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The Legacy Conference

Report on The Science of Consciousness Conference, La Jolla, California, 2017

It goes without saying, but what follows is based on my own experience and opinions, which are not likely to represent the viewpoint of this journal.

The 'Toward a Science of Consciousness' conference — which has now become 'The Science of Consciousness' conference — recently (5–10 June 2017) took place at the receptive venue of the Hyatt Regency in La Jolla, California. It was well-planned and organized, which is extraordinary considering that it had to be organized all over again within a month or two when the original Shanghai location was cancelled. Things ran smoothly at La Jolla and it was well attended for an odd-year, non-Tucson setting. The Director of the Center for Consciousness Studies, Dr. Stuart Hameroff, and his able Assistant Director and logistics manager, Abi Behar Montefiore, deserve full credit for carrying off this last minute transfer, as do many others who worked in supporting capacities.

The name change seems to indicate that there now exists a *bona fide* science of consciousness. Does this mean the ontological question of how consciousness appeared in a non-conscious physical universe has been solved? This question, related to David Chalmers' (1995) *hard problem of consciousness* and Joseph Levine's (1983) *explanatory gap*, has long been dismissed as meaningless in most hard science circles and has no need of being asked by the philosophical idealists or the spiritually inclined (for whom mind or spirit is first, so the question is, *whence the world?*), yet it has featured prominently both

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in *JCS* and in The Science of Consciousness conferences, which indicates that the discussion is ongoing.

In his blogs for *Scientific American*, science writer John Horgan (2016) who attended the 2016 conference in Tucson claims he witnessed clear evidence that it was becoming more *woo*, meaning *spooky* or less stringently scientific, than when he attended in 1994. (However, he also added more than half a decade to Hameroff's age, so his reliability is questionable.) Also, science writer George Johnson (2016), writing for the *New York Times*, called the 2016 conference a 'carnival of the mind'. I disagree with the woo claim. The first 1994 conference had plenary sessions on scientifically questionable topics like transpersonal psychology, parapsychology, and entheogenic effects on consciousness; such topics, if found at all this year, were tucked in with other concurrent session headings. Most plenary sessions were scientific to the point of leaving me restless. Furthermore, there were many plenary sessions on the neuroscience of consciousness and another one focused on the possibility of computer consciousness. I found that these sessions rarely dealt with the hard ontological problem, and, if they did so, seemed to misunderstand it. From my perspective, the conference earned its new title, *The Science of Consciousness*. Bit of a pity since I embrace enough woo to expect phenomenality to originate beyond the individual brain.

Herein, I attempt to summarize more than 30 pages of closely written notes. (I was one of few holdouts with pen and paper; most people these days simply take phone pictures of the slides or posters.) So come aboard with me for an attempt to traverse *six days of conferencing* on consciousness. Hope you don't get seasick.

Day One, Monday, June 5

Monday was all long workshops, which sound more interactive than the plenary or concurrent sessions, but I later learned it only meant more speakers on the designated topics. Not many of the first workshop topics grabbed me, and I immediately rejected the one on meditation, for I came to think, not to avoid it. I was attracted to the promise of East–West dialogue, for I'm aware we still have much to learn from Buddhist philosophy and practice, but I noted that it was only *part one* of the Integrated DEI East–West Forum. This group is a major conference sponsor, but, since I knew of their devotional nationalism from an online discussion group, I decided instead to

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attend the AI and Machine Consciousness session, which had Roger Penrose in it.

The machine consciousness workshop began with an introduction by James Tagg (whose rich voice and general appearance reminded me of British actor Colin Firth) giving a summary of AI achievements in defeating the human world champions in chess and go. Go was supposed to be human territory only, but so was Jeopardy, another AI victory not mentioned. These victorious processing programs (not single computers, but feedback-adaptable programs built by hundreds of people for one purpose), however, remained unaware of their victories, or of anything else for that matter. Complex and adaptable computations do not consciousness make.

First session speaker was Jeff Remmel, who presented a disposition on computable mathematics. I expect it was fairly basic, but I was quickly lost as I tend to zone out with numbers. Then came the great man himself, Sir Roger Penrose, who at 85 years old I expected to be fairly frail. He was; his eyes were failing and he was unable to read his own colourful hand-drawn images or see the projections. He helped initiate using quantum aspects of the brain to question whether computations could ever cause consciousness in his two notable books, *The Emperor's New Mind* (1989), which I did not read, and *Shadows of the Mind* (1994), which I did. His presentation seemed to me to be a summation of the major points made in these older books, but with the addition of his new chess problem which computers are said to be unable to solve (experts beg to differ) and his drawing of 'Schrödinger's Mermaid' to illustrate 'incomputable vacuum fields'. Consciousness is not computable because computers cannot *understand* or experience *meaning*, and the math runs into Gödel's theorem and quantum unpredictability. I got the impression that here was someone shoring up his impressive legacy, but not varying too far from it.

The next two presenters (no one just *speaks* any more) had me in awe at the reach of their vast brainpower. Joscha Bach is a compact young German whose slight accent only adds to his air of intelligence. He directly opposed Penrose by stating flatly that 'minds are best understood as computational, hierarchical systems', and proceeded to back that position up. I had heard him on TED Talks, and found him interesting, though I could not agree with his assumptions. Joscha remained an active presence at the conference, constantly circulating and engaging with anyone who approached him.

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Hartmut Neven followed, another brilliant German transplant, one of the chief scientists employed by the Google Quantum AI Lab. This cool dude, to judge by his manner and unique attire, is making breakthroughs in quantum computing. Aside from wondering if the much-discussed Penrose-Hameroff Orch-OR proposal might be replicated in quantum computers, he had little to say about computer consciousness. Then Paul Verschure, Director of the Center of Autonomous Systems and Neurorobotics (NRAS), among other things, took an entirely different track arguing that we are not even close to building functional autonomous robots, much less creating consciousness in machines. He showed a hilarious series of clips of remote-controlled humanlike robots attempting to negotiate various environments and falling to the ground. I don't know why this was so amusing; perhaps because they fell like drunks, immobile, not attempting to break their plummet. Neven took umbrage at these sequences, noting that early attempts at flying machines also did not look promising. James Tagg from the Penrose Institute in La Jolla then went to bat for human creativity as being non-computable, but he attempted to demonstrate this with an arcane (to me!) description of a *Diophantine equation* that should prove a computer could not have come up with such a proof! Okay then. I was sitting there wondering what any of these intriguing presentations had to say about consciousness in itself, e.g. the hard problem, when Michael Remler of UC-Davis raised his hand to ask what any of this had to say about subjectivity in itself, noting that the speakers did not seem to be addressing the *science of consciousness* but the *science of mental complexity*. Only hand-waving answers were given, so I consider his simple question profound and well taken.

I took a quick lunch and walked around the block, disappointed to find the beach was kilometres away beyond the freeway. I came back at 2pm for the 'Brain Stimulation/Consciousness Technology' workshop, but I now wish I had chosen 'Consciousness and the Arts' because it had both Dorian Electra and QUALIATIK, aka Arielle Herman, whose evening entertainments I later found very stimulating. Since there seemed to be no workshops on theories of consciousness, I chose the one I did hoping for some personal experience with mind-altering technology. It was not to be. The audience certainly seemed more *hip*, to judge by the hair and piercings and all the floor-sitting, but I was not stimulated by the presentations or watching the volunteer don electrodes that seemed to cause little more than 'mild tingling and a metallic taste in the mouth'. I left and came back just in

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time to hear the last speaker render a heartfelt plea that we all be kinder to one another.

The session that evening was Roger Penrose closed-circuit beamed into the main ballroom from USC where he was addressing an Imagination & Science Fiction conference. The man is a *bona fide* genius so his mumbling and fumbling with the advance button was certainly bearable. The main body of his presentation repeated that of his workshop, but he began with an attack on string theory or M-theory by using some 'basic mathematics' to show that its multiple dimensions (up to 11) are unsustainable. Everyone I talked to was as dumbfounded as was I. I must imagine that the audience at the sci-fi conference was even more so.

Day 2, Tuesday, June 6

Because of my interest in language-related theories of consciousness, there was no doubt that next morning I was going to the four-hour workshop 'Language and Consciousness' over the quantum offerings or Deepak Chopra alone on brain biology. However, I must report that this workshop had little if anything directly related to the origin or experience of consciousness. I had reason to believe that Chomsky at 88 years had advanced somewhat beyond his mechanistic views, but this was not the case. Thomas Bever, a former student of Chomsky's with much the same views, also looked elderly, but at least his voice could carry (unlike Chomsky's). It was apparently another case of a famous man shoring up his considerable legacy but certainly not varying from it. Bever began simply by asking for questions, for once guaranteeing that their 'didactic' plenary presentation would differ. After a pause, the questions began with that of non-human animal consciousness.

Bever told the story of working with Herb Terrace on the Nim Chimpsky language learning project, referring to the 'Project Nim' documentary of 2011 as 'scurrilous' and a personal attack on Herb Terrace. In my mind, I protested that the documentary was still based on facts. It was Herb Terrace who had treated Nim like a scientific object. Nim was basically abandoned after the language experiment failed and was put into a laboratory for experimentation. However, Bever already seemed angry over this issue, so I said nothing. Nor did anyone else. The men up front then announced that human language is incomparably unique among animal languages. I am in full agreement, but experience has taught me that such a stance will bring savage

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attacks from evolutionary psychologists and biologists, and nature or animal lovers in general, but not a discouraging word was heard. These clued me in to the non-confrontational passivity I was beginning to note at this conference.

In answer to a question about language origins, Chomsky flatly stated that complex human language began with an accidental neural mutation about 170,000 years ago, 'for good or for ill'. Such unprovable claims of lucky mutations seem random to me, so I later asked my first question whether such a magic mutation occurred only in one person, since language surely requires at least two people. Chomsky whispered into the mike that 'language is primarily not communication but computation', and that 'of course' the mutation could only have been in only one person. I replied rather tartly, 'Still, speech *is* communication. Who would that one person have spoken to, himself?' There was laughter, but the enquiry was stopped when someone asked what the great man thought of Lakoff's theories of linguistic meaning as metaphor. Chomsky, looking annoyed, shrugged, 'Calling such theories hand-waving would be polite'. This was the famed impatience of Noam Chomsky, who felt entitled to make such pronouncements even though they were based in non-empirical assumptions. It was clear neither Chomsky nor Bever accepted cultural creativity or, by implication, conscious self-agency.

I was dismayed that such mechanistic views that basically treat consciousness as a useless by-product went largely unchallenged with this audience, but maybe they were just being polite. I certainly hope future conferences bring in speakers from, say, higher-order language theories or narrativists. How about Canadian philosopher Charles Taylor (e.g. 1989; 2016) who represents a sophisticated opposing viewpoint and is only 85?

Next came the first plenary session from 2 to 4 in the main Aventine Ballroom on 'AI and Machine Consciousness', again. I knew I could skip it because it was a likely a repeat of the previous day's workshop, but, as your loyal reporter, I dutifully attended. It was, however, mostly a replay, with Joscha Bach adding that *understanding* and *meaning* are still computations. Penrose disagreed with Bach, again, but this time pulled off a much smoother presentation that was well received. Questions were not challenging, but I noted the stand-up mike for discussants to line-up and ask questions was foregone in favour of remote microphone runners. This had the advantage of the chair of the session being able to pick out authorities in the particular field and other questioners, so the same talkative few could not

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monopolize the floor. Neuropsychologist Betsy Bigbee and Kelley Garnell from Google did an outstanding job of transporting the mobile mikes throughout the hall.

At 5pm was the first 3-hour concurrent session so, like the workshops, I had to choose one and miss others. I chose 'Dualism and Panpsychism' since I've recently been involved in readings, book reviews, and discussions on the latter topic, but I was also strongly drawn to 'Altered States of Consciousness', though I thought it might have too much *woo* (even though, at the 2001 conference, I'll never forget the ayahuasca vets gathered in the garden area all recognizing one another with shining eyes and broad smiles, though they had never met). At this point, I still thought it was bad manners to graze sessions by wandering through several.

None of the talks bothered to explain panpsychism, as such, and their relationship to it was most often peripheral. Roger Chris Schriner espoused the general 'illusionism' of most of our experiencing. We don't have phenomenal experience, only representations: 'No experiences exist that are phenomenal or qualitative.' Interesting, I thought, his position is headed for eliminative materialism. Laura Gradowski all the way from CUNY took a unique angle with *nonexperientialism* and tied it to the explanatory gap. I'm afraid I just tuned out to hear of nonexperientialism. Panexperientialism sees unconscious experience as the foundation for later conscious experience, so is nonexperientialism meant to imply unconscious experience?

Michael Remler, who had asked the important question about the hard problem at the end of the workshop on computer consciousness above, did not disappoint with his presentation of 'Scientific Dualism and the Metaphysics of Non-Material Reality'. I was delighted to hear him deny the reality of the objective world without subjects to participate in its world-making. What is *out there* without observers? Not *nothing*, as in idealism, but 'reality is an undetermined quantum function', which is *something*, though it is not a world. As he put it, 'Ryle's ghost in the machine can cause the wave collapse of superposition, which causes *stuff*'. I like the *observer effect*, but, to my mind, it reifies the self, which may ultimately be but another aspect of experience in quantum field dynamics.

Lachian Kent from ASU introduced so many new categories he left me confused. He did, however, mention that David Chalmers could not be here since he was still in China. Later in the hall, I eavesdropped on a conversation that speculated Chalmers may have been displeased with Hameroff's decision to move the conference back to

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the US and was staying in China in protest. As your investigative reporter, I intended to pursue this with Hameroff.

The next speaker in this session was the highly respected Finnish philosopher of mind, Paavo Pylkkänen, who was the only one to really address panpsychism. He called his presentation 'A Quantum Cure for Panphobia', *panphobia* being the polite name for the utter rejection of panpsychism from the general public and the horror for it that I have often encountered from the hard science community. I thought this short talk had smatterings of brilliance (it is coming out in 2018 as a chapter in W. Seager, ed., *The Routledge Handbook of Panpsychism*). He sees Bohm's implicate order as a 'powerful holistic paradigm… in which the whole is prior to its parts'. The reductionist aspect of much recent panpsychist thinking has also bothered me (*cf.* Nixon, 2009; 2017). Pylkkänen is against 'the spirit of the bottom-up way of explaining conscious characteristics [in] traditional panpsychism', and he's offering a necessary corrective. I wanted to talk him afterwards but he was surrounded.

Many of the crowd left after Pylkkänen's presentation. I stayed but I have to admit the remaining two presentations were anticlimactic. Anton Kuznetsov of the Moscow Center for Philosophy, speaking with a thick Russian accent, spoke against panprotopsychism, noting that the hard problem of explaining the appearance of consciousness in a non-conscious universe would simply shift to another level. This has been widely argued. Jackson Kernion, an enthusiastic student from philosophy UC Berkeley, then noted that conscious minds must have access to their own experiences, but in so doing, I thought, he, like many, gives too much to consciousness. At the end, Pylkkänen noted that we would not have *access consciousness* (which to me is conscious experience) without first having *phenomenal consciousness* (which to me is raw experience). Kernion did not disagree.

When we got out, the Opening Reception in the Vicino banquet hall was already underway. I thought I might have a drink before buying dinner, but I found the drinks were free for the first hour and there were also high quality snacks (including shrimp quesadillas, which I devoured). The red wine was quite tasty, and soon I was ambling about, engaging in various conversations. Then I spied Stuart Hameroff and Betsy Bigbee, his fiancée, so, brain warm and remembering my duty, I walked up to them and asked about the last-minute transfer from Shanghai. Betsy (this is the social now, so first names are *de rigueur*) was animated enough in reply to see she had been an important player in these negotiations. It seems Crystal Globe,

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the Shanghai organizers, had gotten too pushy, asking for confidential information from credit card users and tagging on extra charges here and there. 'They wanted to change the conference name to The Technology and Science of Consciousness', Stuart said (presumably to make it more marketable). 'Basically, it was a hostile takeover, so we opted out.' I asked if there was bad blood between David Chalmers and him as a result, as some were whispering, but he assured me that was not the case. 'No bad blood whatsoever. Dave stayed in China to meet some obligations he had made as a speaker. Such a nice guy; what's not to love in Dave Chalmers?' I was glad to hear that.

Day 3, Wednesday, June 7

The first plenary session of the day beginning at 8:30am was, again, 'Language and Consciousness', but this time it was presentation based, not a Q&A session; but it was still much more on language than consciousness. A slide announced that, instead of asking what consciousness is, language study can offer more facts about it, to do with experience, behaviour, and 'complex inner computations'. And that was it for any direct discussions of consciousness. So much for the hard problem — not a real problem if consciousness is simply a by-product of non-conscious computational processing, like language.

All three speakers considered themselves members of the same theoretic family. Michael Spivey, the youngest and third speaker, had a major professor who had been Thomas Bever's student, and Thomas Bever had laboured under Noam Chomsky. Spivey declared Bever to be his theoretic grandfather (if memory serves), making Chomsky his theoretic great-grandfather. Not much variation in this close-knit family. As I said above, language is essential for understanding human consciousness, but to have all speakers from the Chomsky camp who see it as predetermined unconscious computation leaves nothing for the vaunted creativity of human speech, much less for creative human consciousness or, for that matter, philosophy, which did not feature at all in these three talks. Someone showed enough spunk to ask Bever the Penrose question: 'Is the understanding itself non-computational?' Bever of course said no. Spivey used the famous Libet time-delay experiment to 'prove' that brain functions precede consciousness. Why would a brain choose to initiate an action? Surprising he did not know that it was now widely accepted that the brain's activation was intiated by a mind's decision, but that it took a second for reflective consciousness to express that decision (*cf.* Asma, 2017). Final

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questions were few and innocent. Apparently, this audience was happy to agree that consciousness as self-agency does not exist![1]

After a very short break, just time to walk out into the drizzly courtyard, I returned for the 11:20 plenary, 'Memory, Spin and Anesthesia', which at least revealed some subdued disputes. Mathew Fisher, UC Santa Barbara, asked, 'Are we quantum computers or merely clever robots?', and proceeded to argue that we are likely the former, even while denying the brain could support quantum effects since the body is too slow and too hot. An audience member asked if he thought microtubules could support quantum effects (referring to the Penrose-Hameroff Orch-OR theory), but Fisher was annoyed to be asked and refused to reply. As Fisher was leaving, Hameroff as chair took advantage of his position to note that quantum effects in microtubules had indeed been observed. Fisher waved off the bait and sat down. And that was about as controversial as the plenaries got.

Not to say the deck was stacked, but it was notable how many from the neuroscience community seemed to support Orch-OR, at least to one degree or another. Fisher was a notable exception. Travis Craddock, the next speaker from Nova Southeastern U, certainly did with his talk, 'A Unitary Mechanism of Anesthesia: Altering Collective Oscillations in Microtubules'. He noted that Alzheimer's, dementia, and schizophrenia all seemed related to dysfunctional microtubule exoskeletons. But the most interesting new fact for me was, in opposition to the sudden slowing of electron activity in microtubules brought about by anaesthesia, the vastly speeded up activity brought about by psychoactive drugs.

After a lunch break I went to the beginnings of the first poster session, which turned out to be largely occupied by devotees from the DEI (Dayalbagh Educational Institute from Agra, India). There were statistics and charts everywhere, but each poster seemed to show that the best teaching and most wisdom emerged from ancient Vedantic Hindu texts of enlightened gurus and is today found in the Institute, sanctioned of course by new gurus and God Himself. There were some hard science posters in their own special area and more on mood improvement with technology. Then I found a large poster declaring that light itself is the *light of awareness*. I had always found this idea

[1] Elsewhere (perhaps in his political persona) Chomsky (2016) has defended the *experience* of free will and even stated that the Libet experiments reveal only that decisions begin in the unconscious mind.

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attractive and stopped to chat with Mohsen Paul Safarazi, who proceeded to explain that light-filled super-consciousness is what created evolution. I asked him how he knew this, and he proclaimed the enormous and turgid *Urantia Book* as the fountain of all earthly truth.

After a break I had to choose which concurrent session to attend from 5pm to 8pm. None seemed compelling, so I filled up my big coffee travel mug and went to the 'Meditation and Consciousness' session, hoping to see some altered brain images from meditation practice, proof of unusual things occurring. Dr. Sona Ajuna from pedagogy at DEI demonstrated that meditators could hold an image in their minds much longer than non-meditators. No surprise there, but then it was claimed that DEI meditation showed the strongest increase in tasks of attention, according to which level the meditator was at. The most control over attention was achieved by 'deity yoga meditation'. *Deity*? Suddenly I was feeling crowded with these all-knowing deities circling about. Next came Sant Saran from electrical engineering at DEI, who began by noting DEI meditation practice was 'obviously more advanced' than others; Kirlian photography proved it. It was *better* than mindfulness or vipassana; it was not just transcendental but *ultra-transcendental*! I was both amused and disconcerted at this shameless one-upmanship. This ultra-best meditation consisted of 1) repeating the divine name, 2) contemplating the image of the guru, and 3) listening to the inner divine wisdom. By now I felt he was definitely proselytizing for his religion, so I interrupted to ask if this method of meditation would work even for those who did not believe in those specific divinities or gurus. He indicated that everyone could believe as they wish, but DEI ultra-transcendental meditation only worked 'with the truth'. 'And that's if you're a true believer?' I asked. 'Truth is more than belief', he began. I took my briefcase and left, saying, 'If one must believe in your deities for your meditation to work, it's religion!'

My brain heated now, I went across the hall to 'Consciousness and Evolution' — quite crowded. Jim Beran was explaining a 'Coding/Memory Model to Explain Consciousness'. It immediately became clear he was avoiding the hard problem by calling upon radical emergence — genetic magic — mutations produce experience from non-experiencing matter. What of the real hard problem? I asked him, and he was decent enough to say he thought his theory had finessed it. Mickra Hamilton and Daniel Stickler from the Apeiron Centre for Human Potential gave a presentation on the epigenetics of consciousness, implying that we might to some degree be able direct our own

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evolution. I liked the essence of their talk and gave them a slip of paper recommending they read Jablonka & Lamb's *Evolution in Four Dimensions* (2006) for strong support for short-term effects on long-term evolution.

Next was Prem Saran Tirumalai from DEI, who mainly focused on which foods to eat, indicating that a very specific diet was necessary for a clean gut and pure mind. (No wonder this group was never seen in the restaurants or social snack area.) He declared that though the West claimed to discover bacteria, they were in fact previously known in ancient Ayurvedic Hindu texts. *Of course*, I thought: *who needs microscopes when you have spiritual insight?* Many left when his talk was done. That left William Oberst MFA to give his presentation to only eight of us. I stayed. Tired as I was, Oberst was actually pretty interesting, suggesting that our conscious cultural creations in turn change our consciousness. He used the artistic vision to explain this, backing up his ideas with neuroscience.

The poster session in the main rotunda was now in full swing. I was amused to see the ever-present James Tagg guiding Roger Penrose through some of the most far-out interactive exhibits, putting on resonance-enhancing headphones for example. I found a freely distributed handout summarizing in point-form Deepak Chopra's position on all this, and grabbed one for later reading.

It was well after 9, and the first Club Consciousness event had long started in the Vicino room. I arrived in time for several slashes of that good red wine and found enough *hors d'oeuvres* to call it a cheap dinner. I entered a conversation with Joscha Bach. To my surprise he agreed with me that *you are not your brain*, but with a difference: 'Yes, your self is not your brain. The self is a story that the brain tells itself about its actions.' I rejoined that 'the conceptual self is a story learned from others that the somatic self uses to explain its actions.' Okay then. I moved to the stage and found who I thought was Dorian Electra and the Electrodes performing. It turned out to be QUALIATIK, the stunning and talented Arielle Herman (who left neuroscience school to follow her muse) and her electronics. Someone dressed in a robot costume was dancing, as was a mature gentleman (who I would later learn was Graeme Breckon, a psychiatrist from New Zealand). I enjoyed his free expression; we talked and became friends. It was he who explained to me who the performers were. I had read of these performers from George Johnson and John Horgan, who both seemed to mock them, but I only know that, tired and little drunk

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as I was, I enjoyed QUALIATIK and went to my room a little excited and very pleased with the whole long day.

Day 4, Thursday, June 8

Breakfast was again at the on-site Perks and then off to the first plenary again at 08:30. The days seemed to pick up speed at this point. This is reflected in my more compact notes. The first plenary of the day was called 'Physics, Cosmology, Consciousness'.

Ivette Fuentes of the U of Vienna, currently at the Roger Penrose Centre, gave a very interesting and well-delivered talk on 'Gravity in the Quantum Lab', apologizing because it did not directly relate to consciousness, though if 'the quantum era is reaching relativistic regimes' I can imagine implications for consciousness studies. At the end of her talk, her young son was handed a mike and asked, 'You said someday physics and consciousness will meet. What did you mean by that?' But mother just noted that *big things are coming*.

Brian Keating of UC San Diego and the Arthur C. Clarke Institute for the Imagination gave us a spectacular visual presentation with his articulate New York accent, noting that we are likely 'the most highly evolved form of the most ubiquitous stuff in the universe — dust'. Two big questions were dealt with: 1) Is consciousness intrinsic to the universe? 2) How did life and consciousness originate and evolve? He was entertaining but came to no firm conclusions on either one.

Next up was James Tagg again, asking 'Are Humans Computers?' He attempted to prove the answer is a resounding *no* by summarizing a non-computable program that apparently runs into the paradox that if it crashes, it does not crash, and, if it does not crash, it crashes. Creativity in itself is not computable, at this point, though quantum gravity computation with an indefinite causal structure may tap into universal creativity. Intriguing.

After a walk came the next plenary on 'Music and the Brain'. Noted pianist Elaine Chew, Professor of Digital Media at Queen Mary University in London, began with 'Mind Over Music Perception'. A pleasant person and a pleasant presentation, but I saw no direct link to consciousness studies. Scott Makeig, Institute for Neural Computation at USCD, next showed us what goes on in our brains when we 'do things with music'. He noted that our shared affective emotional sense that makes social relationships possible seemed to exist beyond the brain and possibly also beyond consciousness. This was interesting in

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terms of unconscious feelings, but he admitted he was only addressing the *easy hard problems of consciousness*.

After a repeat lunch in the cloudy courtyard of the Drift, the final plenary of the day began at 2pm. Stephen Grossberg, psychology and biomedical engineering from Boston U, seemed about to allay my doubts that neuroscience could ever have anything meaningful to say about the hard problem with his presentation, 'Towards Solving the Hard Problem of Consciousness'. He explained how 'surface-shroud resonance' meant experience was happening. It turned out he was finding correlates for self-reported guided attention, which has its own value but which is not the same as phenomenal consciousness itself.

Georg Northoff from U of Ottawa just reeked of brilliance in his own area. However, he noted that 'consciousness connects you to the world, and the brain allows for this', which implied a worldview of naïve realism. He also merged self-awareness and phenomenal awareness, but surely the latter must be necessary before the former can emerge. The audience was listless afterwards, but Hameroff, as chair, had the temerity to give refreshing public advice: 'Go deeper', he said.

Philip Low from the private company NeuroVigil, Inc. could have used the same advice even with his intriguing title, 'From Sleeping Finches to Stephen Hawking to the International Space Station: Harnessing the Brain's Whispers'. Not sure if he was selling his device or not, but he had a clip of using it on the brilliant but severely disabled Stephen Hawking to help him communicate through his cheek muscles. The ISS is interested in the device, now called iBrain 3. Interesting as it is, it had nothing do with explaining consciousness itself.

Clearly, in today's plenaries, *woo* was trumped by science, and, as a result, awareness in itself (i.e. phenomenal consciousness) was left triumphantly unexplained. No more sessions this day.

Thursday was the conference banquet for which I paid $75. I looked for a table with interesting people. I found one with two Russian ladies from the poster sessions, who soon moved elsewhere. The white fish was very good but on the bland side for me, so I purloined some hot sauce and ordered more of the same fine red as yesterday, not giving a damned that I was eating fish. For entertainment, Elaine Chew played background classical. After most of us had eaten, James Tagg joined her and demonstrated his baritone is also great for singing popular ballads. Feeling more sociable, I was led into explaining my views on language to an intriguing woman named Yanina, who had

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seen me in the Chomsky workshop. Apparently the intrigue was not mutual for she soon left for another table.

William Oberst was another tablemate, whose talk on artistic awareness in the concurrent sessions I previously enjoyed. Conversation began with the possibility of artificial consciousness, and I opined that something with human elements like the internet is more likely to achieve it. 'I fear the singularity', I lied, rolling my eyes. Another fellow with a thin moustache interjected that he feared it, too, 'as both a patriot and a family man'. *Oh*. I turned back to Oberst, who presented his thoughts on an ontology that would unite self and world, but seemed unwilling to question materialism. After hesitating, I launched into the phenomenological ontology of Merleau-Ponty (1968), as I understand it, explaining the *dynamic in-between*, an ultimate process that must exist *before* subjects and objects can emerge, yet, paradoxically, cannot exist without them (*cf.* Globus, 2009). It helped when I compared it to electricity that exists before its polarities, but cannot visibly manifest until it is caught between two poles. *The only ultimate ontology is the in-between of dynamic process*, I declared. Others had gathered while I held forth. I was asked for my card, but I had none. I had fun.

Day 5, Friday, June 9

Friday's plenary session was another one based in neuroscience, proving for once and for all that science was predominant over *woo* at this conference. However, this plenary was on 'Neuroscience and Consciousness — Anomalies', which certainly verged into territory some would identify as spooky, but, if so, it was spooky with excellent neuroscientific support. It turned out to be compelling stuff, and certainly the most talked about plenary at the conference.

Daniel Sheehan, U San Diego, began with 'It's About Time: Experiments in Consciousness and Retrocausation', a very interesting topic to me for I am thoroughly convinced that we live in a time-delayed, instant playback reality *most of the time*. He began with an edited quotation from the first lines of T.S. Eliot's 'Burnt Norton':

> Time present and time past
> Are both perhaps present in time future, …
> What might have been and what has been
> Point to one end, which is always present.

As an aficionado of modernist poetry, he now had my full attention. He set out to show that the future can determine the present, but this is

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most obvious in the time-lapse images of the past on a cosmic scale and in the undeniable retrocausality in quantum mechanics. Precognition is likely explainable as those rare occasions when a mind can break through the various classical veils to see into a future that is already affecting the present. Of course, he was asked if retrocausality means every event is predetermined, but he denied that, saying there may be various futures, which we help choose via the precognition of a particular retrocausal back-action.

Peter Fenwick of the Institute of Psychiatry, King's College, London, next examined 'A Meditation Teacher Who Can "Transmit" Subjective Light-Energy'. Fenwick, a tall figure in a rumpled suit with a bald pate surrounded by a crown of pure white hair, looked either like a mad scientist or a visionary guru. The case he presented was extraordinary, but there was certainly room for scepticism. He had made a study of one Alain Forget, a Zen meditation teacher, whose brain apparently blocked alpha waves and entered gamma wave territory (hope I've got that right) as he experienced the clear light (the *ne plus ultra* for meditators). Forget could regularly attain a state in which his body or being glowed with light-energy. However, not everyone could see this light and it was not fully captured on videotape.

Not sure what all this added up to. I guess that some advanced meditators can actually radiate light that can be seen by certain others some of the time, and some very few ardent followers can experience that same light-energy rising within them. Okay then. Afterwards, a Russian woman from the audience went into a monologue about how she saw three angels of light surround her mother as she died. Fenwick mumbled something about cultural variations in the exact nature of light visions, and that was that.

Most intriguing to me was the presentation of Lakhmir Chawla of the George Washington Medical Center who specializes in palliative care for the dying. While editing my *JCER* issue on consciousness and death (Nixon, 2016), I had to read through many papers on the NDE so had encountered the strange phenomenon of the brain's final surge of electric activity at the moment of death. Was it related to the powerful visions reported by those who were revived and brought back from the brink? Dr. Chawla had much to teach me with his presentation 'Surges of EEG Activity at the End of Life'.

To make sure dying patients felt no pain under anaesthetic or to make sure they were dead before organ harvesting began, it was helpful to attach EEG monitors. It was soon noted that, in about 50% of

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the cases, there was a huge EEG spike at the moment of death. In the other 50% the regular EEG wave just dropped into a flat line. Previous experiments on lab rats that were killed revealed that most of these also had a spike. In humans, the surge is a coherent wave, not a seizure, which exceeds any known surge during life. This spike can last up to two minutes, which is a very long time for such intensity. For those who were previously brain-dead (no EEG activity), there was no surge at death. What this means no one is sure.

Chawla noted that in an article called 'The "Quantum Soul"' by Hameroff and Chopra (2012) — indicating the Hammer is not averse to a little *wooism* — these surges were explained as a sort of electric catapult that helped the soul to leave the body. However, Chawla insisted that no certain conclusions should be drawn. Both atheists and theists seemed to embrace the surge, the former because it implied the last *poof* before oblivion and the latter for the catapult alternative. Chawla no longer wanted to share the EEG results with survivors, imagining a little girl crying because her mother's brain did not spike: 'Why did you let my mommy go to hell?'

I have to admit, I did not like the implications of immediate flat-lining, but I found the surge hopeful: at least *something* happens to many of us at death. However, the idea that an NDE could be explained by the surge (as Chawla himself once suggested) seemed wrong to me. I even got the mike and asked: 'Since an NDE is only known because the person returns to life to report it, the surge cannot be equated with the NDE, for, as you've indicated, no one comes back after the final surge, right?' He agreed but said we need more information… and so on.

By now, the reader may be glad to know I skipped the next plenary, also on neuroscience in which two neuroscientists supported the idea of *memristors* in the brain, likely located in microtubules. These presentations seemed to conveniently support Orch-OR, but I badly needed a walk and some solitude. I took to the streets, found nothing and returned for lunch. This time I sat with a table of animated conference goers, still geared up from the neuroscientific anomalies plenary. We had a good talk in which all but one of us supported spiritual agnosticism, the one other being so deeply into woo he did not notice the food falling down his chin onto his chest.

The sun came out that Friday, staying for four hours or so. I took advantage of the opportunity to go swim and bask in the San Diego sun at the large hotel pool. I had forgotten how far south we were and

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I never wear sunscreen, so after only two hours I had a bright red face with chest and back not far behind. It soon faded.

I had a nap and got back for the next neuroscience plenary, missing the first speaker but in time to hear the famed and notably opinionated neuroscientist V.S. Ramachandran, Distinguished Professor and Director for the Center for Neuroscience and Cognition UCSD. Wearing a jaunty cap sideways on his head, he seemed so relaxed he often mumbled in his 'Embodied Brains and Disembodied Minds' presentation. I was interested in seeing what he had to say about disembodied minds; this was, after all, the same guy who had angered the community of artists by declaring in this very journal that all aesthetic appreciation is simply a product of unconscious brain activity (Ramachandran and Hirstein, 1999; Ramachandran and Freeman, 2001), not seeming to notice that our entire civilization (and all cultural reality) is as much an artistic creation as an economic by-product. Yes, pain or feeling in phantom limbs certainly does indicate some disembodied mental activity, but Ramachandran, using experiment-based hypotheses, accounted for it based in bodily interconnections, mirror neurons (massaging the good hand makes the phantom hand feel better), and various brain-based mental delusions. He gives credit to those mirror neurons for humans learning empathy and communication; perhaps they do help to trigger intersubjective empathy, but it doesn't explain why so many people have so little of it. Ramachandran is more accomplished than I could ever hope to be in several lifetimes, yet I question the assumptions behind his research and conclusions. I did like his response to a question on synaesthesia. He agrees that, at some point in our evolution, our senses were not yet separated into distinct faculties, so synaesthesia was the natural way of things. A good example of pre-conscious experience, I thought.

I tried to remain focused for Charles Stevens from the Salk Institute UCSD, but he was your typical mechanistic materialist in his presentation, 'Evolution of Brain Mechanisms for Consciousness'. At least he began by admitting what is so often denied, 'We have no idea what the brain mechanisms are for consciousness', which I was glad to hear. However, he still insisted that consciousness *must* have evolved, so therefore it *must* have been evolutionarily advantageous. I don't believe we can be sure of these *musts*. What of the explanatory gap? No matter!

It was just a short break before the last concurrent sessions that began at 5pm. I was feeling a bit impatient and none of them really drew me in after what was already a long day. The first session I

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entered was postmodern-based, thus indecipherable. The next was on sedating suffering patients. My coffee had not yet kicked in, so I left before I experienced a contact sedation.

Across the hall was a 'Mind–Body' session on 'Sounds and Resonance Healing'. A woman whose name I never caught was claiming that she had cured every problem, physical or psychological, that she had ever had using tuning forks for healing. 'My own discovery', she said. Further, 'Tuning fork resonances can smooth vibrations of troublesome memories and produce therapeutic outcomes'. I left before she handed out her advertising pamphlet that I felt was sure to come.

I walked on down the hall to 'Models of Reality 3', where I found a more interesting mix of the scholarly and not so scholarly. A Korean man with the extraordinary name of Pascal Kim was speaking on 'Consciousness and Memory in Yogicara Buddhism'. This guy, a dedicated scholar and seeker, had travelled to Tibet, learned to speak and read Tibetan as well as Sanskrit, and spent years in meditative practice. I took him seriously indeed. He suggested that it is not experience that determines karma, but the manner in which it is experienced; in other words, the state of mind of the experiencer. I was fully awake now. This is altered by study and meditative practice, learning to insert consciousness or mindfulness in the practice of remembering. Mindful memory, I thought, like the classical notion of *epistrophe* (Greek: ἐπιστροφή, 'return'), implying in this case a creative reliving of memory. I was very impressed with the synchronicity. He was surrounded after his talk, so I could not approach him to discuss this.

Easygoing Mark Valladares of the tenniscentric sessions was next, a good speaker with ideas refreshingly his own. He preferred an ontological self-organizing criticality — which sounded like dynamic process to me — over idealism or materialism, and I think he's onto something. He sidetracked to mention that some people were uncomfortable with the self-isolating group from India because they were 'more devotional', but he brushed it off saying we were all here to 'share ideas'. At first, I wondered if he had seen me walk out of the meditation presentation, but later learned he had not.

Ju Huyoung Lee from the medical programme at Johns Hopkins University and Seoul National University next gave a colourful slide presentation that seemed to be about the self-organizing universe and 'chaotic harmony'. When she spoke of women being reduced to Barbie doll figures, she flashed an image of Venus de Milo, hardly a

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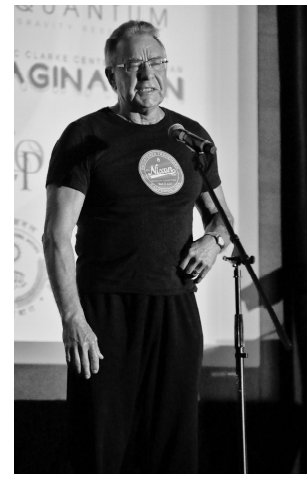
Barbie doll in most people's minds! She said that only Buddhism deals with mind, so she closed by blandly generalizing, 'Buddhism is subjective; science is objective'. Pascal Kim, the expert in Buddhist philosophy, asked her about this reductive nonsense, but she simply talked around the question, avoiding it, and Dr. Kim was too polite to pursue it.

That was it for the business of the day. I believe I had dinner with wine then caught a nap before going to Club Consciousness 2 beginning at 10pm. I arrived and ran into Yanina, bought wine for us both (me, red, her, white) and chatted. Host Stuart Hameroff appeared and announced that we were going to do the famed poetry slam that night, though the programme folder listed it on Saturday. That caught me off guard since I had been toying with the idea of using ontologies as metaphors for a hot love relationship but had not written anything. Yanina immediately left to finish her poem. Unperturbed, I stayed to drink both our wines and watch the entertainment. Dorian Electra and the Electrodes were fun but all I remember is their rendition of the Jefferson Airplane's 'White Rabbit' with some pretty advanced visuals and a very amusing video in which David Chalmers played a starring role, seeming to enjoy himself immensely. QUALIATIK again was terrific, though her show was basically the same as before. Yanina arrived with papers and the poetry slam began.



It seems that the concept of a poetry slam was not familiar to everyone. Yanina read her serious poem without performing it, as did the guy with the thin moustache, who once again expressed his devotion to family and country (though he was in bare feet, so he gets his cool button). The white-haired winner from previous years (whose name escapes me) gave the first all-out performance piece and did so very well, but not as well as the eventual winner, a young woman with forgettable words but whose performance was expressive over-the-top slam poetry. 'Any one else?' Stuart asked, so, with the wines again having their way with my brain, I went up without knowing what I would say or do. In my mind, I performed an exaggerated romantic lament along the lines of, 'O my love, we were

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once stuck in duality…', then added something about how she was the idealist and I the misguided materialist, until we discovered 'dual-aspect physicality'. It fell flat; applause was sparse. Either the satiric aspect of my performance was missed or no one got that I was referencing ontologies. Yanina, smiled, 'At least you did it', and that was enough for me.[2]

Day 6, Saturday, June 10

I'm afraid I skipped the early plenary on 'Vibrations, Resonance, and Consciousness', the descriptions seeming not to directly relate to a philosophy of consciousness. I did show up at the 11:40 Plenary 12, the next to last, 'Eastern Philosophy'.

Xu Yingjin, Fudan U in China, spoke first but very quickly with a high Chinese accent. He was well-versed in his subject matter and had good slides to make his points clear. His talk comparing Japanese philosopher Nishida's concept of *Basho* (nothingness) to contemporary philosophy of consciousness was enlightening, especially when I thought of the 'pregnant emptiness' of the quantum vacuum or ZPE. I asked him about this in the elevator later but he just smiled and nodded, apparently not comprehending me.

Next came probably the most famous name at the conference whose foundation is one of its sponsors, Deepak Chopra. I admit to being well-disposed toward him since he had been gracious enough to submit a brief article to a journal issue I had edited (Chopra, 2016). Mostly disdaining slides, Chopra told a good narrative and gave a fine speech following along the lines of the handout I had read. 'What is the fundamental nature of reality?' he asked. He spoke for idealism — that the mental is the ultimate reality from which material reality is projected by minds working in concert. 'Experience is all a human construct based in recognition.' He never mentioned God but implied that all our minds are part of a super-subject that sustains them all. He knew his science well and made a strong presentation for spiritual idealism, an important counterpoint to the scientific materialism that predominated at this conference. At the end I got the mike and asked him if material reality could not just as well be sustained by invisible quantum field potentials, which might indicate a dual-aspect monism.

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2 Photo of me at the poetry slam by Brad Buhr at flickr online, downloaded 1 July 2017: https://www.flickr.com/photos/150099565@N08/collections/72157681284089564/.

'Again, you are just speaking of a mental construct', he replied, and went on, but I found myself interrupting him: 'The words *quantum field potentials* are certainly mental constructs but the actual referent cannot be seen, so such energy potentials may be more real than the mind that conceives them.' He looked confused for a brief second, either because of my words or the fact that I had interrupted him, but finally he simply said that all such proposals are constructions of a mind. Apparently some people liked my question for they approached me afterwards to agree on dual-aspect monism; however, Deepak was already surrounded by an admiring crowd, so no further discussion could be had. It was good to experience this dip into Eastern philosophy as opposed to religion.

The final plenary at 2:30pm was again based in neuroscience and again chaired by Hameroff. It was titled with appropriate grandeur, 'Origin and Evolution of Life and Consciousness'. Bruce Damer of the Biota Institute UC presented the idea that life was the product of a bootstrap emergence, which in turn bootstrapped the origin of consciousness, yet only a trained human can comprehend this process, so he suggests a reverse bootstrap: 'The next phase of research into consciousness might therefore centre on techniques of mind wrapped in a novel interpretive language.' Allysson Muotri of UCSD told us of 'cerebral organoids for neurodevelopmental and evolutionary studies', but I'm afraid I experienced the *whoosh* effect, as the entire presentation went right by me.

Stuart Hameroff himself was the last presenter, appropriately enough. He began by stating that, for neuroscience and 'most philosophy and psychology', life came before consciousness; however, for 'panpsychism, Whitehead, Orch-OR, and Eastern philosophy, consciousness came first'. Hameroff looked to *quantum vitalism* to explain how the latter is possible. He had my full attention. Why would conscious experience become activated in life systems, and what drives the continued evolution of life? Hameroff's answer, which goes back at least to Aristotle, is eudaemonism, which he takes to be the pleasure principle. Pleasure, according to Hameroff, may involve hedonism, altruism, or spirituality, so all forms of pleasure are covered. As a result, 'The brain is more an orchestration than a computation', which fit nicely into the Penrose-Hameroff orchestrated objective reduction theory. It sounded like an invitation to enjoy life, but one questioner noted that the mark of evolution is the struggle to survive, so wouldn't fear be more fundamental than pleasure? Out of order and without a microphone, I interjected that the two, fear and

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desire, are two sides of the same coin. Hameroff said, *maybe*, and it was left at that, but I think he simply preferred the idea of a fundamental pleasure drive. Maybe it was related to the successful conference or to his happy engagement, but during this conference he seemed to have an aura of enjoyment about him.

Things loosened up after that with many people shipping out but many of us enjoyed dinner together in the Drift. That evening the wine and conversation were free-flowing in the outdoor courtyard, with gas firepits lit up later. Someone wondered what they'd do if nirvana was attained, so I went to town celebrating life as desire (not consciously inspired by Hameroff). If nirvana is the state of eternal bliss attainable after breaking the wheel of samsara (the reincarnation cycle of life and death), then why worry about it now? Who needs to learn the bliss of the afterlife now? Life is for the living, I toasted. We had a good laugh.

I saw Yanina, who was taking a straw poll on the likelihood that the Orch-OR microtubule theory was true (not very scientific). Apparently, most were rating it high indeed. She seemed disappointed when I gave only a vague '20 to 30 percent'. 'Why so low?' she asked. 'Because I know next to nothing about the microscopic structures in the brain and even less about quantum physics', I answered. 'I'm not qualified to guess.' I tried my *celebrate life now* spiel on her, but when I came back from the bathroom she was in deep conversation with the intellect of AI, Joscha Bach. 'AI really is taking over', I smiled to myself.

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Addendum

The link below indicates where you can view interviews with most of the major players (Chomsky, Chopra, Penrose, etc.) and many peripheral ones too, plus on-site reporting as it happened on 'The Daily Show from the Science of Consciousness Conference':

http://www.conscious-pictures.com/consciousness-central.html

Every plenary session is recorded and all are up, or soon will be, here:

http://consciousness.arizona.edu/2017tscVideosPlenarySessions.htm

Photos of many of us in action at the conference by Brad Buhr, plus drawings by Noah of the Big Four (Hameroff, Penrose, Chomsky, Ramachandran), are also online at *Flickr*:

https://www.flickr.com/photos/150099565@N08/collections/72157681284089564/

It was a memorable time. It's a pity next year's Tucson Science of Consciousness conference runs from April 1–7 since many of us academics will still be teaching classes so unable to attend.

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