

BRAIN SCIENCE PODCAST

With Ginger Campbell, MD

Episode #71

Fourth Annual Review

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INTRODUCTION

This is [Episode 71](#) of the *Brain Science Podcast*, and I'm your host, Dr. Ginger Campbell. Before I get into today's episode I want to remind you to visit our website at brainsciencepodcast.com, where you can find detailed show notes and transcripts for all the episodes of the *Brain Science Podcast*. Send your feedback to me at docartemis@gmail.com. And you can follow me on Twitter, where I am [Docartemis](#).

Today I am going to be doing my annual review episode. I'm going to be doing something slightly different in that I'm going to be including a discussion of how the *Brain Science Podcast* has influenced me, personally. This represents the four-year anniversary of the *Brain Science Podcast*, so I thought it would be a good time to reflect back on how what I've learned during the last four years has influenced my life. Also, for those of you who are living in the UK, please be sure to stay tuned for the announcements at the end of the episode, because I have a special announcement for UK listeners.

As I said, this is a three-part episode, and the first part is going to be a review of this year's episodes. There were only six episodes this year, but I think they were all excellent interviews with very interesting guests. The first was [Episode 65](#), which was about affective neuroscience, with Jaak Panksepp. Now, it's probably correct to pronounce this 'ah-ffective,' but I'm going to call it 'A-ffective' throughout this discussion, just to make it easier to tell the difference between the words 'affective' and 'effective.'

If you missed this episode, I strongly encourage you to go back and listen to it. Dr. Panksepp challenges two common assumptions about emotions. One is the old James-Lange idea that emotions are our brains' interpretations of signals from the body. And, more importantly, he challenges the idea that emotions are primarily a function of the human cortex.

So, what is 'affective neuroscience,' since it's not a term you hear used much by others? Dr. Panksepp chose this term for his classic [1998 textbook](#) of the same name¹, to highlight the need for neuroscience to address what he calls "the nature of our positive and negative experiences—the many ways we feel about things instinctually."

The term 'affective' includes emotions, as well as other subjective feelings, like hunger and thirst. 'Affective' is an umbrella term that includes "this mysterious thing we call 'feelings.'" This would include sensory feelings like taste and cold, bodily feelings like hunger and thirst, and emotional feelings like anger, fear, and loneliness. Dr. Panksepp has spent most of his career studying animals, and he has amassed a great deal of experimental data showing that many emotional feelings come from the ancient subcortical parts of the brain; parts we share with all mammals and possibly some other animals.

¹ *Affective Neuroscience: The Foundations of Human and Animal Emotions* by Jaak Panksepp

In the interview we reviewed some of the key evidence. One important piece of evidence is the fact that electrical stimulation of specific subcortical areas leads to specific emotional behaviors, such as anger or fear; but you can't produce these behaviors with cortical stimulation. This indicates that the origin is subcortical, not cortical. Also, animals show specific preferences; they either will avoid a particular thing, or they will self-stimulate. As he noted, they are never neutral.

We discussed some of the specific systems that Dr. Panksepp has discovered. He said, "If coherence comes out behaviorally, that means that emotional coherence is built into the circuits." And the reason he says this is because if you're just stimulating with basically a white noise electrical signal, that signal can't be containing the coherence, so it must be coming from the circuit. Based on this, he has listed seven definite systems: one he calls, 'seeking;' rage; lust; fear; caring; panic; and play. Play was a surprise, and we talked about its discovery in the interview. Just to say a little bit more about the seeking system; it's not the traditional reward system. Dr. Panksepp sees it as the granddaddy of the reward systems. Clinicians seem to embrace this idea more readily than neuroscientists.

Another important idea that we discussed was the importance of different levels of analysis. There is the primary process level, which is where Dr. Panksepp has done his work, and which is, unfortunately, very underfunded. There is the secondary or learning level, such as [Joseph LeDoux's](#) work with fear in mice. And there is the tertiary level of complex human abilities. An example of this would be the work of neurologist, [Antonio Damasio](#). It is important to work at all the levels, and to appreciate their interaction.

Dr. Panksepp brings a unique perspective to the discussion because he can, from personal experience, talk about the challenges of working in an area that has been ignored and underfunded. More generally, we talked also about the loss of academic freedom that is caused by our current grant-driven system. But despite

this, Dr. Panksepp's advice for students is to go ahead and pursue their interest in science and to be willing to work very hard.

What are the implications of Dr. Panksepp's work? After all, that's the reason why I chose it, was because I thought that it had important implications. One is that it could provide the basis of new approaches to psychiatric medicine. The emotional aspects are often ignored in traditional psychiatric approaches. Dr. Panksepp feels that these primary affective circuits may be fundamental to understanding consciousness. Finally, acknowledging that these circuits are present in most, if not all, of our fellow mammals has significant implications for our relationships with other species. In fact, that may drive some of the reluctance to explore this area.

As I said at the close of the episode, I feel that Dr. Panksepp's work is groundbreaking, and its time will come. Remember that for many years the evidence for brain plasticity was ignored. So, eventually this evidence for the subcortical origins of key emotions will become important. The reason I did this episode was I wanted to share this work with you, and I also wanted to give you a feel for how science works in the real world—both the positive and negative aspects. And finally, for those of you who are the future neuroscientists, I wanted to expose you to this exciting area of research which, as I said before, I think has important potential for the future.

[Episode 66](#) was an interview with Dr. Randy Gallistel, co-author of [*Memory and the Computational Brain: Why Cognitive Science Will Transform Neuroscience*](#). Just to recall the difference between cognitive science and neuroscience, cognitive science is concerned with the computational theory of mind, so it brings together at least four other disciplines: psychology, linguistics, philosophy, and computer science. On the other hand, neuroscience is about the brain and behavior; that is, how the brain processes produce behavior.

In the interview Dr. Gallistel said, “The central claim of cognitive science is that you need a computational level of analysis in order to understand how the mind or the brain works.” Now, to bridge the gap between cognitive science and neuroscience, we need to understand how the brain computes. Dr. Gallistel’s book argues that memory is at the core of this question.

My conversation with Dr. Gallistel followed the general outline of his book. We talked a little bit about why information theory is important, because the first half of his book gives the reader the fundamentals of information theory and computation. All modern computers rely on these principles, but the average neuroscientist lacks any training or background in this area.

A fundamental argument of this book is that computation of the sort performed by computers and brains requires something like random access read/write memory. In the interview we talked a little bit about dead reckoning as an example of a very well-understood type of computation, that is trivial, with read/write memory. Many animals—even ones with tiny brains, like ants—are able to perform dead reckoning. But it’s very difficult to do with something like a neural net, because neural nets do not have a read/write memory. This is important because many neuroscientists assume that neural nets are an accurate simulation of what the brain does. This book explains why this is probably not true.

Now, experiments with dead reckoning are an example of the kind of experimental evidence that is mounting, that even very simple brains are computational. Even more impressive are the experiments with Scrub-Jay caching. These are basically experiments that have been done with a bird known as the ‘Scrub-Jay,’ which has the ability to cache food in thousands of different locations, and then go back, even months later, and find it. Experiments have shown that the Jays are able to remember, not just where they left the food, but what they left and when they left it, and often sometimes even who was watching.

This not only adds to the evidence of overt computation, but it actually challenges the association model of memory, because they are remembering these things after one occurrence, and the association model of memory and most models of memory rely on a repetition. Scrub-Jay caching is a good example, also, because it's something that's complex enough that neural nets can't do it—even though birds can.

This episode has two key take-home points. One is that the understanding of information theory and computation is important to anyone who is planning a career in neuroscience. The second is that the experimental evidence is mounting that current theories of memory which don't include a read/write memory are inadequate.

I got some interesting feedback about this episode. I was really surprised that most of the feedback I got was to defend the current models, even though no one who wrote to me had actually read the book before they wrote. This is relevant because several writers complained that Gallistel hadn't provided an alternative theory. That was not his goal. His goal in his book is to present the basics of information theory and computation and show how they apply to understanding how the brain works, and to present the experimental evidence that animal brains do computation. If they do computation, they have to follow the same rules.

As I said at the time, I highly recommend this book to anyone planning a career in neuroscience. I also think that those of you with backgrounds in engineering and computer science will enjoy it. Meanwhile, I hope that the general listener will get a feel for how experimental evidence should inform theoretical work. Anyone who wants to argue against a computational theory of mind has to address the mounting experimental evidence: How do ants perform dead reckoning? How does the Scrub-Jay remember, not just where they left their food, but what they left and when they left it, and even who was watching?

[Episode 67](#) was an interview with Dr. Thomas Metzinger, author of [The Ego Tunnel: The Science of the Mind and the Myth of the Self](#). My impression, based on listener feedback, is that this was one of the most popular interviews I have ever done. And many people bought *The Ego Tunnel*, or listened to it on [Audible.com](#). This discussion is part of our ongoing exploration of the neuroscience of consciousness. Dr. Metzinger is a philosophy professor in Germany, but he is also one of the co-founders of the [Association for the Scientific Study of Consciousness](#). He mentioned in his interview that when the Association was founded 30 years ago the scientific study of consciousness was still considered fringe by many neuroscientists. But, of course, that has changed in the last 15 years.

Dr. Metzinger has written more academic books on this subject, but he aimed *The Ego Tunnel* at the general reader. His key starting point is that consciousness is a totally biological, or natural, process. His working definition of consciousness is “the appearance of a world,” because you have no awareness of yourself or the world when you’re unconscious. He uses the metaphor of the ‘ego tunnel’ because it captures the idea that the world we experience is actually a simulation generated by our brain. But, of course, we experience it as totally real.

We talked about the evolutionary significance of consciousness. Consciousness takes us beyond an unconscious awareness of our body, and thereby allows us to attend to the world and react to it in what is known as ‘context-dependent’ ways. For example, if you’re sleepwalking, you can walk around; but since you’re unconscious, you can’t respond to your surroundings—which would be the context. And, of course, sleepwalking can be dangerous.

Dr. Metzinger presented another apparently provocative idea, which is that he said there is no ‘self.’ “The ‘self’ is certainly not a thing. It’s not a thing in the head, and it’s not a thing outside the physical world in some metaphysical dimension.” Why does he say that? Well, he says, “We can explain and predict

everything we want to explain and predict about human beings with simpler concepts.” So, what we think of as our ‘self’ is not a thing; but it is a process. What he means is that there is no thing separate from what our brain and body create through its processes; that is, there is no non-physical self.

Dr. Metzinger has a long-standing interest in studying altered states of consciousness and, also, psychiatric conditions, because he says that they provide clues to how consciousness happens; and also, if we’re going to explain consciousness, we’ve got to be able to explain these phenomena. We talked a little bit about out-of-body experiences, and how they are different from virtual reality.

A key idea that emerged is that normally our sense of ourself is grounded in our body because of the constant input, both motor and sensory, that the brain receives. Out-of-body experiences seem to occur when these inputs are missing, and then the brain tries to generate a replacement. This was really interesting stuff—if you missed it. But the key idea is that altered states of consciousness have a biological explanation. It doesn’t require anything supernatural or mystical.

The Ego Tunnel is an extremely rich contribution to the exploration of consciousness. My conversation with Dr. Metzinger barely scratched the surface.

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I want to take a few moments to tell you about the [premium versions](#) of the *Brain Science Podcast*. These were only made for Episodes 65, 66, and 67, both as a CD and as an MP3. Each premium episode is broken down into multiple tracks, to make it easy to find specific sections. This feature is particularly useful for students. All ads and other interruptions have been removed.

When I prepared the premium version, I had in mind feedback I had received from listeners—especially of those who liked to listen to episodes more than once. I stopped making the premium versions after Episode 67 because the low demand did not justify the extra work they required. But with the holiday season approaching, I hope you will consider buying a CD for a gift.

Is there someone in your life that you just can't get to listen to a podcast? I think students interested in neuroscience would enjoy any of these three episodes. People interested in animal behavior will particularly enjoy Episode 65. I gave this episode to the lady that's been teaching my dogs agility, and she really enjoyed it a lot. And I've gotten a lot of feedback about this episode from other people that are involved in animal training, so that's a target audience I hadn't really thought about.

And then, Episode 67, with Dr. Thomas Metzinger talking about consciousness, is definitely one that should be appropriate for everyone. The CD really is very attractive, and I think it will make a very nice gift.

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Now, moving on to [Episode 68](#), which was the interview with Dr. Peter Whitehouse, the co-author of [The Myth of Alzheimer's: What You Aren't Being Told About Today's Most Dreaded Diagnosis](#). Dr. Whitehouse is a geriatric neurologist who has spent 25 years in Alzheimer's disease research; and while I found the title of this book a little off-putting, as a practicing physician I really resonated with its contents. I would like to encourage you to listen to this episode if you missed it; but I'm going to try to highlight a few of the key ideas.

First, Dr. Whitehouse is not claiming that the problems of cognitive decline that are usually labeled as 'Alzheimer's disease' do not exist. He is claiming that the label is inaccurate because there is growing evidence that there is no single well-

defined disease process that causes dementia. Thirty years ago, when I started medical school, we were still using the original definition from 1910, where Alzheimer's disease was a form of pre-senile dementia that could only be diagnosed after death, by specific brain changes. Now the term is being applied to everyone that doesn't have a clear cause for their dementia, and we are told that if you get to be 85 you have a very high likelihood of developing Alzheimer's disease.

At the same time that more and more people are being labeled with this disease we have actually discovered that some people with the brain changes associated with Alzheimer's don't have any significant dementia while they're alive. This book really should have wide appeal to both physicians and to general readers.

This interview is supplemented by an [interview](#) with the co-author, Daniel George, who is a medical anthropologist. In the supplemental interview you can learn more about the history and evolution of Alzheimer's disease.

One point that Dr. Whitehouse made that I thought was very relevant was he said, "Diseases are not discovered; they are invented." And that certainly is true when it comes to Alzheimer's disease. But I would like to emphasize that Dr. Whitehouse's message is, I feel, a message of hope. He is arguing that we should not put false hope into some kind of magical pill that would just fix dementia. We are learning that, because of brain plasticity, even people with dementia might have a chance to improve in ways that we haven't previously considered. One of the main themes of Dr. Whitehouse's work is that people with cognitive challenges can still be valuable members of our community.

This title, *The Myth of Alzheimer's*, can be a little off-putting. I really encourage you to listen to the episode and, if you are at all concerned about this subject, be sure to pick up the book and read it yourself.

[Episode 69](#) was an interview with Douglas Fields, author of [The Other Brain](#), which tells us about the surprising discovery about glial cells. It turns out that only 15% of the cells in the brain are neurons, because the rest of them are glial cells, which were once thought to serve only support function. The so-called ‘neuron doctrine,’ which has been dominant for 100 years, is that all the information processing that happens in the brain happens between neurons via electrical communication across the synapses.

Dr. Fields’ book shares the story of the recent discoveries about what glial cells actually do. A key development that has made these discoveries possible is the ability to visualize calcium waves microscopically by using fluorescent labels. It has been discovered that glial cells can communicate with each other, and they can monitor the signals of neurons. They have receptors for all the neurotransmitters. Some actually exert control over large numbers of neurons.

There are at least four main types of glial cells. There are the astrocytes, which turn out to be much larger than we originally thought. These actually cover the brain in a non-overlapping tile-like distribution, and besides their well-known support functions, they have some major control functions. And then, as we knew before, they are also an important part of the blood-brain barrier. The microglia are thought of as the immune system of the brain.

Now, some of the most exciting discoveries about glial cells involve the myelinating glial cells. Myelin is the insulation that helps axons transmit signals more quickly, and it turns out that myelin formation is actually stimulated by the signals going through the unmyelinated axons. So, what you do while you’re young directly influences which axons get myelinated. We had a very interesting discussion about the evolutionary importance of myelin, because while invertebrates have glial cells, only vertebrates have myelin.

To summarize: Glial cells are actually involved in information processing. They are involved in key functions like memory; and this has implications for understanding and treating a wide variety of neurological diseases and mental illnesses. So, this is an extremely exciting new area of research.

Dr. Fields' book, *The Other Brain*, as he says: "The book is not a textbook. I hope it is an enjoyable read. What I hope is that I get across the excitement of doing science and having a revolution in science unfold in real time." You can get free chapters of the book at the website, theotherbrainbook.com. So, that would be a book that would also be an excellent gift for any young person with an interest in science or medicine. I think I mentioned before that it is available on Audible at Audible.com.

Finally, I'm going to only talk very briefly about [Episode 70](#), since it is the most recent episode. It was the interview I recorded live with Scott Lilienfeld, co-author of *50 Great Myths of Popular Psychology*. This continues my tradition of conducting live interviews at [Dragon*Con](#) in Atlanta. The basic idea that I wanted to get across in this interview is that our common sense can lead us astray, which is why even ideas and treatments that seem reasonable need to be subjected to critical thinking and, whenever possible, double blind studies.

During the interview we recorded some common errors in thinking, such as the really common one of forgetting that correlation does not equal causation. We talked a little bit about the role of belief bias: that is to say that if you have a correlation about two things that you think are related, you're more likely to make this error. There's also the problem of biased samples, which we face all the time. For example, if you're a physician who takes care of a certain kind of patient, you might get the idea that their diagnosis is more common than it really is.

We talked a little bit about some of the myths around memory. Especially, I think it's important to know, if you don't already, that repressed memory therapy has been totally discredited. I think we talked about facilitated communication last year when I talked to [Dr. Paul Offit](#) about autism, but facilitated communication is another example of a treatment regimen that has been discredited by proper studies.

One that continues to come up is the whole full moon myths; and Dr. Lilienfeld mentioned that there is the ultimate reference disproving the full moon myth, and I'll put that into the show notes. A good part of this episode was excellent questions from the audience, and these are also available in the show notes.

So, there you have a brief overview of six episodes of varied content: two fairly technical books and four books aimed at general audiences. Several of these are available on [Audible.com](#), and the show notes for each episode contain extensive references and the episode transcript. The show notes for this episode will contain a list of all the books that have been discussed this year. And Lori Wolfson, who does the transcripts, has compiled a database of which books have been covered and which ones are available on Audible, and I hope to get that incorporated into the website soon.

[music]

The second part of this episode is a look back at how the *Brain Science Podcast* has influenced me, personally. I began to plan the *Brain Science Podcast* back in the summer of 2006, after recording a brief book review for Jason Rennie's podcast, [The Sci Phi Show](#). That review eventually became the basis of [Episode 2](#), which is the one about Jeff Hawkins' book, [On Intelligence](#). I had been reading about the mind and the brain intensely for about three years at this point, and what I had read convinced me that the mind is a function of the brain, not something non-physical.

Now, I want to put this conclusion into context. Early in my career as a physician I became interested in what was being called ‘mind/body medicine.’ I believed that thoughts and emotions influenced health, and I thought that I had rejected Cartesian thinking, but I hadn’t really given much thought to the relationship between the brain and the mind. In the ‘90s I was exploring New Age ideas, Native American thinking, and I was drawn to Buddhist thinking and other forms of Eastern philosophy, but I became disillusioned because of the lack of scientific rigor. And the idea that somebody 2000 years ago could magically discover all the answers just didn’t feel right.

So, in 2003 I began to explore Western philosophy; which is how I discovered philosophy of mind, which led me back to neuroscience, which was something that I hadn’t really paid much attention to since my days as a graduate student right before medical school. So, my motivation for starting the *Brain Science Podcast* was to share some of these exciting discoveries with others. Also, I wanted to become a part of the podcasting community, which was new and seemed really special.

In the first year of the show I focused on sharing a lot of basic ideas, which is why the first year is almost like taking an introductory course in neuroscience. The idea that was most exciting to me in the first year was brain plasticity—probably because I was 51 years old when I started the podcast. But it made me look at learning new things in a different light. In [Episode 18](#) Dr. Elkhonon Goldberg talked about this. He actually talked about the value of intentionally taking on new tasks, rather than always letting his younger assistants do things.

Reading the book, [The First Idea](#), for [Episode 6](#) also had a deep impact. The authors talked about the importance of emotional signaling as a possible basis for human language. Since then I have become very aware of how much nonverbal communication is constantly going on.

And then, in [Episode 7](#), when I interviewed Dr. Shanker, that was an important turning point because it was the first interview that I did, and once I got comfortable with interviewing, that became an important element of the show.

In the second year I began to alternate interviews with my own discussions of the books I was reading. I had many interesting guests. Probably my favorite guest was [Dr. John Ratey](#), who talked about exercise and the brain. I also enjoyed talking about the role of embodiment with several other guests.

And when I interviewed [Dr. Robert Burton](#) we talked about the unreliability of our own sense of knowing. To me, this indicates another reason why tolerance is important, and it tells us something about how our brains limit our ability to be “completely rational.” This was an ideal of the ancient Greeks, that we would be completely rational. But as we have seen as we have talked over the years about how our brains really work and the importance of emotional components, and also the fact that so much is going on outside of our conscious awareness that influences what we think and do, the idea that we can be completely rational ignores the evidence about how our brains work.

For the first two years of the *Brain Science Podcast* I put out two episodes a month. For the third year I cut back to a monthly episode with a focus on interviews. We continued to have wonderful guests; and we had several philosophers. Everyone seems to agree on the fact that the brain is essential for creating the mind. Well, not everyone; I guess I should say everyone I interviewed—since I’m not interviewing anyone from the Discovery Institute.

Anyway, there are different viewpoints—even within this basic agreement. There are actually still those that hold to a viewpoint that is essentially dualism, such as [David Chalmers](#); there are those that say that the mind is equal to the brain; and then there are those that say that the mind is equal to the brain, plus the body,

plus the world—which is kind of where I come down. But a key idea is that the explanatory power of neuroscience is continuing to expand.

Now, this year—year four—I just reviewed all those episodes, so I’m not going to talk about them in much detail. But I want to say that, as a practicing physician, I particularly appreciated the courage of Dr. Whitehouse speaking up against the trend labeling all dementia as ‘Alzheimer’s Disease.’ In fact, I found myself, after reading his book, avoiding the use of the term.

[Dr. Gallistel’s book](#), I want to mention: I appreciated the excellent explanation of Bayes’ theorem in his book, although we didn’t have time to talk about that. We actually talked about it in the first version of the interview—the version that I lost the recording of—and it didn’t make it into the second. But this was, again, relevant to me as a physician, because it’s important to understanding why ordering a test for something, when the person is not likely to have the condition, is more likely to lead to a false positive than an accurate diagnosis.

But I guess I would say that [Dr. Panksepp’s interview](#) had the biggest influence on how I see the world, because it made me see my interaction with my own dogs in a very different light. Understanding that mammals seem to have this innate need for contact—to be touched—makes me feel that when I’m petting them I’m not just doing it for myself. And also, over the last couple years I’ve seen several different television shows about the evolution of dogs, and I’m really beginning to feel that when it comes to dogs, since they have basically co-evolved with us to be our companions, I think that gives us a special responsibility toward them. But I guess that’s beyond the scope of the *Brain Science Podcast*.

So, trying to look at the big picture, I don’t really think I’ve captured the impact of the *Brain Science Podcast* on my own life. Obviously, doing the show has given me the satisfaction of learning many new skills, and discovering that I have a talent for interviewing. I’ve gotten wonderful feedback from around the world. It

has been very rewarding to be feeding the curiosity of others, and to find out that I'm inspiring younger people to study neuroscience. In fact, I've been very surprised about the impact of the show. It has been much broader than I would have ever imagined.

But I've also found myself reflecting on the question: what does it mean to be an expert? I don't consider myself an expert when it comes to the brain. My appreciation for the depth of the field has grown with each interview. I find myself thinking a lot about the role of experience. Several recent books have highlighted the role of experience in making rapid decisions. I haven't really talked about this subject in the last couple of years, although I did talk about it in a couple of episodes early on. But I see this every day in the emergency room, where, obviously, such skills are critically important. To the extent that reliable intuition exists, it's probably based on our ability to move decision-making outside of our awareness, with experience.

When I started this podcast four years ago I had the intention of building a new career. Ironically, I find myself looking at what I do as a physician very differently than I did four years ago. This might partly be because I'm getting older, but I think I've also developed a new appreciation for my own experience and expertise. So, I'm starting to wonder how I can use what I've learned to enrich and inform my career as a physician.

I still haven't figured out exactly how podcasting is going to fit into my life as I move forward, but what I have done is I have decided to make a new commitment to my career as an emergency physician. That's one reason why I'm going to be putting the show out less often than in the past.

Now, what about you, the listener? It has been very rewarding to know that the *Brain Science Podcast* has impacted listeners in many unexpected ways, and I would love to have your feedback about this. On the website at

brainsciencepodcast.com I have added a new Guest Book, and the way you find this is go to the tab at the top labeled 'Community,' and if you hover over that you'll see 'Guest Book,' and you can click on 'Guest Book' and you can leave your feedback there. Now, I know many of you have already sent me emails and you have posted reviews, but if you will go and leave your feedback there it will really help me a lot, because it will give me a place where potential sponsors and things like that will be able to see sort of a public record, all in one place, of how the *Brain Science Podcast* has impacted my listeners.

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The *Brain Science Podcast* is sponsored by Audible.com; and if you haven't already joined, you can get a free audiobook download by going to audiblepodcast.com/brainscience. I would suggest as a possible title the new book by Antonio Damasio, [*Self Comes to Mind: Constructing the Conscious Brain*](#). This new book is very relevant to the things we talked about today. I've already read it, and I'm in the midst of trying to get Dr. Damasio to come onto the show.

[music]

So, here we are in the last part of the episode, and I want to briefly look ahead to next year. As I announced a couple months ago, I'm going to an every-other-month schedule; and I am trying to get [Antonio Damasio](#) and also [V.S. Ramachandran](#) onto the show in 2011. Both have new books, although Dr. Ramachandran's hasn't come out yet. So, I am hoping to get them on, since I've had so many requests in the past to have them as guests.

Since I've only committed to producing six episodes in 2011, I will probably show a preference for featuring new books. If you want to send me a new book to review, the address is on the website at brainsciencepodcast.com.

As always, I'd like to close with a few announcements. The *Brain Science Podcast* website is at brainsciencepodcast.com; and I actually recently moved the website because it had been hacked. It was under WordPress and got hacked. So, for the first time, when you share a link to the website, it should actually have 'brainsciencepodcast.com' in the permalink. If it doesn't, you will know that you are not on the current website.

I mentioned that I've added a Guest Book to the new website and, also, I hope to add new features in the future. I'm using Squarespace, which means I can upgrade my service and get some other features. So, feel free to send suggestions and feedback to docartemis@gmail.com.

As far as [donations](#) go, there's a tab for that, also. You can still use PayPal, although I think a lot of people are moving to sending checks to the address that I've got on the website. And for those of you who like to do repeated small payments, you might want to consider changing over to electronic payments, because when you use PayPal they do take about \$1.50, at least, out of every donation.

I would like to mention the [Brain Science Podcast application](#) which has been available for the iPhone. It is now available in the Android marketplace, for those of you using Androids. This allows you to get the transcripts right on the phone, and has some other features which I hope you will explore.

One question I want feedback about is on the [Discussion Forum](#). Right now that Forum is still up, but it's not very active; and I'm considering two possibilities. One is just closing it down; and the second one is closing down the current version and starting a new Discussion Forum on the new website using the Squarespace discussion forum tools. I haven't really looked into this in any detail, but I'd be interested in your feedback on this.

Finally, for those of you that live in the UK, in 2011 I'm planning a trip to London, somewhere between May 8th and May 13th. I have to go to Rome on May 14th, but I'm planning to come to London first. I would like to schedule a public event if there is sufficient interest, so contact me if you are interested. I could use a sponsor for a public event, if there is enough interest to do something of sufficient size.

At any rate, I'm going to adjust my plans based on the interest and the number of responses. At the very least, we could do just a little small meet-up; but if there are enough people, we might be able to do something bigger. Just write to me at docartemis@gmail.com and let me know if you're interested. Also, if you live too far away from London to come, but you'd like to give me some advice about what to see and do in London, I'd love to get that.

And one other thing: Don't forget that I'm going to be putting out my other podcast, [Books and Ideas](#), probably in the alternate months between *Brain Science Podcasts*. So, if you haven't already subscribed to *Books and Ideas*, please give it a try.

Thanks again for listening. I look forward to talking to you again in a couple months.

[music]

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Transcribed by [Lori Wolfson](#)

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