John Nicholls ACGM 2014 Keynote Speech Thursday, June 12, 2014

Thank you all and the organizers for honoring me with asking me to do this. It is an honor, though it's also a nerve-wracking one. The theme of the whole conference is, of course, "Keeping it simple." And when I was asked to give this keynote address, I was asked to speak to this theme. However I've found it very difficult to do that, so I'm afraid this isn't going to be entirely simple. That is partly because something that more and more interests and fascinates me about the Technique is not just how simple it is, but how extraordinarily profound it is in its ability to affect us at very, very deep levels. If you really practice it, if you really put it into practice, it becomes an *embodiment* practice, and so we're going to look at just what that might mean.

Also, a curious thing happened as I started to ponder this. A whole raft of key words drifted into my mind, all beginning with the letter "A". So you might say tonight's keynote address is brought to you courtesy of the letter A.

What kind of words? Well:

Alexander, obviously Awareness, obviously Adaptability, a very important human quality Anticipation, as in learning to anticipate disturbance of balance Automatic, as in the technical term "automatic postural responses" Attitude, a word I love that we'll get to Analog, another favorite Alexander-related word of mine Aspiration, a word which I think has great resonance when we talk about direction Antagonistic, as in antagonistic pulls Acceptance, as in learning to live with antagonistic qualities Art, as in Arts and Sciences and Arts and Crafts

So, I'm going to use those key words as markers as we go on through this.

Automatic postural responses

I think we can take for granted the words Alexander and Awareness. Let's go on to *automatic* as in automatic postural responses. In the latest issue of *AmSAT Journal* you'll find some articles (I wrote one of them myself) touching on the question of whether we are dealing with reflexes for postural and movement coordination that are built into us, pristine perfect and present from birth in all of us, working well when we were children, which we somehow with our lazy and probably immoral behavior have really messed up. And notice, in FM's literature he has a liking for words like "debauched," and "perverted"—there are some distinctly moral overtones there. So we've gotten ourselves into this shocking situation where we've drifted away from that initial perfection of childhood. And how many thousands of dollars, or dare we say tens of thousands, have we paid …and how many thousands of hours have we all had to put in to somehow eradicating those evil habits and getting back to the original perfection?

Now this is in the nature of what, without being pejorative, I am going to call a myth. That may sound like a pejorative – the word myth could be interpreted to mean something that's not true, that's a fantasy - but during my first visit to America I learned a different way to think of myth. I was teaching at Michael Frederick's invitation in Ojai, California, at a residential. I was giving a talk to the participants at the residential, giving what I thought was a simple anatomical explanation of the Technique. A man came up to me afterwards, who turned out to have a medical background, and he said to me: "That was a lovely myth." I was a little upset about this. "Myth?" I said, "I'm telling you the facts." "Oh come on," he said, I'm not trying to put you down. Every profession, every practice,

has its stories that we tell ourselves, to explain ourselves to ourselves, and of course to explain ourselves also to others; but in particular, our myths are the stories we tell to explain ourselves to ourselves."

But telling ourselves the myth of the perfect child has an unfortunate side effect that I've noticed in myself over decades, and I've discovered more and more recently in conversations with other teachers. There's an inner shadow side to this: we never seem to get there; we never seem to get back to this perfection. These evil habits never seem to go away. What's wrong with us? Are we just pathetically weak compared to FM himself? I think that if you talk to people, very privately perhaps, you will find that there is in many of us (or has been, or can be) significant traces of inner anxiety, guilt, and even a little touch of shame. "I've been an Alexander teacher all these decades and I still these habits haven't totally disappeared. What's gone wrong? I still haven't recovered effortless, one hundred percent, 24/7 perfect use.

Well, I've also talked to yoga teachers, and surprise, surprise, they have the same problem. Some of them have this little inner secret: they're up there as paragons of their art, expected to be poised and tranquil at all times, and yet inside they don't feel quite up to it. So, I think it might be helpful to us to reconsider the reflex model and the concomitant perfect child story, because science is really tremendously coming to our aid here in two vital aspects.

The concept of automatic postural responses as opposed to reflexes allows for ongoing, constant, continuous learning.

Adaptability and Anticipation

When I first encountered automatic postural responses, I had a reaction that many of you probably have: "Oh, it's just a synonym for reflexes. Why do these scientists think that by changing their vocabulary, they can kid us into thinking they're talking about something new? It's really all the same thing in different words." Actually, I now don't think it is. The concept of automatic postural responses, together with something called *central set*, really does give us a much more open-ended model, in which our nervous system, even from the first few weeks and months of life, is continually learning, even at the level of how much muscle tone needs to be distributed throughout the body for whatever actions we wish to perform. We can adapt much quicker to new environments than pure reflexes would allow, and learn from past experience so we can prepare in advance for actions we might want to take. It's clear that distribution of muscle tone is very much something that we're dealing with at a physical level as Alexander Technique teachers, and although we're all born with some basic reflexes as starting points so to speak, we're also born with the neurological capacity of continually modulating, moderating, and adapting muscle tone, not only in response to the actions we make, but in advance of them. This is what Dr. Tristram Roberts in the UK, author of The Neurophysiology of Postural Mechanisms and Understanding Balance, and a supporter of the Alexander Technique, called anticipatory pre-emptive actions: we don't just respond, we also predict and adjust tone accordingly in advance of our movements. Later scientific studies have formulated the concept of central set, so here's a description of central set from a book written for physical therapists; it follows a passage explaining that relying on feedback as we move and perform tasks is a relatively slow process, and therefore we also make use of anticipatory control:

"Anticipatory control is a process in which, in a known or commonly experienced situation (when the likely perturbations have been learned), signals for postural compensation and modification are sent before (in anticipation of) receipt of sensory information that the intervention is actually required. Anticipatory control occurs during most of our regular daily activities (e.g. writing and stepping), reducing movement execution times considerably and therefore increasing the efficiency of the task effected... Anticipatory control is effected by muscle synergies and these synergies are the same as those utilized by postural control feedback systems... Researchers have now confirmed that postural muscle synergies are preselected in advance of planned action when that action is serial, expected and/or practiced. The process of this central preselection is known as central set... The central set

therefore reduces the risk of our over- or under-recruiting postural control-related muscles, thus increasing our postural efficiency." (From *Human Movement* by Everett and Kell, 2010)

When I reach for the glass of water on the podium in front of me, the weight of my arm going forward will drag my whole body forward. So even before my arm and hand begin to move, the musculature in the back of my calves, quite below the level of my conscious, gets a little extra tone, because I'm considering reaching for the glass of water; and other pre-sets will also be involved. That's much more sophisticated as a model, but it also has this advantage that it's an open-ended learning model. And as we go along, we'll see how important this could be.

So we're looking at an open-ended learning model rather than the return to in-built reflexes and the myth of the perfect child. And as we're continually learning, even as infants, we're building up that thing that FM called a sensory register, kinesthesia, a sensory appreciation. The modern jargon now in neuroscience is call this either the body schema, or simply the internal representation.

This is well-accepted now among the scientists studying these issues although of course these studies themselves are continually evolving and adapting.¹ And one of the very attractive things from our point of view about an open-ended, future oriented learning model is that those of us who learned rather badly the first time around, get a second chance, and a third chance, and a fourth chance, and a fifth chance. You can go on relearning, being re-educated, and you can learn better; and better.

So I think that's a helpful aspect to bear in mind, if late at night when you're lying in bed waiting to go to sleep you have these awful whirling thoughts about what a bad person you are because, today was one of those days when the bad habits came back and... Omg, I've been in this work for... how many years?

Immortal habits

The other way in which Science is coming to our aid, is right there in this month's (June 2014) *Scientific American*². The front cover story is all about habits, how we develop them, and so on. One of the key things that has emerged now from a lot of study of the neuroscience of habit is, actually, FM was in a sense wrong, with his seeming belief that the old habits will wither away and disappear. The scientific studies seem to show that the tracks in your brain never disappear. Now admittedly, these studies are not of human beings. They have mainly been using rats and mice, particularly rats. But most of this kind of research in the past turned out to have a lot of relevance to us.

The fact is that if a habit pattern that has been built up in a bunch of rats, and then been superseded by teaching them another habit pattern, it only takes a very small change in one very small part of the neocortex, the frontal part of the brain, and it says in the article: "The old habits come back in seconds." That's a little terrifying – in seconds! But it's part of our own experience, and one that we need to recognize that, years and decades into practicing the Alexander Technique, if a certain stimulus that knocks you off guard, takes you by surprise when you're tired or stressed or your health isn't great...you can be taken back to those old habits in seconds.

The moral of the story is: don't beat yourself up about it. You're not a bad person. Science is on our side.

Looking at a way of explaining ourselves to ourselves, a myth, if you like, that has more of the futureoriented, open-ended learning and growth model about it, reminded me that Walter Carrington told me that he thought the way FM talked about his work made it seem as if FM believed we could consciously tap into the energy of growth that fuels our physical grown in the first 20 years or so of our life. Now that may sound a little wacky. The fact is, that after your early 20's you don't grow much anymore, in that physical sense. But growth after the early 20s, is going to have to be very much a growth in consciousness, and a growth in skillfulness. Skillfulness in living. There is a phrase of FM's that has come back to me recently, one that never really struck me when I first heard it, but it seems that he used to refer to directions as: "Conscious guiding orders." Margaret Goldie also used to like to use that phrase. FM also refers in places in his books to: "conscious guidance and control."

What I'm liking here is that the word guidance comes first, not the word: control. We're so accustomed to hearing constructive conscious control, conscious control. Conscious *guidance* and control has a different nuance about it.

This is important to us also, I think, because, again, as science, philosophy, and our general cultural view of life have evolved and changed since FM's time, perhaps the seeming opposition between reason and emotion we find in FM's writings has outlived its usefulness to some extent. It does seem more and more apparent that these two functions do not have to be seen in opposition to each other. Some of you may know that Antonio Damasio's neuroscience work suggests that someone in whom the parts of the brain most involved in reasoning are separated from the parts that are most involved in emotion (through trauma to the head and brain) has great difficulty making any decisions³. So if you actually were a purely rational creature, you might find that you don't actually get very far. You stand there endlessly debating with yourself the pros and cons of each choice that you might be able to make, but nothing happens to give that little extra weight to one side of the argument over the other.

Assessment

Now if we're consciously guiding our actions, our responses to the stimuli of life, how do we decide what choices to make? What actions to perform instead of others, and how to perform them? Well, in one sense that's a huge subject and it relates to the fact that the Technique is often seen or described as a tool, an instrument, a vehicle. A vehicle that will take you anywhere you want to go. It's in a sense, a value-free vehicle.

Given a vehicle, where do you want to go? How do you decide that?

We build up in a lifetime our own set of values. We build up our values by the choices we make, the people we choose to associate most with as opposed to the people we choose not to associate with, the books we read, the movies we to go to etc. All those influences we choose to expose ourselves to, that's how we build up our values, and it's on the basis of those, that we make the decisions, of how to respond, how to act.

At a really simple, physical level, because you and I, all of us here, have chosen to make "good use" in an Alexander sense an important part of our value system, at simple physical response level, we can say, "Well, I make my decision on the basis of knowing that I want to act in such a way that I can still allow freedom of the neck, free poise of the head, decompression of the spine, optimal natural resilient length of the spine, widening and spreading through the back and sides so I'm fully able to breathe." In other words, Primary Control. In FM's last book *Universal Constant in Living*, he actually describes Primary Control as a criterion for *assessing* your use. A criterion for assessing whether you are performing with good use or not⁴. Nice and simple, at the physical level: I need to pick something up from the floor, or from a low shelf, so I should remember to allow my knees and hips to flex, keep my spine long and so on. Or, I need to reach up to change a light bulb, so I'd better not pull my head back, or compress and pull my lower back forward. Simple enough.

But we all know that the Technique infiltrates our lives at a much deeper level than simply how I bend to pick something up off the floor or how I reach up to change the light bulb How does it have those deeper effects? That's something that has always intrigued and puzzled me.

To get further into that, we're now going to dive into Woo-woo land, and I'm sure that causes a reaction in many of you. In a certain percentage of you, there'll be a little tingle of excitement. In

another percentage of you there'll be an inner shudder: Oh no, not that! The percentage will vary a little from East Coast to West Coast, but I'd better not say anything more about that! For those of you who had an inner shudder, suspend disbelief, as the poet Wordsworth said, and you'll find all will be well, so just bear with it.

In the Western Esoteric tradition, the oldest and most famous saying is: "As above, so below." Short, simple, snappy. Attributed to a supposed Egyptian priest king called Hermes Trismegistus. Later scholarship says the texts attributed to him were probably written 1500 to 1800 years ago, which doesn't date them as far back as ancient Egypt, but still pretty old; old enough. The esoteric tradition also says that all knowledge is inscribed on an etheric record called the Akashic Records, but we sophisticates of the 21st century are very well aware that the Akashic Records are merely a primitive forerunner of what we now know as Wikipedia. So I looked up the phrase: "As above, so below" in Wikipedia. Here's what it tells us:

"Whatever happens on any level of reality, physical, emotional, or mental, also happens on every other level."

That's a pretty powerful statement. Not bad, these ancients, really–they had something. So here's where one of my longtime favorite A words comes in: Analog.

Analog

When I did a book with Sean Carey in1991⁵ I wrote that I considered Primary Control to be a physical level analog of things also happening at other levels. An analog is an expression in one form of forces or processes that also happen in other forms, different levels. For example the analog watch, I'm wearing one, the movement of the hands is an expression of the movement or flow of time.

Some of this is embedded in our language. You know, we actually have many physical expressions that have meanings at other levels: Uprightness for example. Uprightness has very strong, even moral behavioral connotations. Poise and balance are words or concepts that operate at every level, from the most physical to the most metaphysical. And as I'm saying this I can reach out and grasp the glass of water in front of me, but we also say: "What's this guy talking about? I don't quite grasp what he's saying." Grasping a mental concept.

For those of you who had that little shudder when we went off into the Western Esoteric tradition and the Akashic records and all that stuff... Now consider this quote from a very fine book by a man called Shaun Gallagher. (I was lucky enough to meet him a couple of years ago at the first Embodied Cognition and Alexander Conference in Paris.) Shaun Gallagher is a philosopher who has helped pioneer an area of study called neurophenomenology, linking the disciplined study of subjective consciousness with the objective observations and methods of neuroscience. So Shaun is a modern philosopher of consciousness with a deep knowledge of current neuroscience, and he writes and talks about how consciousness is embodied. This book is actually called *How the Body Shapes the Mind*. So, if "as above so below" and all that esoteric stuff gave you the shudders, let's read a bit of very modern literature in neurophenomenology:

"Movement and the registration of the movement in a developing proprioceptive system (that is, a system that registers its own self-movement) contributes to the self-organizing development of neuronal structures responsible not only for motor actions, but for the way we come to be conscious of ourselves, to communicate with others, and to live in the surrounding world. Across the Cartesian divide, movement prefigures the lines of intentionality, gesture formulates the contours of social cognition, and, in both the most general and most specific ways, embodiment shapes the mind."⁶

That's also a pretty powerful statement: so we go from "As above so below" and its Wikipedia expansion, to Shaun Gallagher. They do seem to be talking about the same thing. Perhaps it's actually not Woo-woo, at all!

At the level of the relationship between reason and emotion, here's Shaun Gallagher again:

"We might add to all of this that there is an emerging interdisciplinary consensus about the importance of emotions in cognition. Damasio, emphasizing the effect of emotion on experience, discusses muscular-visceral-endocrine adjustments that are non-conscious but that nonetheless shape our conscious experience. ...Bodily adjustments across such visceral and emotional dimensions are not just 'optional accompaniments', but essential to the accomplishment of perceptual experience."⁷

And further:

"Varela and Dupraz... following the emphasis placed in Husserl's later analyses, reiterate the inseparability of lived body, affect, and cognition."⁴ (Francisco Varela, 1946-2001, was the inspiration of much of the modern embodied mind, embodied cognition, and neurophenomenological studies.)⁸

Lived body, affect and cognition. All of this is again pointing towards a model of open-ended, futureoriented learning and growth, and a model in which embodiment is a fundamental factor. And with embodiment comes this next wonderful A word, *Attitude*.

Before we get to that, let's just note that embodied mind, embodied cognition, really is the growing trend or cutting edge of that part of neuroscience and philosophy that's studying mind and consciousness, and I really think we could actually say: We *are* the embodied mindfulness practice. That is what we do. We are *the practice* of embodied mind, embodied aspiration—there's another A word we'll get to—and embodied consciousness. So it might be very helpful to us to try to build better links with the burgeoning interest in mindfulness practices throughout the US, and I believe in other western countries as well.

Attitude

I think we've got to rescue this "attitude" word. You know how it's turned into something that means: bad attitude? "Oh, so and so's got an *attitude*." That automatically means a bad attitude. But we really need to rescue it and to celebrate the immense potential of this word, because it's a word that covers every level—physical posture, psychological, emotional, mental attitude, right up to what people might call spiritual attitude. Attitude is a fabulous word. So what are *we* doing, when we make the choice to stop closing down on ourselves—pulling down—when we make the choice to stop doing, when we choose to re-channel our energies into a freer, more expansive, postural attitude? If the body can shape the mind, and if as above is so below and therefore as below is so above, there's an awful lot of potential in this!

Aspiration and attitude

If we're willing to let this influence all aspects of our lives, I think we're *aspiring*—and that's another important A word---we're actually aspiring to embody that attitude at all levels. As I said, we're the practice of embodied mindfulness, or embodied aspiration.

We're consciously aspiring to "go up." That's what Alexander called it, going up. But in such a way, that we don't *do* it, in the normal sense of that word, and you could reinterpret that to say: we don't do it in a willful, egotistical way. an energy beyond our self-willed, doing ego, an energy that is stimulated by the universal force of gravity. We guide and channel our energies (FM's conscious guidance and control). What we're aiming at, perhaps, is to tap into an energy that is stimulated by the universal force of gravity as we accept and welcome our contact with the ground yet aspire to reach beyond our limits, and this *is* an embodied aspiration towards continued growth. If you add to that the widening that FM spoke of as a freeing of the thorax, you actually get an open-heartedness mixed in with this. These are not just metaphors. If there really is a way in which the body shapes the mind, if

this analog process actually works, these are more than just metaphors. And what's more, you really can't fake it.

There's quite a bit of literature and research now about what's called "high-status posture": holding oneself tall with neck straight, head still, and gestures expansive. If you determinedly hold yourself in high status posture other people will relate to you differently, probably more deferentially. I'm sure we all know some people who are indeed holding themselves that way. Try it for yourself. Who wouldn't want to be treated with more respect? Feels good, doesn't it? Well, maybe for a while. But you know all it's really doing is you're armoring yourself even more. And then in the end, you're even more isolated inside there, inside the armoring and effort of holding yourself. But one of the marvelous things about this Alexander process is that it's not about building up your outside. Rechanneling your energies from closing down and in on yourself to releasing into expansion from the very core of yourself actually does, slowly, turn you inside out. And that's not just a metaphor either.

Along with the phrase "as above, so below," some of you will have heard the phrase: "Making the inner and the outer as one." That's a powerful phrase. Powerful phrases have an almost physical resonance in the body—as great poetry does. This constant turning yourself inside out, I think slowly makes you a little more porous, a little more transparent. It actually does thin the walls, the barriers between inside and outside. Allows you to become more…what can we say? A point of view within a larger picture; part of a larger process and less of an isolated ego.

To help ground this talk of attitude and aspiration in something you deal with practically as Alexander teachers, consider this. Walter Carrington used to tell us never to approach a student with the attitude of "I'm going to do something to you." I was working with a teacher this morning, helping her with her hands-on skills as she was putting a hand on the back of my head and neck, and as you know, the problem is the hand can get kind of grippy; it grips too much, or it gets pushy, pushing into you too much—or the attempt to inhibit these problems can cause the hand to drift out of contact. I suggested: "Think of your hand as just being an invitation to my neck and head to come back and up into your hand." Note that's an attitude. That's what it is. There was an instant, dramatic, and very, very beneficial change in the quality of her hand, and its effect upon me. It really was as if her entire nervous system was issuing an invitation to my entire nervous system. That's an attitude, and she was embodying it, and she was able to choose embody it.

Another experiment I like and you can try for yourselves sometimes, is a little change in the way you think about neck free head forward and up. A little nuance. We often think of neck and head direction as "I'm pointing in that direction" which is fine, a very valuable, important, often necessary and helpful way of thinking about it. But experiment a little bit sometimes with, "Oh, I'm not just pointing, I'm taking the lid off to allow my head to more open and receptive." It's as if pulling down puts a lid on that area and you can release up through the neck to let the top and the back of your head be open and more receptive. Receptive to whatever is there. Again, it's an *attitude*.

Antagonistic pulls and Acceptance

A lot of the above I've mulled over for a very long time. But a little extra came to me recently. Consider how most of the big issues in life seem to revolve around polarities. *This* opposed to *that*. For example: self-control vs. self-expression. That's an especially interesting polarity for the Alexander Technique. Isn't it curious that FM wrote: "My Technique is nothing, if it is not a technique for the control of human reaction" and yet what's the biggest audience for the Technique? Who are its biggest fans? Where has it made the greatest inroads? Performing Arts—quintessentially self- expression.

Other polarities you can consider are the arts vs. sciences (as in artistic and inspirational descriptions of the Alexander Technique vs. accurate scientific descriptions and the acquisition of technical skills); self-esteem vs. self-sacrifice; and at a really extreme level, free will vs. determinism. For those of you

who did get the June issue of *Scientific American*, skip to the end. There's a whole article on how society may need to adapt its social, legal, and political institutions to the realization that maybe there's no such thing as free will⁸. That's a disturbing polarity for those of us in the business of teaching people to make more conscious choices!

When I was in my 20's this kind of thing deeply disturbed me. It gave rise—and some of you may resonate with this—it gave rise to desperate searching for the answers. The answer had to be one or the other—it couldn't be both. This also gave rise to what I would describe as head-banging frustration. Then slowly over the years, I got less and less worried about that. Now, until very recently, I've said to myself: "Oh, you know, you get less bothered about things like that as you get older. Frankly, it's probably just the creeping weariness of age." But I'm actually starting to rethink that. I'm starting to rethink it, because it's not just that I find these dichotomies and polarities don't seem so pressing anymore; it's not just that the energy I put into it all is fading. It's actually that they're becoming enjoyable. Instead of being problems that have to be solved, they've become, as somebody once wrote, mysteries to be lived. And it's actually very creative and enjoyable to be able more and more to live with paradoxes.

Now here's where the analog come in with Alexander direction. I've been toying with the idea that if you spend many decades practicing FM's antagonistic pulls, what do you learn from that? One of the things you learn from it is that embodying things that seem in opposition to each other, that take you in different directions, actually supplies you with a very enjoyable, powerful experience of elastic expansion. At a physical level that's enjoyable; it's fun, it helps you to move and breathe better; it's creative. But if—here we go again, how the body shapes the mind has something going for it—isn't it possible that this stretches you at other levels? It actually makes it easier and more enjoyable to realize that those polar opposites are, in their own way, giving you creative, elastic expansion at all levels?

Adventure

So...the A words have almost come to an end, I've almost exhausted them. I said that some of those powerful phrases resonate almost physically with you. One that I'm very fond of goes like this: "Man is a child of earth, and of the starry heavens." That's a translation of words attributed to the legendary ancient Greek poet and musician Orpheus. But I think it's rather beautiful in expressing something about what I am saying we are trying to embody. There is something about being really present, on the ground, accepting of the fragile physicality of our situation, the physical beingness of us which is both very, very stubborn, and yet eventually very, very fragile. Accepting that, and yet, reaching beyond ourselves; connecting to something more than ourselves.

And I think viewing the Technique in this way brings us to the last A word, which is that it's kind of an *adventure* when you look at it like that. So with that in mind, ask yourself what attitudes and values are you personally aspiring to embody when you direct with conscious guidance and control?

I thank you for your patience and your attention.

- "The time when posture was conceptualized as nested reflexes is gone. The time when the idea of a body schema can be expressed in terms of precise neural functioning is not yet come." *The Brain's Sense of Movement* by Alain Berthoz; Harvard University Press 2000, page 231. See also *The Mechanisms of Postural Regulation in Man* by Viktor Gurfinkel 1994; and *Postural Control Systems in Developmental Perspective* and *Why and how are posture and movement coordinated* by Jean Massion 1998 and 2004.
- 2. Good Habits, Bad Habits, Scientific American June 2014

- 3. Descartes' Error by Antonio Damasio, Penguin Books 2005.
- 4. Universal Constant in Living by FM Alexander Chaterson 1947 page 7.
- 5. *The Alexander Technique: In conversation with John Nicholls and Sean Carey*, the Brighton Alexander Training Centre, 1991.
- 6. *How the Body Shapes the Mind* by Shaun Gallagher Oxford University Press 2005, page 1.
- 7. Ibid page 151.
- 8. Ibid page 151.
- *9.* What Happens to a Society That Does Not Believe in Free Will? Scientific American June 2014.