

Shrink Rap Radio #253: Creativity and the Brain

David Van Nuys, Ph.D, aka "Dr. Dave" interviews Shelley Carson Ph.D.

(transcribed from www.ShrinkRapRadio.com by Susan Hird)

Excerpt: *Recent studies that have been done using brain imaging have indicated that highly creative individuals seem to activate their brains in patterns that are somewhat different from less creative people when they are engaged in creative work or creative activity and so my idea is, rather than to try to change our traits or our creative behavior, if we can learn to mimic these brain activation patterns of highly creative individuals we can enhance our own creativity...*

Introduction: That was the voice of my guest Dr. Shelley Carson discussing how we can use the brain to enhance our own creativity. Harvard Psychologist Shelley Carson Ph.D. is a researcher and instructor of creativity, psychopathology and resilience. She is the author of the 2010 book [Your Creative Brain: 7 Steps to maximize Imagination, Productivity and Innovation in your Life](#). Based on scientific findings from studies involving brain imaging, brain injury cases, neuropsychological testing and interviews with hundreds of highly creative individuals, Dr Carson has created a model of seven different brain states related to creative thought which she calls the 'CREATES' brain sets model. In her book she offers a route to greater creative productivity through a series of engaging exercises and problem sets based on cognitive behavioral therapy methods that enable us to strengthen our brain sets and switch among them with ease.

Dr Carson's research has been widely published in national and international scientific journals, and her findings have been featured on the Discovery Channel, CNN, NPR, the BBC and Radio Free Europe as well as in Newsweek, Scientific American and Psychology Today. She has won multiple awards for her unique Harvard course: [Creativity, Geniuses, Mad Men and Harvard Students](#). Dr Carson hosts [Your Creative Blog](#) on her interactive website which you can find at www.ShelleyCarson.com and she is a feature blogger for the Huffington Post with her [Creativity in the 21st Century](#) blog, and Psychology Today with her [Life as Art](#) blog. She maintains an active speaking schedule outside of the classroom, talking to such groups as the Congressional Biomedical Research Caucus, the National Council on Disability, the Massachusetts Manic Depressive and Depressive Association and the One Day University Lecture series. Since 2006 Dr. Carson has served as the Senior Consultant and subject matter expert for the Department of Defense Project [AfterDeployment.org](#) which provides innovative online mental health assistance to service members returning from Iraq and Afghanistan. Now here's the interview.

Dr. Dave: Dr. Shelley Carson, welcome to Shrink Rap Radio.

Dr. Shelley Carson: Hi David. Thank you so much for inviting me.

Dr. Dave: Well, I'm so happy to meet you. You've been researching and writing about creativity and I understand you teach an award winning class at Harvard called [*Creativity, Mad Men, Geniuses and Harvard Students*](#) and I have a feeling that there is a bunch of meaning packed into that title. Perhaps you could unpack it for us a bit.

Dr. Shelley Carson: Well, of the first question I ask students is "Which they think they are?" And I tell them, they're all Harvard Students because they're taking the Harvard course, and they're geniuses because they chose to take 'my' course. Whether they're mad men or not, will yet to be seen.

Dr. Dave: That's delightful.

Dr. Shelley Carson: So, yes. I actually began my study of creativity as a psychopathologist and I was interested way back in Grad School of the incredible number of highly creative luminaries, both past and present who seemed to suffer from inner demons and that really fascinated me and led me into the study of creativity per se.

Dr. Dave: Ok, well that was one of the things I was going to ask you, was how you got into it. You said that you were a psychopathologist and I'm not sure I've heard anybody describe themselves quite that way. Does that mean you were a clinical psychologist studying psychopathology or what?

Dr. Shelley Carson: No, I'm actually a research psychologist who studies mental disorders.

Dr. Dave: Oh. Ok. Now your title does raise the whole question about the relationship between madness and creativity and I think that's a question that's been around for a long time, but maybe there is some new research on the topic?

Dr. Shelley Carson: Well, it's actually been around since the ancient days of the Greeks. Plato identified poets, playwrights and philosophers as a group of people who suffered from what he called 'divine madness' which he saw as given as a gift from the gods, but madness nevertheless, and Aristotle was the first person that associated creative work with melancholia, or what we call depression today. So the modern research on this topic indicates that highly creative individuals do seem to have a greater prevalence of certain types of mental disorders, including mood disorders like depression and bipolar disorder, and also what we call psychosis proneness and finally alcohol and drug abuse. Now that doesn't mean that most highly creative people have mental disorders, in fact, we're looking at a very small percentage, but it is still a larger group than you would find in the general population. And it also doesn't mean that your listeners, if they decide to enhance their creativity, are also going to enhance their symptoms of mental disorder.

Dr. Dave: Ok. And we're also not advocating that they go out and get drugged up to become more creative.

Dr. Shelley Carson: Oh, absolutely not! Absolutely not. There are better ways to be creative.

Dr. Dave: I recently interviewed Dr. Darold Treffert, MD who studied savants and he cites rare cases where someone, a non-autistic adult who has had a knock on the head or some other brain event, has suddenly released musical or artistic genius.

Dr. Shelley Carson: Yes, isn't that amazing.

Dr. Dave: It is.

Dr. Shelley Carson: Another neuroscientist, Bruce Miller, has studied a number of these cases and I have actually been working with and in contact with Tommy McHugh who is a British man who had actually a brain aneurism and afterwards became constantly artistic – and he has filled every square inch of his house, including the ceiling with artwork and fills canvases with art as quickly as the materials can be provided to him. And he also does sculpting, and it's interesting because, before this, he was in construction work

Dr. Dave: Wow.

Dr. Shelley Carson: So, it is interesting and one of the suggestions is that what you are doing is that you are disinhibiting certain parts of the brain. All of us have these creative aspects of our brain, and these creative thoughts going on in our head but whether they reach conscious awareness or not is what determines whether we have creative ideas. So one of the things we really want to do is be able to turn down the volume on our cognitive filters that keep different ideas out of conscious awareness and that seems to be, in fact, maybe one of the mechanisms by which these strange mental events like strokes or aneurisms or dementia can do for people that turn on their creative activity.

Dr. Dave: Well, you talk about quieting the noisy sort of conscious mind so that some of the unconscious creativity can emerge and this immediately makes me think of meditation techniques. Has anybody tried to see if there is a correlation between meditators and creativity?

Dr. Shelley Carson: There have been some studies of meditators and creativity and one of the things that we've found is that in order to allow these creative ideas that I was discussing to feed forward from what I call the research and development parts of the brain which are located in associational cortices that are back further in the brain and what you want is for them to be able to feed forward into conscious awareness. The way that we do that is to change the brain activation pattern so that the pre-

frontal cortex becomes somewhat defocused and allows information to feed forward. Now, meditation is...especially certain types of meditation like mindful meditation or openness meditation, and I actually have an example of this in my book, will allow you to defocus your prefrontal cortex and that is valuable in allowing creative ideas to feed forward.

Dr. Dave: How fascinating. Now before we go any further, perhaps it would be good if you were to define what *you* mean by creativity.

Dr. Shelley Carson: Well, here's *my* definition: Creativity is the act of taking bits of information, and this information can either come from your environment or from your unique store of memories, knowledge, and skills inside your brain, take this information, combine it and recombine it in novel and original ways to come up with creative ideas that solve a particular problem.

Dr. Dave: OK. Well...

Dr. Shelley Carson: Most creativity researchers say that in order for an act to be creative, it has to have two components: one is novelty or originality and the second is usefulness or adaptability of some sort.

Dr. Dave: Ok. Well, I've been reading in your 2010 book "Your Creative Brain" and it's certainly chock full of information related to creativity and the brain and lots and lots of exercises to help stimulate creativity. I sense a real generosity in the abundance of material that you provide the reader. How long did it take to write this book?

Dr. Shelley Carson: Well, it took about 9 months to write the book but of course it took 14-15 years of research before that to gather the information.

Dr. Dave: Oh, yeah, it's just...I imagine maybe a lot of this information was at hand as a result of the course that you teach and other work that you've been doing, but still, it's very generous in terms of all the information and the exercises and so on. What did you hope that people would get out of the book?

Dr. Shelley Carson: Well, there's a few points that I hope people will realize from the book. The first is that we're all creative. All of us have this wonderful machine inside our heads, our creative brain. We all have the hardware that we need to be creative. The second thing is it's really important now more than ever that we try to hone our creative skills, because of the rapid change environment of the 21st century. So many things that we could do almost by rote or there were specific road maps as to how to do it in the past, those are changing before our eyes, and there's so much change going on now that really we need to be creative, not just to keep up but if we want to actually make a difference and help shape the world of the future. And the third thing I want people to understand is that you can train yourself to be more creative

and you can actually change your brain by doing that – so training and practice, and the book just gives you some guidelines and some exercises on how to do this.

Dr. Dave: Yeah, I taught an undergraduate course on creativity myself, many years ago.

Dr. Shelley Carson: No way?!

Dr. Dave: Yeah, but there was nothing in my course about the brain or neuroscience and since that time we've seen this explosion of knowledge about the brain and you've really organized your book around our current understanding of the brain. Perhaps you could give us a brief tour of the brain in terms of the centers that seem to be implicated in creativity.

Dr. Shelley Carson: Well, there are a number of what we call 'creative hot spots' in the brain and the first and probably most important is the prefrontal cortex, especially the side areas of the prefrontal cortex which is called dorsolateral prefrontal cortex. And this is...these areas are involved in working memory, they're involved in consciously thinking about ideas. This would be the executive centre of your brain. So this is sort of the control centre. The CEO, so to speak.

Dr. Dave: Ok.

Dr. Shelley Carson: And then the second part that's important is the – let's see, what will we go to next? Perhaps we'll talk about the associational cortices that are located at the junction – just above the ear and slightly backward from that which are called associational cortices in the brain and they're in the temporal and parietal lobes and this where information that is processed at a lower level of cognition comes together and is kind of incorporated or synthesized and this is one of the areas where perhaps ideas such as metaphorical thinking are formulated.

Dr. Dave: Mm hm.

Dr. Shelley Carson: One other place I wanted to mention and it's important is the reward centre of the brain because this is where you're going to get motivation. Many highly creative people are intrinsically motivated. That means they're given internal rewards for working on creative activities. Creative work seems to be a reward in and of itself and it's also most valuable and most creative when it's done simply for the joy of doing it rather than to receive an external reward such as a prize or money.

Dr. Dave: Yes. Yes, that makes sense in my own experience. Now you point out that in the past creativity has been studied mostly as a trait, that is studies of highly creative people, but *your* interest has focussed more on creativity in terms of brain states, so tell us about that.

Dr. Shelley Carson: Ok. Well, I'm not saying that I don't study the trait aspects, which I certainly think are important too, but one of the more recent studies that have been done using brain imaging have indicated that highly creative individuals seem to activate their brains in patterns that are somewhat different from less creative people when they are engaged in creative work or creative activity. And so my idea is, rather than try to change our traits or our creative behavior, if we can learn to mimic these brain activation patterns of highly creative individuals, we can enhance our own creativity. So that's the basis of it.

Dr. Dave: Yeah, and you've gone on, you've created a model with the acronym CREATES – I think that's called...is that called eponymous when the name so closely...

Dr. Shelley Carson: Yes! Exactly.

Dr. Dave: Ah, I finally used that word! Ok. You've created a model with the acronym CREATES, each letter referring to one of seven different brain states which you call 'brain sets'. So...

Dr. Shelley Carson: Right.

Dr. Dave: take us through those a bit if you will.

Dr. Shelley Carson: Ok. So, first of all, let me say, I call them 'brain sets'. They are actually activation patterns or networks in the brain that seem to be activated by highly creative individuals as they go through different stages of the creative process and the word 'brain set' is a take-off on 'mind set' because, as you know, when you're in a different 'mind set' you look at things differently. Likewise, when you're in different 'brain sets' which are biological equivalents of 'mind sets', you're going to perceive the environment differently, and you're also going to go about solving problems differently. So, again, the brain sets form the word 'CREATES' and the 'C' from 'CREATES' is the 'connect' brain set. And in this brain set you are generating multiple ideas, you've activated numerous associational networks in the brain and one idea seems to lead to another to another to another. So when you're brainstorming you're actually in this 'connect' brain set because everything seems connected to everything else.

Dr. Dave: Mm hmm.

Dr. Shelley Carson: So 'R' stands for 'reason' and this is a brain set in which you are logically solving problems, sequentially moving through steps of problem-solving and this is important for improving and reworking and elaborating a creative idea. When you say 'I am thinking about something', you're usually thinking from the 'reason' brain set using reasoning and logic. The 'E' stands for 'envision' and in this brain set you're thinking visually, you're using mental imagery, using your imagination and seeing patterns actually emerge in your mind. If you think about the

world around you and everything that humans have made, before it was an object or a concept it was a mental image in someone's mind. So this is really where ideas begin, is with mental imagery. The 'absorb' brain set which happens to be my mental comfort zone is a brain state in which you are open and receptive to new ideas and to stimuli coming in through the environment. You're open to new experiences and ideas and you are absorbing information non-judgmentally, the way a sponge would absorb water.

Dr. Dave: So 'A' is for 'absorb'.

Dr. Shelley Carson: 'Absorb'. Right.

Dr. Dave: Yes.

Dr. Shelley Carson: Then we're going on to 'T' which is 'transform' and basically in this, when you're in this brain set, you are in a state of mild anxiety or depression and the idea is to take this negative energy and funnel it into a creative and positive outcome, which we've seen through art therapy, music therapy, writing therapy, that when you're engaged in a creative project, you sort of lose track of time and you also lose the ability to be anxious or even depressed. It becomes totally absorbing of your attention. So the idea of 'transform' is to take that negative emotional state and transform it into positive work.

Dr. Dave: That's fascinating because we don't normally associate our negative states with creativity.

Dr. Shelley Carson: Right, well, remember how I said that highly creative people have a greater incidence of depression and sometimes bipolar disorder. One of the thoughts is that the act of going from a negative emotional state to a more elevated mood state, opens associational networks and increases creativity.

Dr. Dave: Yeah. Great. Ok, take us through 'E' and 'S'.

Dr. Shelley Carson: Ok. So the 'evaluate' brain set is a state in which you are judging or evaluating your creative ideas. The judgement centre of the brain allows you to make rapid evaluations of things in the environment and also of your own ideas. Many people find this to be their comfort zone. They're very good at quickly assessing or sizing things up and making judgements but while this has an advantage, at one point in the creative process, it's detrimental to the generation of multiple creative ideas. So, the idea is use the 'evaluate' brain set judiciously, so to speak. And then finally the 'strain' brain set which is 'S' – the 'S' at the end of 'CREATES' is a state like 'flow' or 'being in the zone' where thoughts and actions flow almost effortlessly, seemingly without much conscious input. And this is the state of improvisation or the state that you might use, say, if you are playing jazz music.

Dr. Dave: One of the things you say is that we all have one or two brain sets that we tend to rely on that come to us more or less naturally, for example, I think you mentioned 'comfort zone' as you were speaking and you are challenging us to move out of our mental comfort zone to develop the other ones so that we have the flexibility to tap into any of the seven modalities that you write about. Do I have that right?

Dr. Shelley Carson: That's true. In fact, when we, again, when we look at brain imaging studies of highly creative people, they seem to be cognitively flexible. That is, they are able to change brain states, depending on the part of the creative process that they are currently in. So, being able to be flexible and move between different brain states is as important as learning how to get in to each of the brain states.

Dr. Dave: You know, one of the things that I liked as I was reading in the book was your modesty and encountered several places where you more or less said something along the lines of 'look, this is a model and not scientifically proven fact, but it does draw on the latest neurological research, and I've seen it be helpful to my students and others who have applied it in their lives. And I really appreciated that.

Dr. Shelley Carson: Well, thank you. I mean I do believe that this model is a work in progress and the more we learn about the brain, the more changes, additions or alterations – I'm ready to alter it as the science dictates.

Dr. Dave: Well, good for you. You know, so many of these books that come out promise the world and, you know, make extravagant claims, so I'm really glad to see that you've avoided that pitfall.

Dr. Shelley Carson: Well, thank you.

Dr. Dave: Now, you've got all these exercises in the book and I'm wondering if there are one or two that might work in this interview for our listeners or one that you could run me through?

Dr. Shelley Carson: Ok. Well there are a couple of things that I think are important for your listeners to think about. Again, getting into this 'absorb' brain set, where you are actively noticing things around you, this is very important for creativity because what you are doing is, you're going to loosen the filter that is keeping a lot of information out of conscious awareness. Now obviously, as we go through our day, our brains are taking in and processing much much more information than we can actually consciously attend to. If all that information entered our conscious awareness, we'd be completely overwhelmed. But what we do see with highly creative people they seem to have access to more of that subconscious material than less creative people. So what we want to do is kind of loosen that filter, let more information in. And one of the exercises that I suggest for this is one that I call 'notice new things' or 'notice new aspects'. Would you like to try it?

Dr. Dave: Yes. Sure. I'm always game.

Dr. Shelley Carson: Ok. Well, for those listeners that are driving your car, please just listen. Don't participate in the experience here. But what we do is try to notice new things around us. And the first thing you need to do is take a couple of deep breaths. Just relax. Ok. Now what I'd like you to do is close your eyes, again, not if you're driving or operating heavy machinery while you're listening. And first of all feel the floor beneath your feet. Feel how your bare feet or your shoes feel against the floor. If you're sitting or lying down, experience how the chair feels against your back or against your seat. Notice the way your clothing feels against your skin. Actually feel where your clothing is touching your arms or your legs. And now feel the air around you. Is it moving or is it still? Is it moist? Is it dry? Ok, now listen. What do you hear? You can hear my voice. What else do you hear? Do you hear the hum of your computer? Dogs barking in the background? The sound of traffic? Sound of your own breathing? If you listen carefully, there are many sounds in your environment that you are not usually paying attention to. Now breathe in. What do you smell? Are there odors? Aromas? Fragrances in the air? And now if you would open your eyes and look around you. First notice the different colors – the multitude of colors that are in your environment. Look at the different colors that shadows make where either the sunlight or an artificial light is casting shadow, how it changes the color. Look at angles in your environment. Does the walls make a straight angle with the ceiling? Look at the angles that furniture makes or if you're outside, look at the angles that trees make with the ground. All of these things... you can take a deep breath and come back now... but all of these things are areas that we often don't pay attention to and if we can teach ourselves as we go through our day to take a few minutes and just experience everything that's around us in a non-judgmental way, we'll open some of these cognitive filters I've been talking about that will allow more information to be available to you that you can combine in creative ways.

Dr. Dave: You know what was particularly dramatic for me as I followed through on the exercise was when you said 'notice the shadows' and I'm looking at the shadows that the picture frames in front of me here in my office – I can see picture frames that... uh... and they're each casting a shadow, and so is the clock on the wall, and with the shadow around it, that I've never noticed before.

Dr. Shelley Carson: We take things like this for granted and yet they're truly beautiful if we'll take the time to look at them.

Dr. Dave: Yes, and I can feel a new invention trying to emerge right now! I think you have another exercise that we talked about maybe using. Do you think we could do one more?

Dr. Shelley Carson: Sure. If you're willing, I'm willing.

Dr. Dave: Yeah, I'm willing. I hope I'm sufficiently creative to be a good subject, but we'll see.

Dr. Shelley Carson: Ok. So one of the things that has been demonstrated to enhance your ability to generate creative ideas is to practice divergent thinking tasks.

Dr. Dave: Oh, yes.

Dr. Shelley Carson: And basically what that means is that you're given an unstructured problem and you have to generate as many possible answers as you can within a given length of time. So let's try... when I finish describing this, let's give your listeners one minute to answer the question, and try to generate as many answers as you can to this. This is an actual, real life situation, and here it is.

Dr. Dave: Ok. Now, before you do it, I will play some music during the minute of silence, after you describe what we're to do that my listeners will hear one minute of music...so it doesn't mean that we're at the end of the show...wait for the end of the music and come back.

Dr. Shelley Carson: Ok. Good. Alright, here's the dilemma. You are scheduled to give expert testimony before a Congressional Committee in ten minutes and your testimony will be broadcast on C-Span and recorded for posterity. You look down and notice your fly is broken and your slacks won't zip up. What do you do? Think of as many solutions as you can without judging them. No answer is too silly. You have one minute.

[Music for one minute.]

Dr. Shelley Carson: OK. The minute's up. Now, how many solutions did you come up with? And what were they? Maybe there is some way that your listeners can write into you and let you know some of their better answers to this?

Dr. Dave: Yeah, that would be interesting. And they do know my email address, it's shrink@shrinkrapradio.com I would be interested in theirs and I can tell you that two things came up for me. One was just to confess to the audience that I'm aware that my fly is down because I think that kind of honesty is refreshing to people.

Dr. Shelley Carson: That's a great answer. I'm sure they would appreciate your honesty and congruence where they probably don't see it that often.

Dr. Dave: Yes. And then the other is a memory that I actually ran into a situation pretty close to that. One of the other hats that I wear is that of a market researcher and I was calling on somebody at Hewlett-Packard and there was the chance that it was going to be a significant project that I would win and they wanted to meet with me personally so I got all dressed up, suit, tie, jacket etc. and then I went into the

bathroom and washed my hands and in the process of washing my hands water splashed all over the front of my khaki pants which made it look like I had wet my pants!

Dr. Shelley Carson: Oh no!!

Dr. Dave: Yes. So, fortunately, I had a briefcase with me, and I just kind of held my briefcase in front of myself during the...

Dr. Shelley Carson: That is so funny!

Dr. Dave: meeting the person and all and I was able to disguise it, but it was just the kind of thing that you do not want to happen.

Dr. Shelley Carson: I know. I know. Well, the thing that makes it so awkward and this actually did happen to one of my colleagues before he was going to testify before Congress, is that you have such a short amount of time, and of course, the only thing you really want to do is run away and so several of my students, when I give them this test, their first idea is 'call the whole thing off', right?

Dr. Dave: Yeah. Yeah.

Dr. Shelley Carson: But there are a number of other... I'll give you a couple of kind of innovative or interesting answers that students have given me over the years that I thought were kind of creative. One was, 'use a stick of gum to stick the fly together.'

Dr. Dave: Oh, my goodness. Great idea.

Dr. Shelley Carson: So that's a good idea. Another one said 'find a sewing kit. Congress probably has one that cost the tax payer several thousand dollars!'

Dr. Dave: That's great.

Dr. Shelley Carson: And here's another one: 'make a joke about how Congress has raised your taxes so much you can't afford a decent suit.'

Dr. Dave: Oh, those are good ones.

Dr. Shelley Carson: There are a lot of different answers but what my colleague was actually able to do was find a stapler and staple the fly shut.

Dr. Dave: Oh, that's a great one. That's a good one.

Dr. Shelley Carson: So, yes, fortunately, he was a divergent thinker.

Dr. Dave: Yeah! Now I understand you've been doing some interesting research on light and creativity and that's rather unexpected. What drew you in that direction and what have you found?

Dr. Shelley Carson: Well, one of the things that, and this isn't published yet so I don't want to say too much about it but my colleague Alice Flaherty who is a neurologist at Harvard Medical School and I have been experimenting with 10,000 lux therapeutic light and what we've actually found is that when individuals were exposed to it over a period of a couple of weeks, their creativity scores increased significantly over those who were exposed to a placebo light so we had light boxes that looked like regular therapeutic light boxes but they emitted non-therapeutic light. And so that was kind of an interesting finding.

Dr. Dave: Now, what's therapeutic about the light? Special kind of light, full-spectrum? or specially bright?

Dr. Shelley Carson: It's actually the light that is used to treat Seasonal Affective Disorder.

Dr. Dave: Ok.

Dr. Shelley Carson: In people that have seasonal depression patterns.

Dr. Dave: Right.

Dr. Shelley Carson: And it is a full-spectrum light but it has to do with also the angle of the light and the lux of the light which is a combination, I guess, of the actual intensity of the light and the distance it is from the part of the eye that absorbs it.

Dr. Dave: Hmm.

Dr. Shelley Carson: So, this is all...this is interesting and it is leading me to think that there are a lot of different ways that we can affect creativity. But certainly there are seasonal patterns in creativity and maybe some people in your audience have experienced this, that they seem to be more creative at certain parts, certain times of the year.

Dr. Dave: Mm hmm. I know I'm most creative in the shower. Is there any research on that?

Dr. Shelley Carson: Well, I can tell you that from my own personal example, that that's where I do my creative thinking as well!

Dr. Dave: Yeah!

Dr. Shelley Carson: Some people do it after exercise. That seems to help some people to think more creatively. Some people actually find that they have their creative ideas

when they're walking. And again, if you walk in an area of natural beauty like woods or a park, what you're doing is defocussing your attention because there's so much beautiful, natural stimuli around you that you're not focussing on one particular thing. And again, this is going to put you in a disinhibited state that allows creative ideas to feed forward.

Dr. Dave: Mm hmm.

Dr. Shelley Carson: Now Mozart suggested that he came up with his best ideas for symphonies when he was riding in a carriage after a fine meal in Vienna, so I've always thought 'well, hey, let's all do *that*, right?!'

Dr. Dave: Yeah, right.

Dr. Shelley Carson: We'll go to Vienna, have a great meal, and ride around in a carriage.

Dr. Dave: That sounds good to me. As a former Yoga student and teacher of Yoga I was also fascinated to see that you're studying the yogic technique of alternate nostril breathing. Can you say anything about that?

Dr. Shelley Carson: Oh, yes. Well, actually, this was the brain child of one of my students who was also interested in alternate nostril breathing and she had read that anecdotally, people were reporting that alternate nostril breathing would enhance creativity and possibly the mechanism behind that was by breathing through alternate nostrils you are activating both hemispheres of your brain. So many of your listeners probably have heard about or read literature that suggests creativity is associated with right brain activation.

Dr. Dave: Mm hm.

Dr. Shelley Carson: And in fact, what we know now is that, yes, there is right brain activation in creativity, but that you really need to have both sides of the brain activated in order to be highly creative. And that they need to be speaking to each other. So we haven't completed the study yet but at this point it looks like just getting into a state of deep breathing increases creativity, perhaps because it reduces stress but the results about alternate nostril aren't panning out yet.

Dr. Dave: Ok. Now to shift ground somewhat, I understand you've been doing some consulting work for the Department of Defense to help them provide innovative online mental health assistance for soldiers returning from Iraq and Afghanistan. What can you tell us about that?

Dr. Shelley Carson: Oh yes. This is sort of my 'other world', my other job. Yes, I work for the Department of Defense and the name of the project is AfterDeployment.org So this is a website that is free for everybody to go visit, and it provides self-help

assistance on a variety of topics including post-traumatic stress symptoms, depression, alcohol abuse, anger management and sleep problems and relationship difficulties, among other things. These are some of the problems that, unfortunately, our Service Members are experiencing as they return from multiple deployments in Iraq and Afghanistan. So this has led me into research into resilience and how we can increase resilience and enhance resilience using cognitive behavioral techniques, and that's what we're actually giving as different exercises, cognitive behavioral exercises right on the website. So anyone can go take advantage of this. It's not just for Service Members, although it's geared towards Service Members and their families.

Dr. Dave: Well, that's a very interesting project and I did visit the website. You know Shelley, we probably should wrap it up here. Do you have any final thought you'd like to leave our listeners with?

Dr. Shelley Carson: Well, I would just like to remind them that all of you are creative, whether you think of yourself that way or not. And it's very important in this rapid change climate of the 21st century that you hone your creative abilities so that you can not only survive but thrive and make a contribution towards shaping the world of the future. It's easy to do this if you will train and exercise your brain and in this way we can all become more creative.

Dr. Dave: OK. Well, that sounds like good advice. Dr. Shelley Carson, thanks so much for being my guest today on Shrink Rap Radio.

Dr. Shelley Carson: Thank you. It was a pleasure.

Dr. Dave: I certainly hope you enjoyed this interview with Harvard lecturer, researcher and author Dr. Shelley Carson. As you heard me mention, I taught a course on Creativity at Sonoma State University many years ago. Actually, I think I taught it for some number of semesters and I've also been through something called the Synectics Training as part of my work in the Market Research and the Organization Development arenas. On occasion it's been my job to facilitate corporate retreats to either plan research or to assist the group in planning the action steps following research, so from these kinds of experiences I'm quite familiar with many of the concepts that Dr. Carson covered here such as brainstorming, withholding judgement during the idea generation phase, convergent thinking, divergent thinking and others. The piece that was really new for me is the way she is able to link this various activities and processes to brain centers and brain states. If you're interested in creativity, you'll find lots of useful and state-of-the-art information in her book *'Your Creative Brain'*. She also has generously posted activities and instruction on the two websites we mentioned: www.ShelleyCarson.com and AfterDeployment.org and of course we'd be interested to hear of any creative solutions you had to the open zipper exercise.