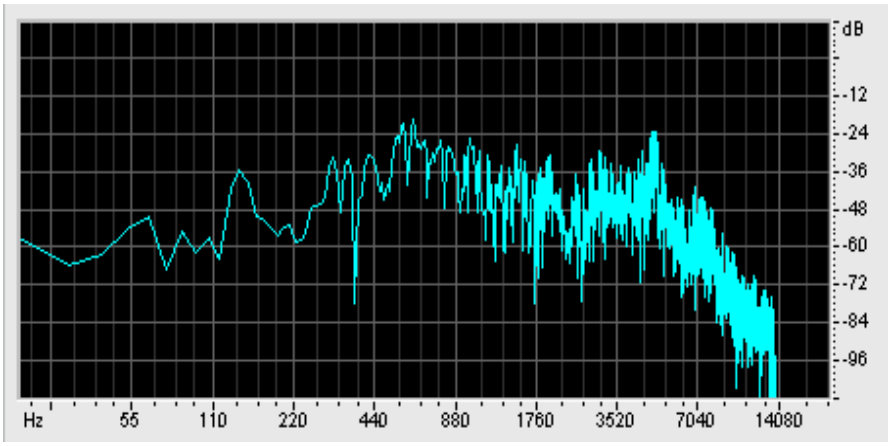

Figure 3. Spectrogram at an envelope peak.

Although the spirit technicians were unable to produce speech using the Spiricom audio as background, they did appear to try. The constant background sound gave us the opportunity to identify what changes they were able to make to the audio signal. We now know they can (1) lower the amplitude of the audio down to the noise level, (2) increase or decrease the energy of select frequency bands, (3) change the level of frequency components in order to alter the pitch perceived by a listener, and (4) introduce sibilant sounds by increasing the level of the high-frequency background noise by as much as 30 dB.

3.4 Phoneme background

The spirit technicians might transform the unintelligible foreign speech into English words by selectively rearranging small phoneme segments. Placing them in a different order might create a new English word. However, careful comparison of the parts of new words to the sounds in the background file found little evidence to support this idea.

Another possibility is that phonemes are changed to other phonemes by shifting the frequency of a formant within the phoneme by a small amount. The Spiricom experiment suggested that they might be able to do this. This idea was tested by constructing a background file consisting of a repeating sequence of a group of three phonemes, a+e+o, extracted from the reversed Latvian audio file. Could the spirit technicians select one of these phonemes and modify it sufficiently to produce a different phoneme? Would they find it easier to shift one or two frequencies a small amount rather than suppress a larger number of frequencies as was required to form phonemes in the Spiricom experiment?

The background consisting of repeating phonemes did not yield English words, but some interesting effects were observed. The original background file had a constant amplitude, but the re-recorded file had a gradually declining amplitude from start to finish. Also, near the end of the recording the audio content had been changed slightly. While the background consisted only of repeated 'a', 'e', and 'o' sounds, the aberration in the re-recording consisted of four sounds: 'o', 's', 'a', and 'e+s'. So the order of the phonemes was scrambled and a sibilant, 's', was added alone as well as combined with the 'e' sound.

The results of the experiment showed that the technicians did not change the frequency of formants within the phonemes, but they did modify the temporal relationship between phonemes in this simple background file. Since the voiced phonemes were the same as those in the background audio and not new phonemes, it seems likely that the temporal grouping of the phonemes was changed from 'aeo' to 'oae'. Further, they again were able to add the sibilant sound as they did in the Spiricom experiment (Figures 1b and 3).

3.5 Filtered background

The results of the Spiricom experiment indicate that the technicians can manipulate amplitudes of speech sounds and can, to some extent, change their spectral properties. But can they also transpose an available frequency to a much different frequency in order to create a sound needed to form a particular word? This question was addressed by filtering the background speech with either a low-pass (LP) or a high-pass (HP) filter. The cutoff for each filter was 1000 Hz, so LP-filtered speech contained no energy above 1000 Hz and HP-filtered speech contained no energy below 1000 Hz. Could frequencies in the background speech below 1000 Hz be transposed to frequencies above 1000 Hz, and conversely, could frequencies above 1000 Hz be transposed to frequencies below 1000 Hz?

Separate experiments were performed with the LP and HP filtered speech. The results were unambiguous in that the responses in the re-recorded speech had the same spectral content as the background speech. This indicates that the technicians did not transpose the energy of one frequency to a much different frequency that was lacking in energy.

However, a followup experiment using the LP-filtered background suggested that the technicians can learn how to produce energy in a part of the spectrum where there is no energy. The re-recorded file contained a number of tonal pulses of 20-30 msec duration at frequencies between 4000 and 5000 Hz. These are well above the 1000 Hz cutoff of the LP filter.

In the second experiment using the HP-filtered background file, the re-recorded file was much louder and sounded distorted as if the audio waveform had been clipped. But many of these high frequency distortions were already present in the lower-level background file, and were merely much more obvious when recorded at the higher gain. The unexpected increase in gain also had the effect of magnifying the very low-level energy below 1000 Hz that had managed to pass through the high-pass filter. There was at least one instance in a sequence modified by the technicians where perceptually significant low frequency components were present (Figure 4).

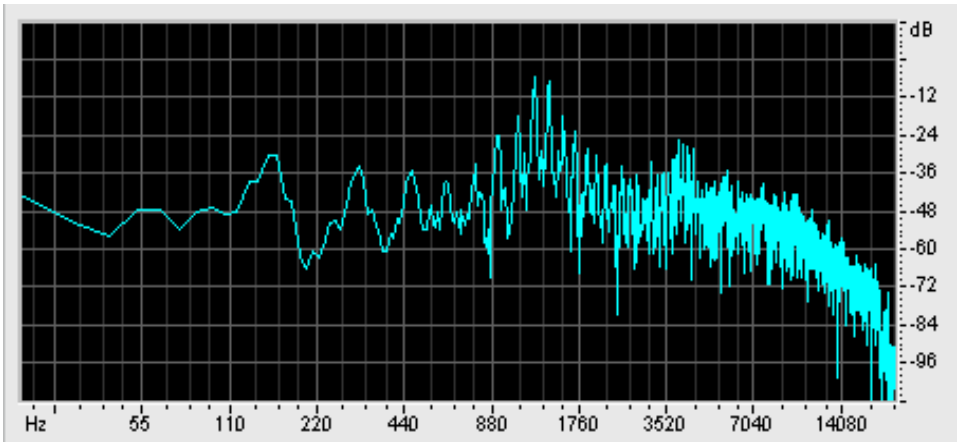

Figure 4. Low-frequency spectral peaks in high-pass filtered speech (1000 Hz cutoff)

In Figure 4, the spectrogram for this voiced speech sound shows significant peaks below 1000 Hz where none were expected. This spectral energy, combined with the high-frequency energy above 3500 Hz, accounts for the perceived broadband buzz with clearly audible low frequencies. Perhaps the spirit technicians had increased the gain in order to enhance very low-frequency energy that was barely present in the high-pass filtered background audio. As we saw in the results of the Spiricom experiment, they appear to have the ability to then increase further the level of the low-frequency band in order to recreate the missing spectral components.

3.6 Level of background

We have seen in both the Spiricom experiment and one of the experiments with a high-pass filtered background that the spirit technicians are able to change the level of the audio being recorded. To test this capability further, Alison played the reversed foreign speech background at a very low volume during a communication session. In this instance, the re-recorded file appeared to contain one response sequence, and it appeared to be at a significantly higher volume than the rest of the audio in that file.

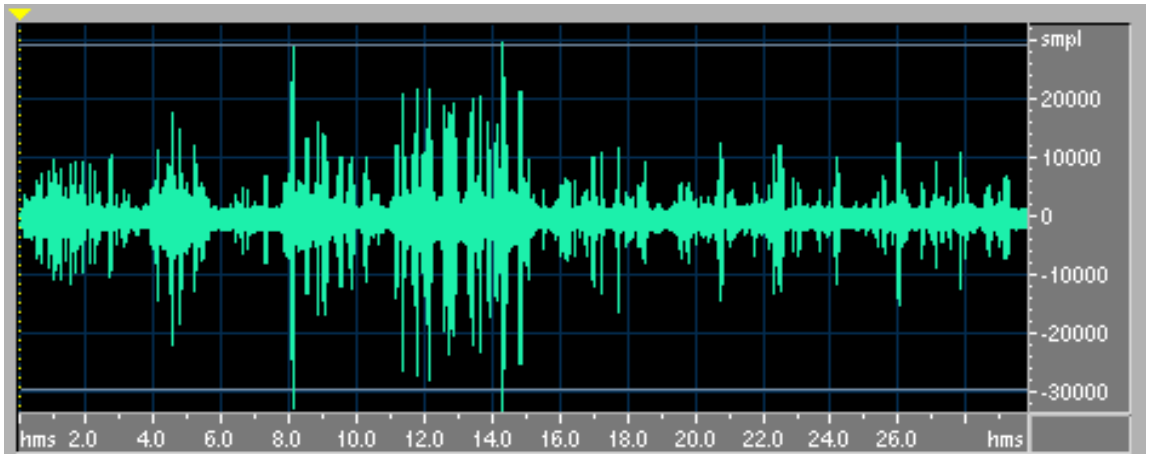

Figure 5. Apparent change in level of spirit technicians' responses.

Figure 5 shows the change in gain of the response between approximately 11-15 sec on the abscissa which also happens to be where new English words were heard. The additional peak at about 8 sec marks another location where some manipulation of the audio content occurred. Here, a very small amount of new data was inserted, and a short sequence of data in the background was just ignored when it should have been re-recorded. Of course, the latter change could not be part of any received message.

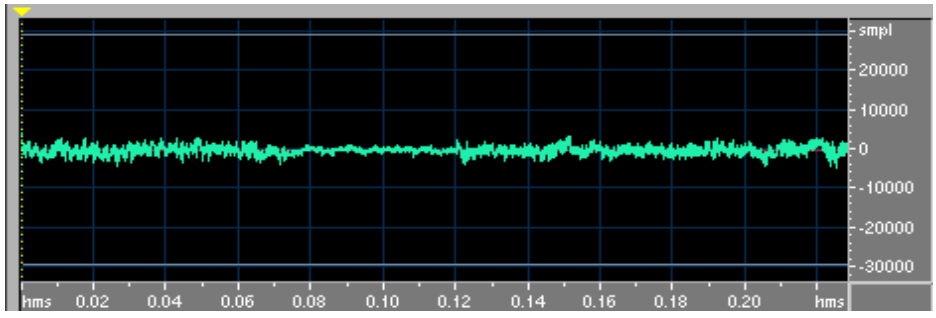

Figure 6. Apparent audio discontinuity at a change in speaker.

The segment between 11-15 sec in Figure 5 seemed to include a change from one male speaker to another. It is interesting that the switch between speakers coincided with an apparent discontinuity in the response data. Figure 6 shows this discontinuity visually at a much expanded scale as a brief drop in the level of background noise. This might be indicative of the completion of one phase of the process and the initiation of another as the

speaker identity changed.

The increased loudness relative to the background was found to persist in a replication of this experiment. Figure 7 shows two intervals where the level appears much higher than the adjacent background audio. The content of the first higher-level burst is a response to the question posed by Alison while introducing the session. She asked, "*Is there anything that you would like to say to William for his assistance in compiling his paper regarding our work?*" The first high-amplitude segment contains the unambiguous and pointed response, "*Help him focus full on the paper*."

The sound of the large excursion at the beginning of the second higher-amplitude segment seems to also exist at a lower level in the background audio, so we may ignore it. The rest of the segment sounds like, "*Mr. Slice, give me an invoice*." However, it is somewhat open to interpretation since '*invoice*' is actually pronounced more like '*onvoice*'. This is an example of an utterance having an unknown context since it seems unrelated to Alison's question.

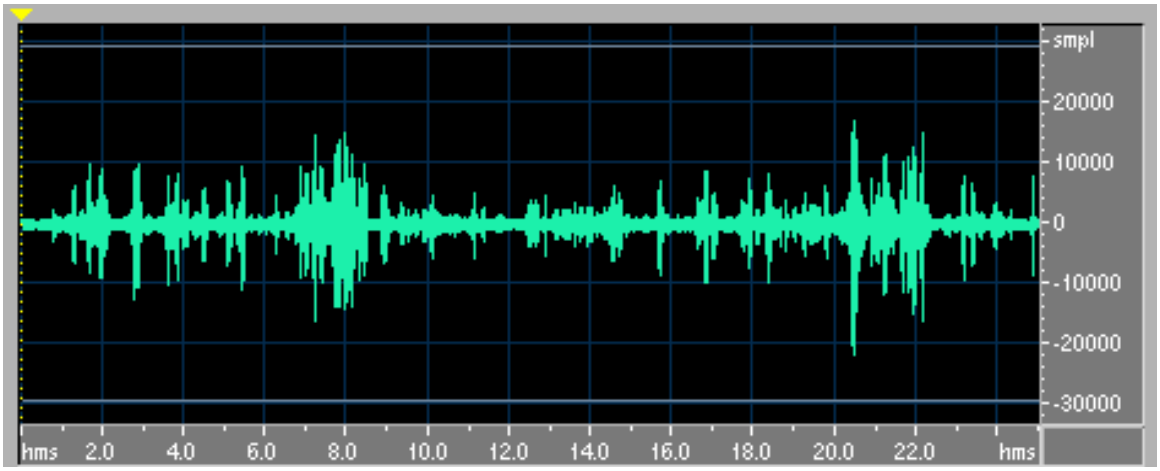

Figure 7. Confirmation that level changes when spirit responds.

In this experiment, the lower level of the background did not seem to interfere with the construction of English words, and the increased energy provided by the technicians nicely identified their locations. Also, the technicians' criterion for loudness calibration does not seem to be based on the level of the background audio. In this experiment, the louder response words were at roughly the same level as in other experiments where the higher background level obscured their position. So keeping the background level low in future sessions should continue to facilitate spotting the communications in the response file.

4. Discussion

The normal human speech apparatus consists of the larynx to produce a sinusoidal excitation signal and its harmonics, and an adjustable vocal tract which filters the signal to create the various speech sounds. During the Scole experiment (Foy, 2008, Treurniet, 2012), sitters often heard an "energy voice" that was independent of the medium's vocal apparatus and could come from any place in the room. A spirit guide said that the energy voice was produced "*via the spiritual counterpart of a set of human vocal chords ... built by the spirit team from the available creative energy*".

The Scole spirit team seemed to have created separate mechanisms to generate and filter the excitation signal to form speech sounds. In some cases, the energy voice produced only a whistling sound, indicating that the

excitation signal was being generated but was not filtered through the resonator cavity. In other cases, the energy voice sounded squeaky but intelligible. Apparently, the excitation mechanism had produced a signal that was too high in frequency but could yet be formed into speech sounds by the filter mechanism.

The results of our experiments can be explained by such a model as well. The experiment with no background audio yielded a response that had all the properties of whispered speech. Since the spirit technicians can produce whispered speech, they must be able to generate an air flow and direct it through a simulated human vocal tract. But, since they are unable to produce voiced speech on their own, they apparently cannot generate an excitation signal in the air flow. This was confirmed when they finally did produce voiced speech using air vibrations made available to them in the form of the unintelligible reversed foreign speech.

It is possible for human audio engineers to construct new voiced speech sounds using the energy in already formed but different voiced speech sounds. An inverse filter method is applied to model the filtering effect of the speaker's vocal tract. The output of the derived filter is then compared to the original speech signal to recover the excitation signal. Then the physical glottal pulses from the larynx are approximated as a function of the excitation signal. We know a vocal tract simulator is available to the spirit technicians since they used it to create the whispered speech. The same simulator stimulated by the recovered glottal pulses would produce new voiced speech that appears independent of the original voiced speech.

The reconstruction and use of the original excitation signal explains why the new speech has spectral characteristics similar to the background audio. The excitation signal recovered from low-pass filtered audio would be lacking the high-frequency harmonics and, conversely, the signal recovered from high-pass filtered audio would be lacking the low-frequency harmonics. These harmonics are not restored by the vocal tract simulator, and so the newly created speech must have the same frequency bandwidth as the background speech.

We can now understand why the technicians were unable to produce speech when audio like the Spiricom tones were played in the background. The inverse filter method applied to these tones would have failed to produce an excitation signal, so production of speech was not possible. They seemed to still be able to amplify low-level, high-frequency background noise in order to create the audible bursts of sibilant sounds. This does not depend on the outcome of the inverse filter analysis.

Alison commented that "*It has been noticed several times that not just an English word but parts of the transformed sentence are heard to jump out during the recording of the background audio*." She would have been able to hear the English transformation only if the speech were reconstructed before reaching her ear and, hence, the recording microphone as well. Thus, the change to the background speech must have been due either to alteration of the electrical signal in the audio player or to changes in the acoustic signal leaving the speaker of the player.

The experiments suggest that the proposed glottal and vocal tract simulations are separate mechanisms like they are in human speech generation. The whispered speech produced without background audio would arise from the smooth flow of air through a simulated vocal tract filter. The modified voiced speech would require a continuously interrupted flow of air through the same filter, generated by a simulation of the larynx. As in the Scole experiment, we can imagine ectoplasmic simulations of these processes which generate and filter the air flow directly.

These two mechanisms are not as readily distinguished when the speech is represented as an electrical signal in the player. Since the replacement speech is so different from the background, it would still need to be generated via models of a larynx and a vocal tract filter. So from an audio engineering perspective, the same operations would be involved as before, including the extraction of the excitation signal from the background speech. In the case of no background audio, the whispered speech could be generated by manipulation of the audio player's speaker cone, either directly or by induction of current in the speaker coil. To minimize the complexity, this would be the preferred means for generating the voiced speech as well.

There may be a way to distinguish between acoustic versus electrical signal generation or modification. In the acoustic model, the whispered speech is generated by filtering the air flow through an ectoplasmic device. In the

electrical model, the whispered speech is generated by manipulation of the player's inactive speaker cone. The occurrence of the latter could be detected by attaching a sensitive accelerometer to the speaker. Movement sensed during the generation of whispered speech would support the validity of the electrical model. The whisper would not have been created via an ectoplasmic filter simulation, and one could argue that neither would the creation of new voiced speech. On the other hand, if the accelerometer does not detect movement of the speaker cone, then the whispers and voiced responses might yet be generated acoustically via ectoplasmic devices.

Of course, we do not know how the spirit technicians might implement any of the proposed processes in real time from where they are. We should expect them to have different abilities and technologies, and possibly more efficient methods.

5. Conclusions

A particular form of Electronic Voice Phenomena involves the modification of unintelligible speech-like sounds to intelligible English speech. The mysterious method producing such results was analyzed via several experiments. The spirit entities appear to apply an inverse filter to successive segments of the unintelligible background speech in order to recover the excitation signal and the form of the associated glottal pulses. The amplitude of the latter can evidently be controlled, and the train of pulses is used to energize an adjustable filter simulating a human vocal tract. The result is the production of a new word specified by the filter that need not be at all like the analyzed background speech.

This model explains a number of effects discovered by the experiments: (1) the production of speech whispers in the absence of background speech, (2) the production of new voiced speech when voiced background speech is present, (3) the addition of high amplitude sibilant sounds, (4) an increase in the energy of individual spectral components of speech, (5) an increased amplitude of the entire amount of recorded data, (6) the similarity of the bandwidths of the background speech and the new speech, and (7) the independence of the level of the new speech from the level of the background speech.

Although the model explains what seems to have been done to produce the phenomenon, it does not offer much insight about how it could have been implemented by the spirit technicians. The processing may be performed on the actual speech signal in the air, or on the electrical analogue fed into a speaker. We may speculate that the necessary modifications to either medium are made in the etheric realm, and that the coupled physical structures follow the modified etheric forms.

6. Bibliography

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Biography

*William C. Treurniet is retired from many years of scientific research at the Communications Research Centre (CRC) in Ottawa, Canada. While at CRC, he collaborated with international partners to develop an International Telecommunications Union standard for objective measurement of perceived audio quality using an auditory model (ITU-R recommendation BS.1387 (PEAQ). He also carried out research on psychoacoustics relevant to the development of advanced audio compression algorithms. His articles have been published in the Journal of the Audio Engineering Society and the Journal of the Acoustical Society of America. After leaving CRC, he applied his research and software development skills to a number of other projects. He participated in speech recognition research and led the successful development of a speaker identification algorithm for mobile phone users. He studied the use of audio feedback (sonification) in computer network intrusion detection systems. He designed and implemented an on-line book review management system for the Canadian Association of Physicists. More recently, he has studied phenomena to do with unidentified aerial objects, crop formations, physical mediumship, spirit energy, and consciousness.