

JM: It was a fairly easy ride for me because I was thoroughly fascinated and excited to be there at this level exploring Rolwing SI with these teachers – and 150% ready to go. When I was thinking about all of this stuff, I used to play a little game. I would pretend that Ida Rolf, or some omniscient Rolfer, would come into my Rolwing room and say, “Stop what you’re doing and tell me exactly why you’re working there, and what you intend to effect.” What it taught me is that I didn’t know anything. I couldn’t answer those questions, so I was more than ready to begin this project of trying to create a non-formulistic approach.

AH: Did that come about when you were already Advanced faculty? Or did you teach the old Advanced Series for awhile?

JM: We hadn’t even begun doing the non-formulistic approach when I was training. Michael and Jan had initiated the investigation, opened the door and made some headway. But we had no way to sequence the work, to justify why you’re working where you’re working, to be able to answer the three questions of What do you do first? – What do you do next? – When are you done?

AH: Were those your questions?

JM: They came from me. What do you do first, what do you do next, when are you done?

AH: Did that arise out of your own practice of thinking about the work and trying to understand what you were doing?

JM: Yep. At the core of the principle-centered approach is a distinction between two kinds of rules: *constitutive rules*, or rules that define the game, and *strategy rules*, which are rules of thumb. Strategy rules are like suggestions for how to move your piece when you come up against recurring situations. If you break a strategy rule you are still playing the game, but if you break a constitutive rule, you’re outside of the game and no longer playing it. The distinction comes from a book in which the two rules were used to articulate utilitarian ethics.

When I remembered this distinction, I also saw how it applied to our struggle to free ourselves from formulistic Rolwing SI. With this distinction between two kinds of rules in hand, we can answer the three questions. The Principles of Intervention are the constitutive rules that define the practice of manual therapy and guide us in sequencing our work. The birth of

non-formulistic Rolwing SI turns on the distinction between the two rules. (You can read the full story about the Principles and how they are employed in Chapter Four of my latest book, *Embodied Being*.) Once we got that, we saw the rest of it. Jan and I set to work on it.

I was just remembering when we were in the thick of figuring out the Principles, we got so excited that we’d talk after class for hours sometimes. I remember once I was trying to go to bed or watch TV or something, and Jan came bursting into my apartment, and he says, “Turn that off! I had a great idea.”

AH: Wow, it sounds like it was a very, very alive environment.

JM: Yeah. It was an exciting moment!

AH: Are faculty meetings and faculty interactions still so juicy these days?

JM: It’s typically only juicy when we discuss or demonstrate some aspect or discovery about the work.

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expert in soft-tissue manipulation. He has spent most of his adult life deeply investigating Zen practice, philosophy, and the nature of healing. He has practiced Zen over forty years and is a Zen monk. He is also a Certified Advanced Rolfer, an Advanced Rolwing Instructor, a former tenured professor of philosophy at Purdue University, and a philosophical counselor. In addition to teaching Rolfers, Maitland also teaches workshops and classes in myofascial manipulation to physical therapists, chiropractors, and other healthcare professionals, as well as workshops in perception and energy. Maitland has published and presented many papers on the theory of somatic manual therapy, Zen, philosophy, and Rolwing SI. His research, articles, and book reviews are published in numerous professional journals. He is the author of four books: Spacious Body: Explorations in Somatic Ontology; Spinal Manipulation Made Simple; Mind Body Zen (written at the request of his Zen teacher); and Embodied Being. He lives and practices in Scottsdale, Arizona.

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Review

Into the Fibrillar Jungle with Dr. Guimberteau

A Review and Exegesis of Architecture of Human Living Fascia

Reviewed by Szaja Gottlieb, Certified Advanced Rolfer™

I was not excited to receive the assignment to review Jean-Claude Guimberteau and Colin Armstrong’s *Architecture of Human Living Fascia: The Extracellular Matrix and Cells Revealed through Endoscopy*, published by Handspring Press in 2015. After all, there has been an enormous amount of coverage on the French surgeon’s groundbreaking work since he first appeared at the First International Fascia Research Congress (FRC) in 2007 at Harvard University. An issue of *Massage & Bodywork* in September 2016 published an article by Guimberteau, “The Living Fascia,” summarizing the main ideas of his book, with an accompanying article, “Insight

into Fascia,” by Tom Myers. Rolfer Brooke Thomas also did an excellent interview with Guimberteau on her podcast *The Liberated Body* (www.liberatedbody.com/podcast/jean-claude-guimberteau-lbp-059). There was also the very popular YouTube video, “Strolling under the Skin” (www.youtube.com/watch?v=W0lvOVKDxE). What more could be said?

When the French surgeon appeared at the first FRC, his video recordings from twenty years of intratissular endoscopic research carried out during 1,000 operations had the effect of a bright comet streaking across the night sky, lighting up the entire landscape

of fascial research. He has presented at every FRC since. While other scientists offer their papers and describe their research, it is the indisputable images taken from Guimberteau's video presentation that leave an indelible mark on the audience, images of fascia not in vitro but in vivo.

I was an attendee of the most recent FRC in Washington DC in 2015 and have, in the past few years as a contributor to this Journal, taken on a number of science-oriented reviews. The irony is that science is actually not my forte: my title as Research/Science Editor for this Journal is a running joke with my brother, who is a physiologist / biophysicist researcher and who has just published a book called *Piezo Channels*. I knew that reviewing a technical book like *Architecture of Human Living Fascia* would require more than the usual effort, my only solace being that it is not a tome but a thin book of seven chapters and only 204 pages. I emerged from my engagement sixteen pages and 5,000 words of typed notes later.

I cannot overstate the brilliance of this book, not only in terms of its concepts presented, but also in terms of its organization and presentation. From the outset this is a book aware of its mission. The front cover displays what looks like a rising planet, a tensegrity dome composed of fascial fibers, lit by a distant source like a star or sun. One could almost hear in the background the 2001: *A Space Odyssey* theme of *Thus Spake Zarathustra* by Richard Strauss announcing the discovery of a new world. To be clear, from my point of view, there is BG and AG – Before Guimberteau and After Guimberteau. The surgeon's revelations sweep long-held conceptions about fascia into the dustbin of science history and introduce ideas so stark that even the means of discussion, words and image metaphors, have to be reinvented. Who, after reading Guimberteau, can say "connective tissue" without wincing at the ridiculousness of that idea, the term "constitutive tissue" instead resounding in one's brain? Guimberteau and his colleague, Colin Armstrong, an osteopath, are well aware of the moment, and this book is written to help the reader cross that great divide between old and new. Despite its monumental significance in the field of fascia research, the strength of the book is its simplicity, its factuality – which, I believe, would have endeared it to Dr. Rolf.

Despite its high degree of technical details, there has been an enormous effort by the

writers to include the informed reader, ensuring that the book would not remain just the domain of the expert. The book is accessible to the informed layman because the authors created a running format like an outline or subtext highlighting the significance of the information presented.

- Every chapter begins with a summary of the forthcoming information. "Key Statements" highlighting the significant concepts the authors want to communicate are dispersed throughout every chapter. The first chapter, "Tissue Continuity," is fifty-eight pages and there are fourteen key statements interspersed in it. An example of a key statement is, "At the mesoscopic level, the observation of note is the continuity of tissue."
- There are also the six "Red Thread" questions; presented early on and dealing with larger issues, they are a running commentary throughout the book. Questions such as, "How is this tissue continuity structured, and how do these fibers ensure tissue cohesion?," "How do they come together to create a structured form?," or "Can nature restore harmony to the multifibrillar network when it is subjected to forces that exceed normal physiological limits, as in pathology or as a result of trauma?"
- The book comes with a DVD of images and video that correspond to those presented throughout the book.
- Finally, at the end of every chapter there is a commentary by a renowned researcher or manual therapist, many already known to the structural integration community, such as Robert Schleip, PhD; Dr. Tom Findley; and Tom Myers, author of *Anatomy Trains*.

All these teaching aids equip and support the reader for this excursion, this safari if you will, into the fibrillar jungle, led by Guimberteau. I use the word "jungle" because the world presented is not constituted of the solid, linear anatomical structures we were taught in Biology 101. Instead, it is the chaotic, disorderly, fractal, fibrillar universe of fascia. Cell-centered biology disappears along with the familiar anatomical emphasis on bones, muscles, organs, tendons, and ligaments. Taking their place is the extracellular matrix and fascia, the interstitial stuff of life, the basic unit of which Guimberteau refers to as the microvacuole, volumetric, geometric units of fibers and fluids. The seemingly endless

number of vacuoles together form a system that Guimberteau calls the MicroVacuolar Collagenic Absorbing System (more on this later).

Tensegrity

In 1998 Harvard microbiologist Donald E. Ingber published an article in *Scientific American* espousing the view that cells were designed in accord with tensegrity architecture, which allowed sensitivity to mechanical pressures to regulate biochemical processes. The title of this article was "The Architecture of Life." The title of Guimberteau and Armstrong's book is *Architecture of Human Living Fascia*. Did the authors have Ingber in mind in publishing his book? I don't know for certain, but it is reasonable to believe so. One of the main concepts of each is identical: the human organism, whether on the cellular level or on the tissue level, operates as tensegrity structures – that is, structures of continuous tension and discontinuous compression, highly responsive to changes of mechanical pressure in their environment. If we now add a third name, Stephen Levin (interestingly another surgeon), who applied tensegrity principles to the biomechanics of living organism, fathering the term 'biotensegrity' in the 1980s, we have a complete picture of tensegrity principles operating at cellular, tissue, and biomechanical levels – or, put another way, micro, meso, and macro levels. One must note that repetitions of the same forms at different levels of scale is the very definition of fractals.

What is common to the points of view of the three, which should warm the cockles of every Rolfer's heart, is the recognition that gravity is the primary force affecting structure and function. In Chapter Five, Guimberteau and Armstrong comment that living tissue is under the influence of different physical phenomena – tissue tension, temperature, capillary pressure, gaseous exchange, etc. – but that the primary force that affects living tissue is gravity. "We must remember that the main force that living tissue has to deal with is gravity."

While we, as Rolfers, accept the centrality of gravity unquestioningly, the role of gravity in human evolution has been an ongoing argument as far back as the late nineteenth and early twentieth centuries when Darwinians warred with D'Arcy Thompson as to the morphogenesis of organisms, how organisms acquire their

shape – whether from adaptive evolution, which Thompson thought was valid but inadequate, or, as Thompson emphasized, mechanical forces determining shapes and forms that are commonly found in the inorganic and the organic world. Fast forward to the present time and this debate continues in modern form between determinist geneticists versus another school of scientists, such as Guimberteau and Ingber, who emphasize mechanical forces such as gravity as being critical in biochemical processes in all organic life.

Guimberteau's Journey

Guimberteau's journey from surgeon to researcher occurred in a happenstance manner as is common with great discoveries. He was simply curious about phenomena he observed but could not explain. The first of these was that when an incision was made into the subcutaneous tissue, bubbles would froth as if there was a pressure differential between outside and inside the body. When traction and force are applied by grasping and pulling the tissue with forceps, more microbubbles appear. Guimberteau's conclusion: there seemed to some kind of pressurized hydraulic system within the body.

The second phenomena related to the behavior of the fibrils and microvacuoles themselves. As a hand surgeon he was interested in the movement of the tendons in relation to the surrounding 'connective' tissue and was shocked when he observed, using endoscopic images and video, that the behavior of the layers of 'connective' tissue was not uniform with the movement of the tendons. The fibrils responded to the movement of a tendon unpredictably, stretching, widening, shortening, and even at times splitting into additional fibrils – behavior that a linear point of view would have to label 'chaotic'. Guimberteau observed that when load was increased locally, force was dispersed through the fibrillar network. He then came to the realization that the 'connective tissue' was actually a body-wide system cohesive unto itself like the lymphatic or vascular system. He named it the MicroVacuolar Collagenic Absorbing System (MVCAS), and, significantly, it behaved like a tensegrity structure.

While the fibrils of the microvacuoles did outline various polyhedral shapes, the resultant geometric forms were not identical with ones usually associated with tensegrity

structures such as the icosahedron, which Ingber had observed at the microscopic level. Notwithstanding, Guimberteau realized that only a tensegrity-type structure – in this case as applied to a living thing, a biotensegrity structure – could explain 1) the tension exhibited by the fibrils at rest, commonly referred to as prestress in tensegrity-like structures, and 2) the response of the MVCAS of spreading load throughout the system as stress increased. The resultant picture was startling, an organism maintaining equilibrium based upon the chaotic unpredictable but highly adaptable behavior of the microvacuole system. Guimberteau classified the function of these similar but not identical forms as dynamic *fractalization*, its purpose being metabolic efficiency and maximization of the exploitation of space.

Unfortunately, disequilibrium in the multifibrillar network is a fact of life similar to the law of entropy in physics. In the sixth chapter, Guimberteau and Armstrong explore various types of these dysfunctions, which we as manual therapists often come across in our work. Even minor injuries and wounds over time produce scarring and adhesions. The result of the body's repairs often are neither perfect nor pretty, but certainly suited to literary metaphor: "We see what can only be described as a fibrillar apocalypse, with distended fibrils, interwoven like the broken masts and rigging of a ship after a shipwreck, with thickened ropes composed of collagen type 1 fibers scattered all over the place." Other than trauma, there is also degeneration of the fibrillar network simply from aging or weight loss. The internal tension of our bodies slowly but surely gives way to the external force of gravity.

A bright note within all this is Guimberteau and Armstrong's confidence in the ability of the bodyworker to affect the fibrillar network; they state, "It is no longer possible to argue that manual therapy has no effect on subcutaneous tissues." Of course, exactly what is happening under our hands when we engage the fibrillar network is still uncertain, and open for discussion and controversy. The advice for the bodyworker in relation to scars and adhesions, however, is instructive: mobilize a damaged area as early as possible to enhance the potential for the tissue's return to health, i.e. elasticity and flexibility.

Informed Touch

There are many vectors contributing to the informed touch of a manual therapist. Besides the personal components, there is training, practice, and exposure to ideas and information. As teachers know, it is often particularly difficult to transfer ideas and information from the cerebral realm to the tactile one. I have heard more than once the rhetorical question, "But how do we get it into their hands?" The link perhaps is *image*, which can be described as an embodied thought. Image is behind the power of Guimberteau's work. While all of his thoughts and concepts are available to be read and understood, they would be insufficient without his images of what lies beneath our fingertips. Guimberteau presents a new world of fibers and fluids. Many commentators like Schleip and Findley have remarked on the change in their work, in their touch, after absorbing Guimberteau's research. This challenging book provides a personal passage for the reader of, first, exposure; then immersion; and finally a kind of baptism to enter a new world. *Architecture of Human Living Fascia* is a personal passage requiring effort and a willingness to shift point of view. For those who make the passage to this new world, "Welcome."