Bernd Sebastian Kamps

Ear²Memory {2016}

To really learn languages on your smartphone!

FLYING PUBLISHER

Executive Summary

The time needed to learn a foreign language is impressive: hundreds of hours to transfer 5000+ words into a human brain and then hundreds more hours to understand people speaking at '3+ words/second'. In addition, language learning seems to be immune to the accelerating and streamlining effects of modern technology – today, like 50 years ago, it takes over 1000 hours to start being fluent in another language.

No technology has been shown to be able to compress this time frame.

Here we present a method of double exposure to a new language through intense listening plus reading. The rationale for simultaneous ear/eye exposure is that incoming signals from the ear are processed in different brain areas than signals coming in from the eyes and both areas need to be trained simultaneously. Our free smartphone app *Ear²Memory* is designed to assist the initial 50 to 100 hours of language learning. The only requirements are:

1. Time (at least 30 minutes every day)
2. Supplementary audio files that you acquire (examples: page 4)

If you dedicate at least 30 minutes to daily *Ear²Memory* exercises, you will rapidly learn more than 1000 words, have excellent spelling skills, develop an intuitive comprehension of important grammar rules and acquire a fairly genuine accent.

Printer-friendly edition

Ear^{2}Memory Summary

Ear^{2}Memory is a Power AB Player for audio files. You'll use it primarily to learn languages. Other applications include the rehearsal of oral presentations (poems at school, shows at colleges, scientific demonstrations at conferences, etc.); dancing and tai-chi; and learning the vocal or instrumental part of a song. We also anticipate *Ear^{2}Memory* to become an instrument in the rehabilitation of stroke patients with memory deficits.

The buttons you'll use most often are the folder (1), the AB (2), the delete (3) and the right arrow button (4). They are all within easy reach of your thumb.

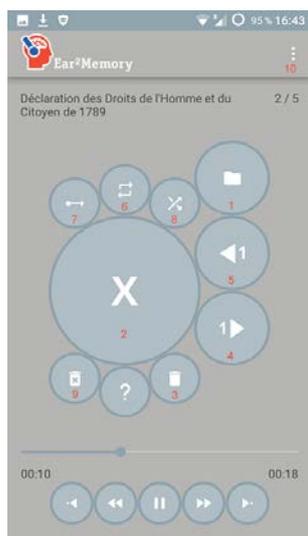Some buttons have important *long-click* functions.

Figure 0.1 – *Ear^{2}Memory* buttons by order of first use

1. **Folder** – Select an audio file.

    If you long-click the folder button, *Ear^{2}Memory* enters the 'minimal mode' which doesn't save the snippets (see below). Long-click the folder button again to return to the 'full mode'.

2. **AB** – Set the start and end points for an *AB snippet* (a segment of an audio, maybe 2, 3 or 4 seconds long) to be repeated in an endless loop. Click a third time to exit the loop.

    Important note: All snippets are automatically saved and will be available whenever you reopen the audio file. After the first 'cutting' session of an audio file, stop using the AB button; at this point use only the arrow buttons (4 + 5) to browse through the saved snippets.

3. **Delete** – Delete the snippet that is currently being repeated.

    It will sometimes occur that a snippet is too long or too short and that you want to cut the snippet again. In these cases, **long-click** the delete button. The snippet is deleted and the cursor is placed three seconds *before* the deleted snippet. Be ready to click the AB button within two to three seconds.

4. **Next** – Go to the next snippet.

5. **Last** – Go to the last snippet.

6. **Repeat mode** – Enter the *autopilot repeat mode* for a single audio.

    Long-click this button to modify the number of loops.

7. **Continuous mode** – At the end of an audio file, *Ear^{2}Memory* goes back to the beginning and starts playing the same audio again; this is *Ear^{2}Memory's* default mode. Activate the *continuous mode* if you want to have *Ear^{2}Memory* play the audio files of a language manual one after another.

8. **Shuffle (random) mode** – Enter the *shuffle mode* to play the snippets of a single audio file in random order.

    Long-click this button to modify the number of loops.

9. **Delete all** – Delete all snippets of the current audio file.

10. **Settings** – Left hand mode, Help

For a detailed description, see page 9.

Welcome to Ear²Memory!

In early 2016 Marie de France asked me how I would use smartphone technology to boost memory in people learning new languages. I answered that the best memory booster is dedicated study – hours every day and mostly with books. I also reminded her that transferring 5000+ words into a human brain takes hundreds of hours; that to understand people speaking at '3+ words/second' is equally time-consuming; and that language learning is immune to the accelerating and streamlining effects of modern technology: Today, like 50 years ago, it takes more than 1000 hours to start being fluent in another language. No technology has shown itself able to compress this time frame.

Marie agreed that language learning is incompressible (like fluids) but she insisted on two points. First, "Can't we motivate people better, young and old alike?" Second, "Can't we help them to concentrate better and work more efficiently?" And, finally, "Let's create a smartphone app for people who are willing to study a language several hours every day. Shouldn't we deliver the best conceivable service to people who are serious about working hard and determined to achieve quick results? And, of course, offer it for free?"

That was the decisive point: Create a product of excellence and make it free to the world! We accepted the challenge and went to work.

'We', well, first and foremost that was my brother Stephan who rolled up his 33-year-old programming sleeves (he started in 1983 with assembler/machine language) and plunged into Android Studio, weeks and months in a row, dawn to dusk. And it was a dozen courageous volunteers aged 9 to 80 who consented to test *Ear²Memory* in daily language learning.

Some results were totally unexpected (page 12).

* * *

Ear²Memory is a smartphone app specifically designed for accelerating language learning. If you know how powerful *Ear²Memory* is and are just looking for a detailed description of the app, please go directly to page 9.

If you are not aware of *Ear²Memory's* potential and want to see why it is so powerful, start on page 3, 'Island of total understanding' and discover that you have two different brain areas that process sound (human speech) and vision (writing). You'll learn that some language manuals are more suitable than others for *Ear²Memory's* 'Power Listening' (page 4) and that the app has two 'language learning modalities', *Full Power* and *Standby* (page 5). After a few weeks, you will be ready for your first preliminary (page 7) and final exams (page 8).

You can read all this in less than an hour. I sincerely wish you the best with *Ear²Memory*.

Bernd Sebastian Kamps

11 November 2016

1. Objective: Island of Total Understanding

Have you ever studied a language in school, but never lived abroad? Then you know that 3 or 5 years of school lessons are not enough to understand foreign people in real life.

We now propose a radically different experience. If you follow our advice, you'll understand the audio files of any language manual (for any language in the world) in 2 to 4 months. We'll help you conquer, perhaps for the first time in your life, a foreign 'island of total understanding'. Imagine being Hercules lifting a hidden mountain ridge out of the ocean: at first, only the highest peaks emerge from the waters – words; then, small islets will be connected by land bridges – sentences; finally, an entire island with a sumptuous landscape will appear. In a few months, you – Hercules – will understand every single word in a one-hour audio of a language of your choice.

You'll see later that comprehension of every word in a one-hour audio is the condition for becoming a 'volcano of speech'. For now, contemplate the extraordinary 'collateral benefits' of the 'total understanding' of one hour of speech in a foreign language:

1. You'll quickly learn more than 1000 words.
2. You'll develop intuitive knowledge of crucial aspects of grammar.
3. You'll boost your spelling skills.
4. You'll end up having a more genuine accent.
5. You'll be familiar with a concise method to learn even more languages in the future.

You don't need to be a neuroscientist to know that your ears and eyes are the only windows through which language enters you brain. All other senses are useless for language processing: you've never sniffed letters, you can't taste words and you won't caress sentences. But being a neuroscientist is helpful to understand that you need to **train both your ears and eyes** when you learn languages because what you hear is processed in a different brain region than what you see. If you put an emphasis on eye training and neglect the ears, you'll soon be able to read newspapers, novels and essays, but you won't understand people who talk to you. Alternatively, if you put an emphasis on ear training and neglect the eyes, you'll end up being illiterate. Both options are unacceptable. From the very beginning of your language training, you must train ears and eyes simultaneously.

In just a few weeks, you'll lay the foundation for a life-long skill that you can extend and improve at any time. Everything seems to be in place for future heroic language exploits. There is one major obstacle: Time!

2. Method: Time

If your parents had lived in a different country, you'd speak today a different language. Children don't care about languages, they learn with equal ease Mandarin, Spanish, English, Hindi, Portuguese, Bengali, Russian, Japanese, German, French, Italian, etc. Children have an outstanding skill for absorbing languages. In particular, they become true native speakers without a foreign accent – a feat almost impossible for anyone starting a language after age 6 or 7.

However, apart from accent-free speech, adults are immensely superior to young children. First, you have acquired the skill of high-speed reading which is a formidable fast lane to language absorption. Second, your brain is home to a huge semantic web of tens of thousands of words, concepts and ideas. While young children still need to build their web, you have it! In a single year you can learn more language than a child during the first 6 years of its life.

The only true obstacle to language learning is **time**. If you don't have at least 30 minutes at least five days a week, I'd recommend that you postpone your language project; the chances of frustration are greater than the chances of success. When you were a toddler, you listened to people talking, quarrelling and rejoicing every day, and no one would have dared to lock you in a dark basement and cut you off from the world of words and language. Ever since you were born, you've heard your native language every day, and that's the scheme you should adopt for your second, third or fourth language: daily exposure for months to come. Language must become your daily bread.

The target for Phase I is the perfect understanding of one hour of speech. This will take you between 60 and 90 hours. Sixty hours translates into 30 minutes every day for four months and 60 minutes for two months. Sixty hours is a hefty investment; however, the complete understanding of one hour in a previously unknown language is an immense satisfaction.

Ear²Memory proposes the following recipe:

1. Work your way through your audio files one by one. (One hour of speech is usually divided into 20 to 40 audio files. If you have no language audio files, we'll show you where to get them on page 4.)

2. Cut every single audio file into snippets of 2 to 4 seconds.

3. Listen to every snippet as long as it takes you (5, 10 or even 15 or 20 times) and

    • Figure out which word corresponds to which sound;

    • Learn the meanings of the words;

    • Memorise the spelling of the words.

    We call this procedure 'Power Listening'. If you listen to every snippet an average of 10 times, the playing time of a 3-minute audio is 30 minutes. These 30 minutes would be the **first session** for that audio file.

4. Over the following days and weeks, do another five to 10 **additional sessions** for every audio file.

All in all, you'll hear and read the words and sentences 50 to 100 times. In language learning, there are no miracles. Power Listening is condensed intellectual power.

3. Results

The intense language learning we call 'Power Listening' (see the details below) produces astonishing results:

1. To understand the sound of a text you have to know all the words. As one hour of audio contains between 1000 and 2000 unique words, Power Listening is an excellent way to **quickly learn new words**.

2. Listening to short portions of an audio file 50, 100 or more times will end up giving you an intuitive knowledge of important aspects of grammar. You'll certainly need to study a more complete grammar later, but many rules you come across will then be already familiar. In any case, **grammar will be easier and more pleasant**.

3. *Power Listening* is always *Power Reading*. The new language is being pressed into your brain both via your ears and via your eyes with high pressure. ('Full volume on all channels!') Your **spelling will be excellent.**

4. As you have an entire life to speak your new language, there is no need to start speaking today. We recommend later that you listen to the audio files for a month or two and that you don't worry about speaking. By doing so, you'll give your brain time to absorb the correct pronunciation of single words and the characteristic sound of your new language. Just sit and wait, do a few months of intense listening and reading – **you'll have a more genuine accent**.

5. Having experienced 'Power Listening' in your own skin (and in your brain) will be an incentive for learning more languages! For all future language projects, you know what you can achieve and you know the time you need. You'll have acquired **a precious tool for future study**.

4. Language Manuals

Everything seems to be in place: you know about your formidable inborn language acquisition capabilities; you have at least 30 minutes per day; and you anticipate how helpful *Ear²Memory* can be for you. Now comes the last roadblock of your language project: finding a suitable language manual. According to where you live and which language you want to learn, this may not be easy.

The complete package to train your ears and eyes should include

1. Audio files

2. Texts (transcriptions of the audio files)

3. Translations of the texts

4. Audio word lists

We'll call this an **ATTW package** (**A**udio + **T**ranscription [= Text] + **T**ranslation + **W**ord lists). Unfortunately, many language manuals have no audio files at all – in today's world with audio players installed on billions of smartphones, that's obscene.

Of those manuals that *do* offer audio files, most don't include the translations of the texts. Although these manuals can be used for Power Listening, you'll lose precious time figuring out the meaning of the texts.

Fortunately, there is a positive side, although shorter. Almost all of the following manuals and series have at least **ATT** (**A**udio + **T**ranscription [= Text] + **T**ranslation):

- English native speakers
  - **Teach Yourself – Complete…** series: German, French, Spanish, Italian, Portuguese, Brazilian Portuguese, Hindi, Mandarin Chinese, Russian, etc. (Some manuals here **don't** include the translation of the texts.)

- German native speakers
  - **Langenscheidt-Sprachreihe 'mit System'** – Englisch, Spanisch, Französisch, Italienisch, Portugiesisch, Niederländisch, Russisch, Griechisch, Norwegisch, Schwedisch, Dänisch, Tschechisch, Polnisch, Türkisch, Chinesisch, Latin. This series includes both normal and slow speed audio files

    Langenscheidt's '*mit System*' series is probably the best series of language manuals in the world!

- French native speakers
  - **Pocket: Langues pour tous, 40 leçons pour parler…** – allemand, anglais, espagnol, italien, portugais, le grec moderne
  - **Pocket:** Se perfectionner en anglais, espagnol, allemand, italien
  - **Pocket:** *…* au quotidien: anglais, americain, espanol

To our knowledge, there are no ATTW or ATT manuals available in Spain, Italy and Portugal. If you are aware of one, please contact us via our mailing list.

After finding a manual that is suitable for *Ear²Memory's* Power Listening, proceed as follows:

1. Transfer the audio files to your smartphone. If they are on your computer, copy the files onto your smartphone. Alternatively, transfer the files via Bluetooth or by email.

   Now open the first chapter in *Ear²Memory*. Before starting your Power Listening programme, listen to the entire audio once or twice while reading the translation. This way, you'll get familiar with the content of the text.

   If you have already tried the language before, listen once or twice to the entire audio file while reading the transcription. That will give you a feeling of what you know and what you still have to learn.

2. Some manuals (*Langenscheidt*) come with two audio versions: slow and normal. We recommend that you start with the slow version, but as soon as you can, listen only to the normal speed audio. For the final test of 'total understanding' (see page 8) you should, of course, use the normal audio.

3. Listen to the audios files of your manual for a month or two, but speak as little as possible. Give your brain time to absorb the correct pronunciation of the words and the characteristic sound of your new language. If you wait to speak after a few months of intense listening, you'll have a more genuine accent.

If you don't find a suitable manual, there is a solution: Do it yourself! For any given language you'll find on the internet audio material *en masse*. Proceed as follows:

1. Select a total of 45 to 60 minute of speech audios of your choice and prepare MP3 files of 2 to 3 minutes.

2. Ask native speakers to make a transcription of the audios. Recommend them to use the *Ear²Memory* app for their transcription task.

3. Translate the transcription at https://translate.google.com and have the Google translation revised by a person who is fluent in both languages.

4. Put your new **ATTW** or **ATT package** on the internet for free access to everybody.

5. Notify *Ear²Memory* for inclusion of your package on our website.

In an ideal world, we would soon have hundreds of free language packages on the internet… ☺

* * *

Your language project is now ready. Try to study one new audio file every day and repeat it over the next two days and then at intervals of three to five days. Remember that you are committed to at least 30 minutes a day; if possible, go for 60 or 90 daily minutes.

That's the *Full Power* mode of *Ear²Memory*. In the next chapter, learn how to document your progress and discover *Ear²Memory's Standby* mode.

5. Full Power versus Standby

Writing down the time of your Power Listening will help keep your motivation high. Figure 5.1 illustrates three key features of the *Ear²Memory* scheme. You'll

- Study every day;
- Repeat the unit on the following two days (and ideally – not shown – at intervals of no more than 5 days);
- Start all over again after reaching the last unit.

To document your progress, download our template from www.bsk1.com/xls or design your own worksheet. How exactly you'll work your way through the units is up to you. Do you prefer listening to a new text every day until the end (Figure 5.1)? Or would you rather stop at halftime, go back to text 6, proceed to text 15 and go back to text 11? (Figure 5.2) Only you know!

You'll also have to find out your 'daily sustainable workload'. Remember that 30 minutes per day are considered the minimum, but 45, 60 or 90 minutes per day are better (two to three hours if you are a language student). Find out which daily rhythm you can sustain over weeks and months. Sustainability is the secret

weapon in conquering a new language. In my personal experience, 60 minutes is easy, 120 minutes requires a certain discipline, and 180 minutes or more is possible only if no other important activities are happening around you.

(Power Listening is exhausting. Just 30 minutes of intense listening and reading is a demanding exercise. Three hours per day implies six 30-minute sessions, nine 20-minute or twelve 15-minute sessions. Give it a try and discover how day-filling it is!)

Figure 5.1 – Worksheet. Daily documentation of the time dedicated to *Power Listening* for each unit. Here: from start to end and back to the start.

The 'Full Power' mode – simultaneous listening and reading – should be your primary mode of learning. Being hyper-focused, you'll learn faster. There is an auxiliary mode, though: the *Standby* mode. Are you performing a complicated culinary recipe or doing a bit of handiwork around the house? Or does your life enter idle, siesta or beach mode? In all these cases, put on your headphones and listen to your language files! 'Something' will reach your brain, for example the sound of the words, the music of the language and sometimes even the meaning of a word!

Figure 5.2 – Worksheet. Daily documentation of the time dedicated to *Power Listening* for each unit. Here: 10 steps forward, 5 steps back.

Typical situations for the standby mode include transportation and non-intellectual activities.

Transportation:

- in your car
- on public transport

Non-intellectual activity:

- shopping
- jogging
- cooking
- beach time
- in the bathtub
- during a siesta
- before you fall asleep

Ear²Memory has two powerful features for standby learning: The *Repeat Mode* and the *Continuous Repeat Mode*. If you click the second of the three buttons that sit on top the AB button, *Ear²Memory* starts repeating every snippet three times (Figure 5.3). This mode is particularly useful for the rehearsal of audio files you studied a few hours earlier. By the time you commute to work, you will have heard every snippet 10 to 20 times.

Adjust the repeat mode to your needs by long-clicking the button and selecting the number of repeats from 1 to 7. (You'll understand one day that even the value '1' is useful.)

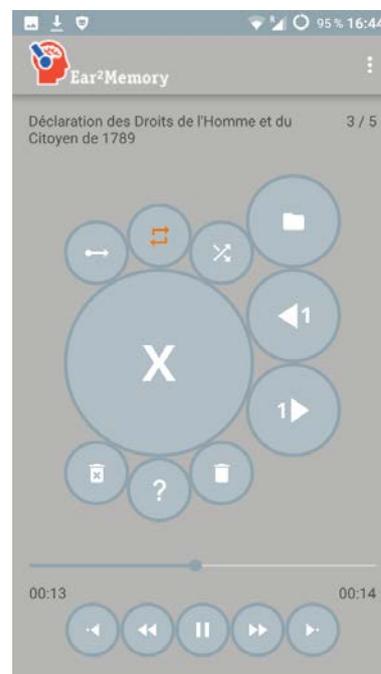

Figure 5.3 – *Ear²Memory* repeat mode for standby listening.

As soon as you become familiar with the audio files, try the *continuous repeat mode* (Figure 5.4). Activate both the first and the second button that sit on top of the AB button. Again, every snippet of an audio file is repeated. However, at the end of the file, *Ear²Memory* goes on to the next audio file. I use the continuous

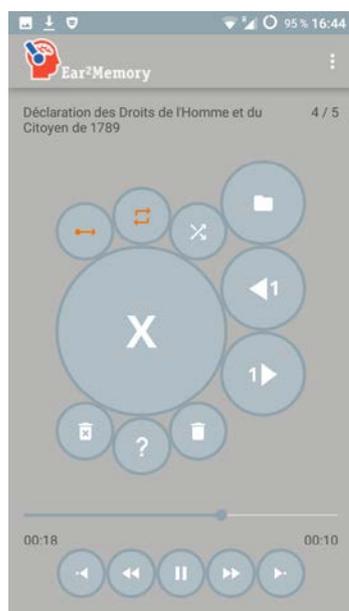repeat mode primarily during grocery shopping, cooking, siesta and pre-sleep time.

Figure 5.4 – *Ear²Memory* continuous repeat mode for standby listening.

Background

While going through your *Power Listening* programme, consider a fundamental point of language learning: **Listening is harder than reading.** The reason is speed. When you listen to a native speaker, you'll hear three or more words per second. If there is only one key word you don't know, the sentence will remain opaque and unintelligible forever. All you see are the backlights of the 'sentence-train', without time for a second guess and nobody giving you additional clues. You'll never catch that train again.

On the contrary, when you read your first articles in your new language you can stop the train at any time and linger on single words until you control, guess or remember their meaning (one second, five seconds, 10 seconds – at your speed). Furthermore, after studying the text a few times, you'll also dispose of some subtle clues to understanding, for example the number of letters in a word, the position on the page, the vicinity of other words, etc. The consequence: while an approximate knowledge of words is sufficient for reading, it is not sufficient for listening. Listening requires a 100% knowledge of all words.

You'll soon experience by yourself that perfect comprehension of speech requires more than just a few sessions. Don't be surprised if you need to listen to a sentence 20, 50 or even 100 times – today, tomorrow, next week – until you can distinguish **every single word**! This is perfectly normal for anyone who wants to get the best results quickly.

* * *

That's it! You have

- a suitable language manual with audio files and, ideally, a translation and word lists
- *Ear²Memory*

You know how to

- cut an audio files into snippets
- browse saved snippets with the arrow buttons '1►' and '1◄'
- use *Full Power* mode and *Standby* mode
- activate the *repeat* mode and the *continuous repeat* mode

Important

Please note that you need to "cut" an audio into snippets only once because all snippets are automatically saved. For all following sessions, stop using the AB button; instead, use only the middle-sized arrow buttons '1►' and '1◄'.

If you want to do AB exercises without saving the snippets, go first into *Ear²Memory's* simple mode by long-clicking the folder button.

With that you have all you need for the weeks to come. Before going on to your next stop – the *preliminary* and *final* exams – remember your final target: **understanding every single word** and guess the correct spelling **without reading the text, with eyes closed**. Depending on your sustainable daily *Power Listening*, decrypting a one-hour audio will take you two to four months.

6. Preliminary Exams

Remember the 'island uplift' image. Like tectonic uplift, understanding a new language is a slow process: first a word, then a couple of words and half sentences; finally, complete sentences and then a whole text! Over the coming weeks you'll reach your target of understanding every single word with eyes closed.

While this process may seem to be slow, in reality your brain is working at full throttle and executing acrobatic feats. Not only will you learn more than 1000 new words within a few months, you will also reduce the 'time-to-response' between hearing a word and understanding its meaning, from several seconds to less than 0.2 seconds. As a matter of fact, the *knowledge of words* can vary widely, from *low, moderate, elevated, high* to *perfect*. The definitions:

5 seconds	Low	Low probability of usefulness
3 seconds	Moderate	Moderate probability of usefulness
1 second	Elevated	Elevated probability of usefulness
0.5 seconds	High	High probability of usefulness
0.2 seconds	Perfect	Useful degree of knowledge

This measure that resembles the US Homeland Security Advisory System of colour-coded terrorist alert is a lovely demonstration of the different degrees of knowledge. As a novice it may take you up to 5 or 10 seconds before finding a foreign language equivalent of *corkscrew* (German: Korkenzieher; French: tire-bouchon; Italian:

cavatappo; Portuguese: saca-rolhas; Spanish: sacacorchos; Russian: штóпор). Months and dozens of bottles later, you'll do it in less than 0.2 seconds. That's a spectacular improvement of more than one order of magnitude, courtesy of your brain, the most complicated structure in the known universe.

*Ear*²*Memory* allows you to adapt to the different degrees of knowledge. First, at the beginner's level, after cutting the audio with the AB button into snippets of suitable length of generally 2 to 4 seconds, you'll use the Arrow buttons '1►' and '1◄' to browse the snippets and repeat them until you clearly remember which sound corresponds to which word; what the words mean; and what the correct spelling is. You'll probably stay at the beginner's level for a few weeks, repeating the 'Arrow Session' for every audio at intervals that would ideally be no longer than 5 days.

At the intermediate level you don't need the translation anymore because you know the text by heart. It usually occurs after 4-7 sessions. Now do your first preliminary test: **close your eyes** before playing the next snippet and listen. Do you understand every word? If you don't, open your eyes again and read the sentence several times.

You can do this preliminary test in different ways:

1. **Arrow Mode.** This is the easiest mode. Use the Arrow buttons to browse the snippets and listen to each snippet the number of times you need.

2. **Repeat Mode.** Long-click the Repeat button (the second above the AB button) and set the number of loops to 3. Then (single-)click the Repeat button and listen without reading. Getting a triple shot will allow you to understand most snippets word by word.

3. **Shuffle Mode.** This is the most difficult mode (Figure 6.1). Long-click the Shuffle button (right button above the AB button) and set the number of loops to 3. Then click the Shuffle button and listen without reading.

Later reduce the number of loops to 2 in both the repeat and the shuffle mode. With only two opportunities, understanding is more challenging.

Figure 6.1 – *Ear*²*Memory* shuffle mode for preliminary exams.

Please let me offer you two pieces of advice. First, check the word lists of your language manual regularly because you cannot understand 100% of a spoken script if you do not know 100% of the words.

Second, preparing exams is easier when you do it with friends. If you have friends or family who want to learn the same language, present them with the *Ear*²*Memory* Power Listening Program and explain the benefits to them. In particular, teach them how to use a worksheet to document their progress. Describe the extraordinary feeling of conquering, one after the other, 'islands of total understanding'.

7. Champagne!

After a few preliminary tests with the repeat and shuffle mode (see previous chapter), you'll be ready for the final exam of your first audio file. Play the audio *normally* (without repeating the snippets), **close your eyes** and listen until the end. Question: Have you, yes or no, understood every single word?

If you have, you have conquered your **first island of total understanding**! This is an exceptional achievement because it doesn't happen often in a lifetime. As you will remember it forever, celebrate it with champagne! ☺

In my personal experience, it may take up to 10 sessions to get to a 100% understanding of an audio (see Figure 7.1; the days of first complete comprehension are marked in blue); however, such intensive repetition may be partly due to the fact that I am 49+ years old. If you are younger, especially if you are in your twenties, you might need a few sessions less.

Please don't stop at your first experience of 'total understanding'. Give you brain time to strengthen the connections (synapses) between the brain cells involved (neurons). Copy the audio file into a separate playlist on your smartphone. Over the coming

weeks, the playlist will grow longer with more newly 'conquered audio territories'. Make it a habit to listen to the playlist while you are in your car, on public transport, during other activities (cooking, jogging, etc.), even while enjoying a siesta. We have known people who used language audio files as 'sleeping pills' to fall asleep faster! Give it a try... ☺

Russian, 30 days

Day	Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Minutes per unit (total)	74	100	148	212	183	208	184	186	162	137	154	138	97	115	91	102	64	106
1	20	20																	
2	30		30																
3	40	10		30															
4	122		10	42	70														
5	175	20	25	20	45	65													
6	124	2	2		25	35	60												
7	65							65											
8	125				10	10	20	15	70										
9	108	2	3	12	12	12	12	15	15	25									
10	45									20	25								
11	0																		
12	95							20	20	30	25								
13	75								15	20	40								
14	30											30							
15	75												75						
16	55													55					
17	67												15	12	40				
18	59											25	14				20		
19	90										15						15	60	
20	82	10	10	10		30											22		
21	106	5	5	16	15		17										15	15	18
22	135	5	10	10				30	30	30	20								
23	63	3	5									35	20						
24	30			5	10									15					
25	179				10	8	33	20	20	20				10	15	15	12	15	
26	77			5	5						10			15	15	12	15		
27	82							13	18	23	14								14
28	100	2	5	3								18	12	19	18	13	10		
29	84				23	6										12	10	14	14
30	123				25	10	17	16	15	15	15	10							

Total (hours) 41,0

Figure 7.1 – **My first 30 days of learning Russian**. I had no previous experience of Russian: no language course, no trip to Russia. The total audio time of the manual (Russisch mit System, Langenscheidt 2015, 18 lessons) was 43 minutes. My daily average of *Power Listening* was one hour and 22 minutes. The 'discoveries' of the 'first islands of total understanding' are marked in blue. See also the data of a Turkish trial on page 13.

8. Further Ear²Memory Uses

Here, we have presented the power of *Ear²Memory*. In addition to language learning, the app may be used in numerous heterogenous settings. First, *Ear²Memory* can be employed in areas of study that require the acquisition of huge numbers of new words; these include areas as different as medicine, law and economics. Second, *Ear²Memory* might be helpful during rehearsal of oral presentations (songs and poems at school, shows at colleges, scientific demonstrations at conferences, etc.) Third, *Ear²Memory* may be useful in learning the vocal or instrumental part of a song as well as in dancing and tai-chi.

It has not escaped our notice that the specific mechanism of *Power Listening & Power Reading* immediately suggests a possible benefit in the rehabilitation of stroke patients with memory deficits.

9. Phase II + III

How shall you continue your language project after this Phase I? You'll find more about this in the second edition of *Ear²Memory* (check www.Ear2Memory.com/updates for updates).

For now, let's just indicate

- that the study time is comparable across a wide range of languages in Phase I, but not in Phases II and III.
- that Phase I of your language project is less time-consuming than Phases II and III;

Please check this short overview of Phase II and Phase III of language learning.

9.1   Phase II

Phase II language learning includes

- Studying an advanced language manual with audio files and, ideally, the translation of the texts and word lists
- Listening to and reading a bilingual audio book
- Studying a grammar overview of around 200 pages
- Preparing a strategy for learning 5,000 to 10,000 words in Phase III
- Becoming a 'volcano of speech'

9.2   Phase III: Differences between languages

In my personal experience (see page 12), Phase I in language learning – fully understanding one hour of human speech – is comparable in time and effort across languages as different as Norwegian, Greek, Russian and Turkish (and probably Chinese) (see 12). This is counter-intuitive as we all know that some languages are clearly easier to learn than others. For an Italian native speaker, learning Spanish is easier than learning Russian or Chinese. If there is no difference in the first 60 to 100 hours of language learning, where is it?

The difference is the total number of words you will eventually have to learn. To be comfortable in another language you need to know about 15,000 words. This is about double what you are expected to learn in 8 years at school (see a detailed discussion in Chapter 1 of www.TheWordBrain.com, PDF, free download).

Fortunately, many languages come with hefty 'discounts', in the sense that not all 15,000 words are considered *truly new words* because you can deduce many of them easily from other languages you know. If you ask a 17-year-old French student without previous exposure to Italian to screen an Italian dictionary, he will immediately be able to tell you the meaning of around 6,000 words. Provide him with additional clues on how Latin words evolved differently, but still recognisably, into French and Italian, and he will increase his vocabulary to around 10,000. In other words, to start being comfortable in Italian, our French teenager would need to learn 5,000 words. (The same is true for any Italian, Spanish, Portuguese or French learning any of the other three languages.)

On the contrary, people from Western Europe have no discount when starting Russian, Turkish, Hindi, Chinese or Japanese because only few words resemble the words they know from their native language or languages commonly learned later in life. In these cases, they need to learn all 15,000. Check www.TheWordBrain.com how this number translates to study hours...

In short, the difference between easy (or familiar) and difficult (completely unfamiliar) languages can be expressed as a 1:3 ratio: learning a difficult language will take you three times as much effort as an easy language.

10. E²M: Click and Long-Click

In 2016, my brother Stephan developed the *Ear²Memory* app for Android smartphones. *Ear²Memory* is a Power AB Player for audio files. You'll use it primarily to learn languages but you can use it with any audio file (speech or music) to boost your memory and improve your skills. Possible applications include the rehearsal of oral presentations (poems at school, shows at colleges, scientific

demonstrations at conferences, etc.); dancing and tai-chi; and learning the vocal or instrumental part of a song. In medicine, *Ear²Memory* could be a precious instrument in the rehabilitation of stroke patients with memory deficits.

Find the summary of the *Ear²Memory* functions on page 1. For updates, check www.Ear2Memory.com.

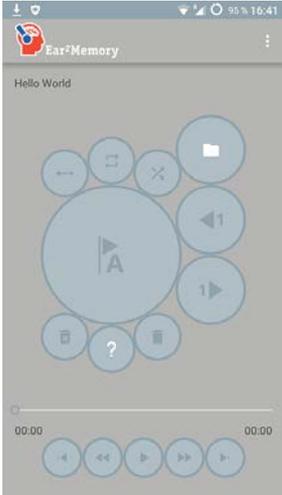After installing the free app on your smartphone, this is what you'll see:

Figure 10.1 – Ear²Memory's start screen.

To start, **long-click** the folder button and enter *Ear²Memory's* 'simple mode':
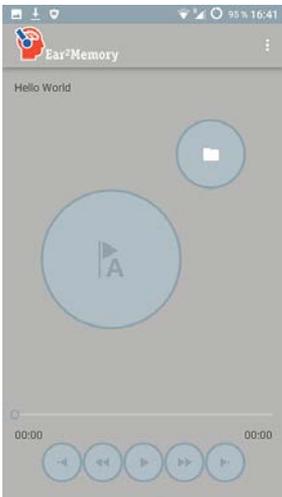

Figure 10.2 – Ear²Memory's simple mode.

Now (simple-)click the folder button, click on 'AAA Ear²Memory' and select 'Déclaration des Droits de l'Homme et du Citoyen de 1789'; alternatively, you may open any other audio file on your smartphone:
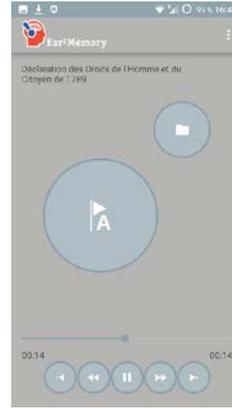

Figure 10.3 – Ear²Memory's play mode; waiting for you to set the starting point of a snippet.

The AB button is the centrepiece of *Ear2Memory*. You'll use it to select short snippets of usually 2 to 4 seconds (sentences, groups of words or even single words) and have them repeated as often as you like. Click the AB button first at the beginning (A) of the few words you want to isolate and again at the end (B) – immediately the snippet enters a loop and is repeated endlessly. To break the loop, click the big button once again, and the audio continues normally.

After exiting the loop, the 'A flag' appears again. Be ready – within seconds! – to click the AB button again and define the starting point of the following snippet.
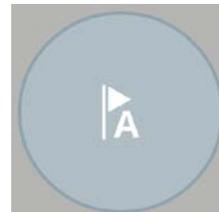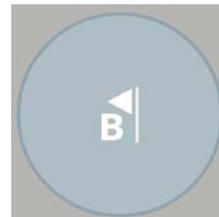
AB Button	Three states
	Waiting for A: Press to define the starting point (A) of a snippet. As long as you don't press the button, the audio will play from start to finish and then return to the beginning.
	Waiting for B: Press to define the end point (B) of the snippet and repeat the snippet in an endless loop.
	Waiting for X: Press to exit the loop and continue playing the audio normally.
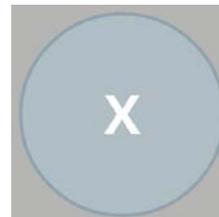
Figure 10.4 – The three 'waiting states' of the *Ear2Memory* AB button. A: Defining the start point (A) of a snippet; B: Defining the end point (B) of the snippet and entering a loop; X: Exiting the loop (X) and continue normal play.

Why should you wish to listen to the same words 5, 10 or even 15 or 20 times while reading the corresponding text? You'll do it because it gives you enough time to:

- Figure out which word corresponds to which sound;
- Learn the meanings of the words;
- Memorise the spelling of the words.

If you listen to every snippet an average of 10 times, the playing time of a 3-minute audio is 30 minutes. These 30 minutes would be the first **session** of that audio file. Over the following days and weeks, you'll need five to 10 additional sessions for the same audio file to achieve a 100% understanding. All in all, you'll hear the words and sentences 50 to 100 times!

> **Important**
>
> Please note that you need to "cut" an audio into snippets only once because all snippets are automatically saved. For all following sessions, stop using the AB button; instead, use only the middle-sized arrow buttons '1▶' and '1◀'.
>
> If you want to do AB exercises without saving the snippets, go first into *Ear²Memory's* simple mode by long-clicking the folder button.

If you have no suitable speech audio, download www.bsk1.com/audio/ItalianWithElisa.mp3 and learn your first Italian words with a short text from my *Italian with Elisa.*

La macedonia di Amos

– Guarda la bella frutta che ha il signor Gianni. Sembra freschissima.

– Davvero! Senti solo le fragole…

– Facciamo una macedonia!

– Ottima idea! Quale frutta compriamo?

– Seguiamo la ricetta di Amos: due pezzi di tutto, frutta piccola, ananas e pinoli – e per finire, succo di arancia e limone a volontà.

– Cioè?

– Due mele, due pere, due banane, due kiwi e mezzo ananas, una piccola bustina di pinoli e 250 grammi di susine, d'uva e di albicocche.

– E le fragole?

– Certo, anche le fragole. Evito solo melone e anguria – il melone perché ha un gusto molto forte e l'anguria perché è troppo acquosa. Tagliamo la frutta a pezzettini, la mescoliamo con quattro cucchiai di zucchero e mettiamo tutto nel frigorifero per trenta minuti. Alla fine, aggiungiamo il succo di quattro arance e di tre limoni e serviamo la macedonia con un gelato alla crema. Signor Gianni…

Amos' fruit salad

– Look at the beautiful fruit that Mr. Gianni has. It seems very fresh.

– You're right! Just smell the strawberries!

– Let's make a fruit salad!

– Great idea! What fruit shall we buy?

– Let's follow Amos' recipe: two pieces of everything, small fruit, pineapple and pine nuts - and finally, orange juice and lemon to taste.

– Say that again?

– Two apples, two pears, two bananas, two kiwis and half a pineapple, a small packet of pine nuts and 250 grams of plums, grapes and apricots.

– And strawberries?

– Of course, also strawberries. I usually avoid putting in melon and watermelon - the melon because it has a very strong taste and the watermelon because it is too watery. We'll cut the fruit into small pieces, mix it with four tablespoons of sugar and put everything in the fridge for thirty minutes. After that, we'll add the juice of four oranges and three lemons and serve the fruit salad with vanilla ice cream.

Mr. Gianni…

– Buongiorno, Signorina Elisa. Che cosa desidera?

– Salve. Vorrei preparare una bella macedonia. Ci servono due mele, due pere, due banane, una bustina di pinoli, 4 arance, 3 limoni…

– Good morning, Miss Elisa. What would you like?

– Hello. I would like to prepare a nice fruit salad. We need two apples, two pears, two bananas, a bag of pine nuts, 4 oranges, 3 lemons…

The five buttons at the bottom of the screen are standard. Use buttons 1 and 5 to go to the previous or next audio file; buttons 2 and 4 to move the cursor 3 seconds back or forth; and the middle button to stop and play the audio.

Now long-click the folder button again and return to *Ear²Memory's* full mode (Figure 10.5).

The main difference between simple and full mode is the way snippets are treated:

- Simple mode: **no** snippets are saved
- Full mode: **all** snippets are saved

After preparing a few snippets, you'll find two numbers in the top right corner of the screen (in our example: '3/5'). The second number (5) indicates the number of snippets that have been saved; the first number (3) shows the snippet that is currently being repeated. Use the middle-sized arrow buttons ('1▶' and '◀1') to jump between snippets.
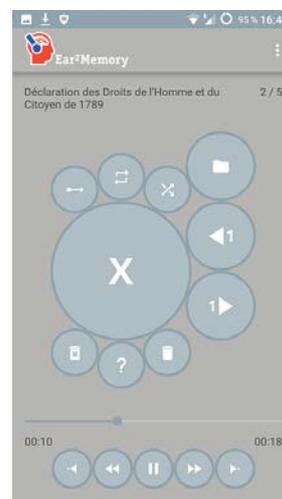
Figure 10.5 – Ear²Memory's full mode. Snippet 2/5 is being repeated in an endless loop. Click 'X' to exit the loop.

In language learning, you would

1. First use the AB button to cut an audio file into several dozen snippets (around 15 to 20 per minute)

2. Thereafter use only the '1▶' and '◀1' buttons to listen to the snippets. In our experience, you'll need 7 to 10 sessions to understand every single word of an audio file.

After several 'arrow' ('1▶' and '◀1') sessions of *Power Listening*, start using the automatic repeat mode:

Figure 10.6 – Ear²Memory's repeat mode. All snippets are being repeated automatically. Long-click the repeat button to define the number of times every snippet will be played.

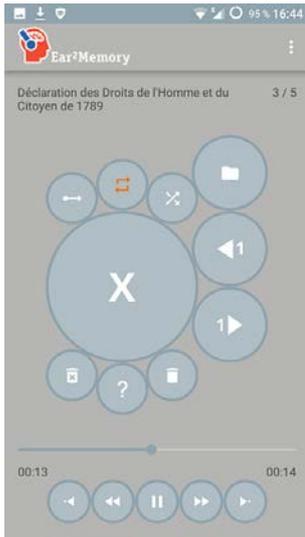After clicking the repeat button, *Ear²Memory* plays the snippets one after the other. The repeat mode is useful in *standby mode*, while doing sport, cooking, etc. (see page 5). To change the default value of 3 loops, long-click the repeat button and select a new value.

At the end of an audio file, *Ear²Memory* jumps back to the beginning and plays the same audio again; this is *Ear²Memory's* default mode. If, instead, you want to have *Ear²Memory* play the audio files of a language manual one after another, click the *continuous repeat button* located next to the repeat button:
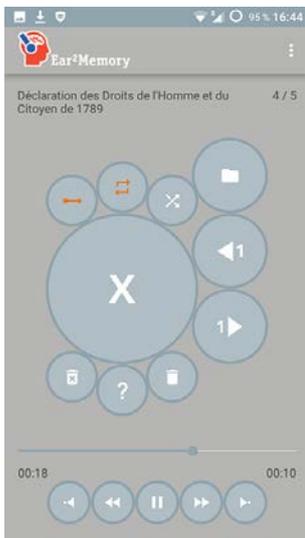

Figure 10.7 – Ear²Memory's continuous repeat mode. All snippets are being repeated, but at the end of the file, Ear²Memory goes on to the next file.

For the final rehearsal, use the *Ear2Memory shuffle mode*. To change the default value of 3 loops, long-click the shuffle button and select a new value.
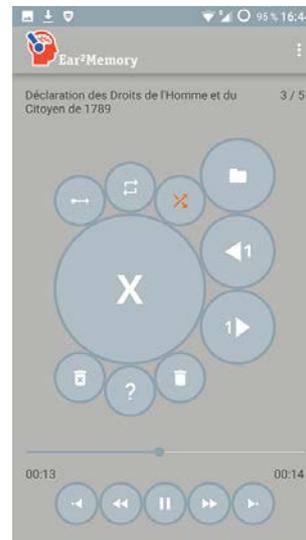

Figure 10.8 – Ear²Memory's shuffle mode. Snippets are being repeated randomly. Long-click the shuffle button to define the number of times every snippet will be played.

See page 7 and 8 for how to do the preliminary and final exams.

11. Appendix: Law of second language acquisition

I report here my personal 200-hour *Ear²Memory* experience that suggests that there might be an as-yet-undescribed law in second-language acquisition. The preliminary definition: "In second language acquisition, the time needed to understand a 40-minute audio file (word by word, without reading the transcript) is language-independent." In other words, whether you learn a language related to your mother language (for example Italians learning Spanish, Germans learning Dutch) or a language that is totally different (Europeans learning Chinese, Japanese or Hindi), it will take you roughly the same amount of time to understand the first 40 audio minutes word for word. This statement is utterly counter-intuitive. One would normally assume that audios from related languages are easier to learn than those from non-related languages. So did I until May 2016.

In 2014, I studied a 280-page Norwegian manual from the '*mit System*' series ('Norwegian systematically'), which is being produced by the German Langenscheidt publishing house. After 2 months and about 60 hours of listening and reading I understood the 40 minutes of the audio files word for word. This experience was unremarkable – after all, Norwegian has many similarities with German and English, two languages I am familiar with.

In March 2016, I started the Greek manual from the same '*mit System*' series. Never before had I studied Greek (neither ancient nor modern), visited Greece of had Greek friends. After around two months and 60 hours of listening and reading, again I understood every single word of the audio files. This was

Bernd Sebastian Kamps

surprising as I had expected Greek to take considerably longer to enter my brain than the more familiar Norwegian. Could the time needed for spoken language to enter a human brain be a more or less constant value, independent of the language we learn?

To confirm or reject this hypothesis, I started in May 2016 a third language I had not been exposed to in the past: Russian. Again, after two months and around 60 hours, I understood the audio files word by word (see Figure 7.1, page 9).

Was that enough proof for the existence of a 'Kamps law of second language acquisition'? Or did the common Indo-European ancestry of Norwegian, Greek and Russian act as a previously unknown 'Indo-European language absorption facilitator'? So in September 2016 I started my fourth 'mit System' manual: Turkish (again, no previous experience with Turkish, no language course, no trip to Turkey, no Turkish friends). The result: I needed 55 hours of Power Listening over a 2-month period to understand it all.

Turkish, 20 days

Total (hours) 30,7															
Minutes per unit (total)	64	100	120	124	141	117	83	128	158	149	135	164	115	156	89
Unit (minutes per day)															
Day / Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 / 68	34	34													
2 / 62	8	14	40												
3 / 129	10	12	17	50	40										
4 / 146			12	15	24	25	30								
5 / 136				9	10	17	25	15	40	20					
6 / 151					6	12	14	10	22	47	40				
7 / 50											20	30			
8 / 134		7	7	4	8	9	5	15	24	20	15	20			
9 / 25												25			
10 / 285	6	8	7	6	13	12	11	23	33	33	46	20	34	33	
11 / 135											40		31	37	27
12 / 95	3	10											22	28	32
13 / 56	3		7							10	17	19			
14 / 66				5	8	8	6	11	13				15		
15 / 47													13	15	17
16 / 37									13	24					
17 / 30		3						7	10	10					
18 / 14														14	
19 / 73			5	12							14	16	13		13
20 / 104		13	7	18	9	6	10	11	16						14

Figure 11.1 – **My first 20 days of learning Turkish**. No previous experience of Turkish: no language course, no trip to Turkey, no Turkish friends. The total audio time of the manual (Türkisch mit System, Langenscheidt 2012, 15 lessons) was 37 minutes. My daily average of Power Listening was one hour and 32 minutes.

In December 2016, I'll do a final test: *Chinesisch mit System*. I am confident that despite the complex tonal system of spoken Chinese it won't take me longer than the Norwegian, Greek, Russian or Turkish manuals. Thanks to *Ear²Memory* I would finally have my first stronghold in Chinese, something I had dreamed of for long but always considered inaccessible.

So in my personal and insignificant 'Power Listening/Power Reading' experiments with 'virgin' languages, the time until reaching complete understanding (word for word, eyes closed, without reading the text, around 40 audio minutes of a standard language manual) seemed to be language-independent.

Chinese, 20 days

Total (hours) 0,0															
Minutes per unit (total)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unit (minutes per day)															
Day / Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 / 0															
2 / 0															
3 / 0															
4 / 0															
5 / 0															
6 / 0															
7 / 0															
8 / 0															
9 / 0															
10 / 0															
11 / 0															
12 / 0															
13 / 0															
14 / 0															
15 / 0															
16 / 0															
17 / 0															
18 / 0															
19 / 0															
20 / 0															

Figure 11.2 – **Next project**. Almost no previous experience of Chinese: no language course, one short trip to China in 1993, no Chinese friends. The total audio time of the manual (Chinesisch mit System, Langenscheidt 2013, 15 lessons) is 45 minutes. The outcome will be reported in the second edition of *Ear²Memory*.

Many of my friends generously credit me with an extraordinary skill for learning languages. I know that they are wrong because they have no idea of the amount of time I have invested in language learning, probably ten times more than they did and certainly hundred times more than people who claim to be totally unfit for learning a foreign language. I am convinced that virtually all of them could reproduce my results, with only one single condition: that they study for the time that is needed.

I am also convinced that any human being can rapidly learn the basics of any language – our brain is hardwired to do just that, as we nicely showed when we were babies. Moreover, we all learned languages in comparable time periods. So put enough power into the game (translate: increase the time of exposure), use simultaneously headphones to stimulate your ears (+ the auditory brain cortex behind it) and books to stimulate your eyes (+ the visual brain cortex), and any brain will ultimately surrender to the assault of language.

Does that mean that most humans (>80%) would have virtually equivalent basic linguistic skills (± 20%)? I would be inclined to say so. If this were the case, one student would need 60 hours to understand a 40-minute audio of a totally new language; a less fortunate friend would have to study a little longer, some 70 hours; while the luckier ones would do it in about 50 hours. With that, of course, everyone would be happy.

More experiments are currently under way. In the meantime, if there is a language you have always craved to understand and speak but never dared to attack, this might be the moment! Give it a try! Allocate 60 hours of time, buy a suitable manual (see page 4 + check www.Ear2Memory.com for updates) and do daily Power Listening with *Ear²Memory* for the next two to four months. I would be delighted to hear about your experience.