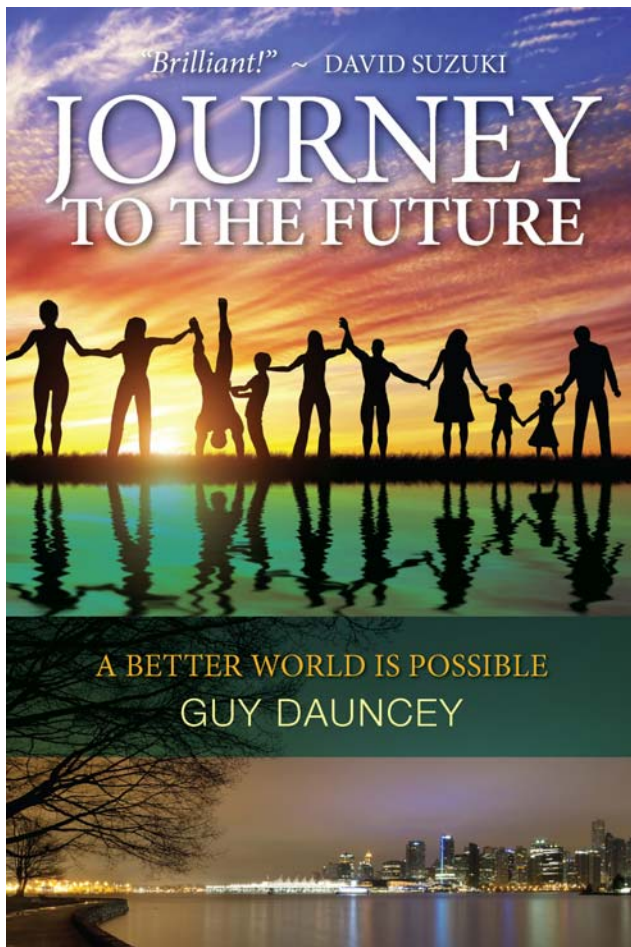


Journey to the Future: A Better World is Possible

Guy Dauncey¹



This paper is a major extract from the final Chapter 34 of the book *Journey to the Future: A Better World is Possible*. The book is set in Vancouver in the year 2032, by when it has become the world's greenest city, alongside Portland and Copenhagen. Patrick Wu, a 24-year-old Chinese Canadian, is visiting a future world brimming with innovation and hope, where the climate crisis is being tackled, the solar revolution is underway and a new cooperative economy is taking shape. But enormous danger still lurks. All of the characters are fictional, including Satyanendra Mukherjee, who wrote the First and Second Laws of Syntropy.

Details of the book at:
www.journeytothefuture.ca

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Chapter 34

The Dinner Party: Exploring Syntropy

“How was your trip to Joey’s Farm?” Leo asked, as we took our places at the table.

“Amazing! I had no idea they’d be using horses, or that they’d have such a strong sense of community. Have you been there?”

“No, but it’s on my list. Working at the supermarket ties up most of my time, and I need what’s left for my reading. From Socrates to Syntropy, remember? The philosophy course I want to teach in China, if I can find a college to accept me.”

Dezzy had been busy in the kitchen with Lucas and the result was a creamy onion soup, followed by a salad picked fresh from the garden and a broad bean and zucchini rice pilaf served with hemp and sunflower seeds, yoghurt and mint, topped with nasturtium flowers, served with a pleasant white wine from the Cowichan Valley on Vancouver Island. My taste buds still remember the summer flavors as I write this today. For the wall-art Dezzy had chosen a stunning piece that showed a human emerging from an egg, emerging from a cluster of atoms, emerging from a supernova explosion. I *liked* this new digital art revolution.

As well as the food and the art, Dezzy had prepared a sumptuous mental menu, which was the reason for Thaba’s and Soluna’s presence.

Soluna was a biologist from UBC. She was a small woman with long brown hair who arrived riding one of the standing mobility devices I had seen on Friday when I was exploring the city. I learned that she had been paralyzed following a snowboarding accident some years ago and the device allowed her to move around vertically and sit when needed, as she did for dinner. She was a long-time friend of Dezzy’s, and how she coped with having children as well, I never did learn.²

“Friends,” Dezzy said, when she had served the soup and Thaba had returned, “I have been wanting to throw a dinner party like this for years, ever since I started hearing about syntropy theory. And then our new friend Patrick came knocking on my door, asking all sorts of penetrating questions, and it struck me that now would be a good time, particularly since Patrick has to leave for Portland later this evening for the next leg of his journey. What I am hoping is that we can get a better understanding of what syntropy is, and what it means for us all.”

Yay! I thought to myself. Finally!

“There has been so much talk about syntropy,” she continued, “but I doubt there’s any of us—apart from Leo, I suspect—who could give a clear explanation. So I invited my good friend and ex-husband Thaba to join us. I thought, if we’re going to understand syntropy, who better to tell us about it?”

“It’s not my intention to turn this into a seminar; it’s just a dinner party with friends, but unlike some of the theories physics has presented us with, this one seems different. As I understand it, it erases the distinction between the inner and the outer world, and if that’s true we all need to be better informed. I’m also hoping it might help Patrick, as he tries to puzzle out what lies behind the changes we’ve been able to achieve here in Vancouver.”

I felt both thrilled and daunted. Would I be able to follow the discussion without making a fool of myself? I had a degree in environmental science, but when it came to physics I felt like a shrimp in an ocean of highly evolved sea-life.

“Thaba, would you be willing to get things started?” Dezzy asked.

² TEK Robotic Mobilization Device: www.matiarobotics.com

“I feel a bit self-conscious in Soluna’s presence,” he replied. “But I could start by talking about the way we see things in my physics faculty. I’ll try to use plain English.”

“As long as I can follow along, I’ll be happy,” Betska said.

“Me too,” Aliya said. “I’ve got a hunch that syntropy is a lot more important than I’ve understood so far. This pilaf is really delicious. Thanks, Dezzy—and Lucas!”

“So, syntropy,” Thaba started. “Where to begin? Let’s start with a toast to our host, Dezzy, who has put together such a wonderful meal for us.”

“And to Lucas!” Dezzy said. “He did most of the cooking.”

“To Dezzy and Lucas!” Betska exclaimed as we all raised our glasses.

“So,” Thaba began, “If I’m going to do syntropy justice I need to go back to the beginning of modern science in the 16th and 17th centuries, when Copernicus, Galileo, Kepler and Newton showed what good results you could get when you marry experimentation with detailed observation and measurement. Everyone knew that when you dropped an apple it fell to the ground. But no-one had made the effort to measure its rate of fall. So when Newton finally buried himself in the numbers and did some serious head-scratching, out popped the theory of gravity.”³

“Was he really sitting under an apple tree?” Betska asked.

“Who knows? The point I want to make is that when science got started, external reality was seen as something solid and real, unlike thoughts and feelings in the realm of consciousness. Those were left to the priests, and considered their realm of expertise. Them and their inquisitions. We need to remember that there was a time when a discussion like this could have gotten us tortured, and burned alive at the stake.

“Believe it or not, the separation continued for centuries. Science was about the material world ‘out there,’ even when it delved into the working of the brain. Matters of the mind and soul were left to the psychotherapists, priests and shamans. The objective material world was on one side of reality; the subjective world of consciousness on the other. And as a scientist, woe betide you if you crossed the line. That could put your career at risk. Science required measurability and solid data, not the soft subjective stuff that goes on in the realm of consciousness.

“Using this model of reality, things proceeded smoothly for almost four centuries. Science was able to unravel the secrets of chemistry, electromagnetism, the human body and much more, bringing unparalleled progress. But then quantum theory arrived, pushing the conscious observer onto the scene as a critical factor in the determination as to whether a quantum-scale entity would express itself as a wave or a particle. That was a problem, and even the leading quantum physicists said if you thought you understood quantum theory, it was proof that you didn’t. It was easier to concentrate on crunching the numbers, which gave absolute proof of the validity of the quantum model, than try to resolve the philosophical quandary at the heart of quantum physics.”

“And there was me thinking I was dumb because I could never understand it,” Betska said.

“You’re not the only one,” Thaba replied. “Even Einstein had difficulties with it. He went to his grave rejecting the uncertainty principle and the notion that something might exist without any causal explanation, as it appears to do in the quantum paradox. Can you pass me some more of that wonderful pilaf? There’s nothing uncertain about that.”

After taking a few moments to savor his food, Thaba continued.

“Meanwhile, there were other problems relating to the separation between matter and consciousness. Take free will, for instance, or agency, as we prefer to call it these days. We take it for granted that we have free will, and we use it to make things happen, like this lovely dinner party. In pure physics, however, there is no such thing as free will—or rather, there didn’t used to be. Everything was causally set in motion at the time of the Big Bang, when the first particles began

³ Sir Isaac Newton: The Universal Law of Gravitation
<http://csep10.phys.utk.edu/astr161/lect/history/newtongrav.html>

bumping into each other. When we were in the laboratory wearing our white lab coats, we inhabited a world where free will and agency did not exist. But the moment we took our coats off and went home to our families it magically reappeared, for I can assure you, it's impossible to be a parent without the assumption of free will. If we took the idea that there was no agency seriously, everything would grind to an immediate halt."⁴

"So which Thaba is speaking to us now?" Leo asked. "The Thaba who wears a lab coat, or the Thaba who's the father of Jake?"

"Both, to answer your question: and there's the paradox, and we scientists hate a paradox, since it means we haven't got our models right. The standard model of physics had been wedded to bottom-up causality, the classic billiard balls. No free will—just A causes B, causes C, starting with the Big Bang, all the way to Z. Do you know what the famous biochemist Francis Crick wrote in his book *The Astonishing Hypothesis*? The same Francis Crick who shared the Nobel Prize for discovering the double-helix molecular structure of DNA? Have you got your Li-fi on, Dezzy? And is it okay if I displace your lovely wall-art?"

Dezzy nodded. Thaba spoke a few words to his device and threw Crick's words onto the wall:

*The astonishing hypothesis is that you, your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will, are in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules. As Lewis Carroll's Alice might have phrased it: You're nothing but a pack of neurons.*⁵

"That's pretty gloomy stuff—not much room for free will there. But what has been fascinating in recent years has been the way top-down causality has emerged as a serious player, recognizing the role of free will and agency at every level of conscious existence."⁶

This was fun. I was struggling to keep up, but so far, so good.

"But free will and causality are not the only problem," Thaba continued. "The standard model of particle physics also said there was no direction or purpose in the Universe: it was all just random chance, even though the journey of existence, from the origin of the Universe to the evolution of life, screamed otherwise.

"Normally, this would not be a problem, since when we're wearing our lab coats we don't concern ourselves with philosophical matters such as whether civilization is advancing or not."

"But that makes no sense at all," Aliya said. "Surely, you don't believe that?"

"No, I don't, which is why I said 'normally.' But I have colleagues who do. I have one who likes to point to the awesome immensity of the Universe to remind us how utterly insignificant Earth is. If you scale the Universe down to the size of the Earth, he likes to say, the Earth would be 1/180th the size of an atom. And he's right. And if you line ten million atoms up side by side, you

⁴ Thanks to Rupert Sheldrake for the analogy. See *The Science Delusion*, by Rupert Sheldrake. Coronet, 2012. Published in North America as *Science Set Free: Ten Paths to New Discovery*. Deepak Chopra, 2013. www.amazon.com/Science-Set-Free-Paths-Discovery/dp/0770436706/ - Rupert Sheldrake: www.sheldrake.org and his blog: <http://sciencesetfree.tumblr.com/>

⁵ *The Astonishing Hypothesis: The Scientific Search for the Soul*, by Francis Crick. Scribner, 1995. www.amazon.ca/Astonishing-Hypothesis-Scientific-Search-Soul/dp/0684801582

⁶ Time to turn cause and effect on their heads. George Ellis, *New Scientist*, Aug 17, 2013.

www.newscientist.com/article/mg21929300.400-time-to-turn-cause-and-effect-on-their-heads.html

Recognizing Top-Down Causation, by George Ellis, Professor of Applied Mathematics, FRS, University of Cape Town. Cornell FQXI Essay Contest. Dec 9, 2012. <http://arxiv.org/abs/1212.2275> and <http://arxiv.org/pdf/1212.2275.pdf>

Downward Causation and the Neurobiology of Free Will. Murphy, Nancey; Ellis, George F.R.; O'Connor, Timothy (Eds.). Springer, 2009. www.springer.com/physics/complexity/book/978-3-642-03204-2

get one millimetre. Within this complete insignificance among all insignificances, he says, do we really think that anything we do or think actually matters?”⁷

“But that’s horrible,” Aliya said. “It goes against everything I believe.”

“We’ve got to suck it up,” Lucas said, taking a sip of wine. “Pretending it’s not true won’t make it go away. I prefer to turn it around and think how amazing it is that within this vast immensity, how great it still feels to be alive and to know that I can make a difference.”

“You two have put your finger on it exactly,” Thaba said. “That’s the core of the problem, right there: the separation between the external reality of this vast, seemingly impersonal Universe in which there is apparently neither purpose nor free will, and the rich reality of the internal world where we experience purpose and free will... and love. There’s the paradox, and scientists either love or hate a paradox, because it means something needs to change.”

“So what’s the solution?” Betska asked. “Do we go on ignoring our insignificance in the vastness of the cosmos, or does syntropy offer us a new way of seeing things? If it does, I hope this dinner party lasts a long time. Leo, can you pass the wine? Or better, can you give us all a top-up?”

“I think I should turn it over to Soluna at this point. I hope I’ve laid some useful groundwork.”

“You have indeed,” Soluna said. “There are several more things that the standard model of physics can’t explain, but we don’t need to go into them now. I come to this as an evolutionary biologist, and one of our tasks is to explain how life evolved, and how living things that started out as a few basic molecules that chose to hook up with each other in a sea of hot mud ended up as humans discussing these things around the dinner table.

“I’ve been working in the field for over twenty years, and I still remember something one of my professors told me when I was an undergraduate at Oxford. As long ago as 1963, he said, the same Francis Crick who you just mentioned told the maverick scientist Rupert Sheldrake in a student seminar that there were two major unresolved problems in biology: development and consciousness.⁸

“By development, he meant the mystery of why it was that molecules adhered to each other and became so much more than their parts, over and over, until there were humans, with our capacity to ponder the vastness of the universe. It’s not sufficient to assume that it happened by random mutations and the instinct of a gene to replicate. Something else must have been at work. But what?

“And by consciousness, even though Crick was a materialist who took it for granted that consciousness had purely physical roots, he meant both the ‘soft problem’ of how consciousness is supported in the brain, and what the philosopher David Chalmers called ‘the Hard Problem’ of consciousness, with capital letters: the undeniable reality of our felt experience. Crick spent the last twenty-five years of his life working with the German scientist Christof Koch on neuroscience research, trying to pin down the nature and origins of consciousness and how the brain produces it. He died never having solved the problem, but Koch became extremely ambivalent about the claims of pure materialism; it’s almost as if he sensed that consciousness did indeed operate in a universal pan-psyche realm, but didn’t have the evidence to come right out and say so.”⁹

⁷ The Universe: Imagine the un-imaginable! Michel van der Meij, 2009

www.xiac.com/Universe/universe.html

How big is Earth, compared to the Universe? Joshua Kennon, March 6, 1011.

www.joshuakennon.com/how-big-is-earth-compared-to-the-universe/

⁸ Story recounted by Rupert Sheldrake (see above) in *The Science Delusion*, page 9.

⁹ See *Consciousness: Confessions of a Romantic Reductionist*, by Christof Koch. MIT Press, 2012. Pages 131-134. www.amazon.ca/Consciousness-Confessions-Reductionist-Christof-Koch/dp/0262017490

“As an evolutionary biologist, I live surrounded by the wonder of evolution. Every day we get a better understanding of why Darwin was right, and how everything that exists on the tree of life has evolved from the same common origins. When people say, ‘We are one,’ it really is true.”

“You’re making me feel a lot happier now,” Aliya chimed in.

“Well, I’ve hardly started, Aliya! I’m hoping you might feel even happier by the time we’re finished with the evening.”

Aliya smiled and snuggled up to Lucas, taking his arm.

“Darwin was fundamentally right about evolution,” Soluna continued, “but we’ve added many new understandings since his time. Natural selection is an important factor, but it’s by no means the only one. Bringing consciousness into play and giving it a role in evolution is huge.

“As a biologist, I deal a lot with animals and plants. But first, do you all agree that you are conscious?” We chuckled, and she continued. “So do you believe that the other people around this dinner table are conscious?” We laughed again. “Okay, how about cats and dogs? Do you think they’re conscious?”

“Of course they are,” Lucas said. “So is every creature.”

“Okay. But remember, it’s not that long ago that scientists used to perform vivisection on monkeys and dogs without anesthesia, claiming they had no feeling. René Descartes, the famous French 17th century philosopher, used to perform live vivisection on dogs, putting his hand inside their living bodies, because his philosophy told him that animals were only machines and could not possibly feel pain.”¹⁰

“Eugh!” Aliya responded, putting down her food. “That’s horrible. How could he do that?”

“Exactly. I’m really glad that we’ve stopped doing vivisection at UBC. Our kitchen chefs still boil lobsters alive, however, and they still tear the limbs off living crabs. I’ve complained, and I’ve shown them the evidence that crabs and lobsters feel pain, but so far, to no effect. But let me get back to consciousness. How about elephants?”¹¹

“Absolutely,” Betska said. “They are probably more conscious than humans. I feel so ashamed at how we have treated them over the years.”

“All agreed? So elephants are conscious. What about worms? Are they conscious? The tiny one-millimetre-long worm *c. elegans* has 18,000 genes and more than 300 neurons. So is it conscious?”¹²

“I’d have to think about that,” Lucas said. Then after a brief pause, “and having given it due consideration, I conclude that yes, they are.”

“Anyone else?”

No-one spoke, but people were slowly nodding their heads to say that yes, it was probable that worms were conscious.

“My friend Sophie told me once that she has experienced the consciousness of a mosquito,” Aliya said. “She was meditating, and a mozzzy started to bother her. But instead of brushing it away she put out an inner request to understand the mind of a mosquito. She found herself transported to a very strange place, which she had difficulty in putting into words, but she was pretty sure that’s what it was: the mind of a mosquito. And ever since that day, she says, she has never been bitten by one.”

“That’s so trippy!” Leo said, laughing. “She should teach a course to show us how to do it.”

¹⁰ *Charles Darwin and the Vivisection Outrage*. Scientific America, Oct 6, 2011.

<http://blogs.scientificamerican.com/primate-diaries/2011/10/06/vivisection-outrage/>

¹¹ *Lobsters, Crabs Feel Pain, Don't Just Respond To Stimulus: Research*. Huffington Post, Aug 8, 2013.

www.huffingtonpost.ca/2013/08/08/lobsters-crabs-feel-pain_n_3724909.html

¹² Bacterial gene numbers: <http://bioscience.jpub.com/cells/MBIO137.aspx>

“That’s fascinating,” Soluna said. “A very elderly friend called Andrew Watson told me a similar thing about ants: that once, he was meditating on a beach in South Africa and the ants were bothering him. So he drew a circle in the sand around him and told the ants not to bother him for an hour. And sure enough, they didn’t. But after a while he felt a bite and he instinctively slapped his leg, killing an ant. What he saw next totally amazed him. Two ants had taken the body of the dead ant and they were holding it up to him. He looked at his watch, and guess what? It was exactly an hour since they had made the agreement.”¹³

“That’s incredible!” Aliya exclaimed. “So the ants were totally conscious of what they had agreed to?”

“So let’s take this a step further. What about bacteria? The largest bacteria have as many as 7,000 genes, compared to a human’s 30,000. Do they experience some kind of proto-consciousness?”

Silence.

“Anyone vote for bacteria being conscious? They can communicate with each other, pass electrical current to each other and respond to light. They can breed, like you and I. Personally, I think it highly likely that bacteria are conscious, which they experience in whatever way their bacterial biology makes possible. And what are bacteria made from? From organic cells that are in turn made from a host of organic molecules. So could it be that even the molecules are conscious, in a very elementary way? And if they are, what about the atoms they are made from? I expect you can see where I’m going with this.”

“Before we go any further,” Dezy asked, “how do you define consciousness? If molecules and bacteria have consciousness, is that the same consciousness that you and I experience? And by the way, would anyone like dessert? We’ve got pear purée with fresh cream, and quince and walnut ice cream. The quinces are probably conscious, but I’m not so sure about the spoon.”

“Ha!” Thaba responded with a deep laugh. “That might be because the molecules that make up the spoon were not consulted before someone came along and mashed them together, so their self-organization never came into play, migrating their consciousness to the higher level. And the dessert sounds delicious. Can I have some of both?” There was a pause while Dezy served dessert, and then Soluna continued.

“When people talk about consciousness they use the same word to mean three very different things. Some people mean self-consciousness, which is clearly nonsense, since children are not self-conscious when they are babies, but they are obviously conscious.

“Some people mean the content of consciousness: the taste of this pear purée, the sound of our voices, the feel of the chairs we’re sitting on. These can all be correlated to neuronal activity in a specific area of the brain. No-one questions the role of the brain in generating the content of consciousness, and deciding which of our gazillion daily perceptions will emerge into consciousness and which will not. There’s a mass of scientific research going on to investigate the nature of those correlations.”¹⁴

“When I use the term, however, I mean consciousness beyond content. I mean pure consciousness, the fundamental experience of being that remains when you quieten every sense and silence every thought. You have to be a very serious Buddhist or something similar to experience consciousness in this raw form, without intrusion, but when people do they speak of something very profound. They speak of overpowering light. They speak of becoming part of a Universe filled with

¹³ Andrew Watson, brother of the author Lyall Watson, told this story at a healing workshop I attended in London in the 1980s.

¹⁴ See *Consciousness: Confessions of a Romantic Reductionist*, by Christof Koch. Referenced above.

compassion. We hold a meditation group in our biology department every Friday afternoon, and we talk about these things afterwards.”

“Are you following this, Patrick?” Dezzy asked me. “You’ve been very quiet.”

“I’m hanging on every word,” I assured her. It was true. I was transfixed by what Thaba and Soluna were saying, and where this might be going.

“So to recap,” Soluna continued, “before syntropy theory we had an unresolved problem with consciousness, and another unresolved problem with the process of development. We also had problems with the standard model of physics that Thaba referred to, concerning free will and purpose. And since biology is ultimately underpinned by the standard model of physics, these problems concerned us biologists as well. If a dog has consciousness, does it have free will? My cat Molly certainly seems to: I see it in her eyes.

“And that’s how things stood when the research into telepathy in identical twins was published, using fMRI chambers with pairs of twins to demonstrate with a high level of certainty that one third of identical twins are telepathic under specific circumstances. One black swan: that’s all it takes to prove that not all swans are white. The premise I find the most plausible is that all beings are telepathic among their kin, but in humans it rarely surfaces into waking consciousness, enabling us to deny it, just as people denied other major scientific breakthroughs before they slowly accepted the evidence. Evolution pushed our conscious experience of telepathy down into an unconscious part of the brain because we needed the conscious brain-space for language—a problem other species don’t have.

“If it had been demonstrated just once that a pair of twins was reliably telepathic, that should have been enough. But since the history of psychic research has been so controversial, they repeated the experiment many times in different ways. By the time they were done there was no denying it any longer: something associated with consciousness was either travelling across space-time without any known means of doing so, or the mind is not restricted in space-time. Just because we experience it as such, does not mean it is.”

This was the same research that Pelly had spoken about. It was reassuring that there was consistency in what I was hearing.¹⁵

“The twins research put the trans-dimensional nature of consciousness firmly on the table,” Soluna continued. “Researchers all over the world began to focus on different theories. It was no longer sufficient to propose that consciousness originated in a specific nerve centre in the brain, or that it was an emergent property associated with the interconnection of the brain’s neurons. If thoughts, feelings and biological responses could travel across space and arrive intact in another being, there was clearly something much more advanced going on. Thirty years ago, when the Nobel prizewinner Brian Josephson from the Cavendish Laboratory in Cambridge suggested that quantum theory might help us to understand the nature of telepathy, his views were met with total disdain by other mainstream scientists and labeled ‘utter rubbish.’ Not any longer!” Soluna leaned back to let it all sink in.¹⁶

“This is fascinating!” exclaimed Dezzy, and the others nodded, still processing silently.

“Let’s have a break for coffee,” said Dezzy, ever the hostess. “Lucas makes a very good spiked chili and chocolate blend, and I’ve got iced peppermint coffee and hot Senegalese coffee, though it’s not for the faint of heart.”

“Don’t go anywhere near it!” Leo cried out. “That stuff’s lethal unless you’ve got asbestos lips.”

¹⁵ While the evidence for telepathy in identical twins is very strong, the studies that Patrick refers to have not yet occurred.

¹⁶ Referenced in *Sync: The emerging science of spontaneous order*, by Steven Strogatz. Penguin, 2003. Page 151. www.amazon.ca/Sync-Emerging-Science-Spontaneous-Order/dp/0786887214

“I wouldn’t say that,” Soluna said. “I got quite a taste for it when I lived in Mexico. It’s certainly an acquired taste, though.”

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“So, where were we?” Dezzzy asked, when everyone had their coffee.

Soluna put her mug down. “We have been obliged to accept that consciousness is more than an emergent feature of the encapsulated brain,” she said. “So let’s get straight to it. The assumption I have embraced, in company with many of my colleagues, is that consciousness is omnipresent in the Universe, similar to space-time. I find it the only theory that makes sense, when you consider all the variables. Dualism makes no sense at all, since the dualities would need to be connected. This means you’ve either got to be a materialist monist, believing that the whole Universe is ultimately material, or a mystical monist, believing that it’s ultimately made from consciousness. For me, assuming the omnipresence of consciousness is the only way in which the realm of mind can interact with the realm of matter without breaking the laws of physics. Without it, there’s no way for mind to trigger the neurons to provide the content we enjoy in our conscious experience.”

“I’m fine with this, but how do your colleagues at the university react when you talk this way?” Betska asked.

“When Mukherjee’s paper on syntropy was published sometime around 2020, it was met with a lot of scorn. But slowly, people are coming round to it. I’m actually in very good company, which is helpful on days when I question it all. Do you know who Max Planck was? He was the founder of quantum theory in the early 20th century. Take a look at what he said.”

Soluna threw Max Planck’s words onto the wall:

I regard consciousness as fundamental. I regard matter as derivative from consciousness. We cannot get behind consciousness. Everything that we talk about, everything that we regard as existing, postulates consciousness.¹⁷

“And he wasn’t the only one. Here’s his colleague, the Austrian Wolfgang Pauli, another quantum theory pioneer:

It is my personal opinion that the science of the future reality will be neither ‘psychic’ nor ‘physical’, but somehow both and somehow neither.¹⁸

“There’s also the British scientist, Sir Arthur Eddington, whose book *The Expanding Universe* made a big impression in the 1930s. He had this to say:

The universe is of the nature of a thought or sensation in a universal Mind. To put the conclusion crudely – the stuff of the world is mind-stuff. As is often the way with crude statements, I shall have to explain that by “mind” I do not exactly mean mind and by “stuff” I do not at all mean stuff. Still that is about as near as we can get to the idea in a simple phrase.¹⁹

¹⁷ Max Planck, *The Observer*, Jan 25, 1931. Referenced in *Today in Science History* (scroll down to the quotes beginning with ‘I’: http://todayinsci.com/P/Planck_Max/PlanckMax-Quotations.htm)

¹⁸ Referenced in *The Genius of Science: A Portrait Gallery* by A. Pais. OUP, 2000. www.amazon.ca/Genius-Science-Portrait-Gallery/dp/0198506147

¹⁹ Eddington: *The Nature of the Physical World* (1928). The quote comes from the essay *Eddington’s Universe* in a thoughtful blog by Orkney Islander Howie Firth. <http://howiefirth.wordpress.com/2012/07/22/166/>

“This has huge implications for developmental biology,” Soluna continued. “It opens the door to the idea that the evolution of species is an intelligent learning process in nature, as the biologist Elisabet Sahtouris believes. Every creature and perhaps even every cell operates with the same fundamental tools of consciousness that we humans experience: awareness, agency, goal-seeking intention and effort, informed by the sensory input of information and organized by memory and intelligence. By agency, I mean the experience of being conscious, which brings the ability to act and respond. It’s a fundamental precondition for free will, which we can choose to exercise or not. In a nutshell, consciousness provides a perceptual organizational matrix that enables the experienter, whether hookworm or human, to use organized information to apply effort to engage in intentional action. Even proteins rearrange themselves when they’re under stress.”²⁰

There was total attention around the dinner table as Soluna spoke. This was so different from the biology I had learned during my home-schooling years. A hookworm, a conscious intentional being? Back in my time, a description like that would have been criticized as anthropomorphizing, distracting from the objective analysis of a hookworm’s life. This was huge, I began to realize. If mainstream science was embracing the omnipresence of subjective experience there would no longer be any barriers between science and spirituality.

“Can we measure consciousness the way we measure matter, time and space?” Dezy asked.

“We’re making progress on ways to measure its existence biologically in terms of correlated brain activity, but to measure consciousness as an absolute, a fifth dimension, equivalent to time and space—for that we may need an entirely new breed of math, going right back to zero; perhaps some new kind of non-differential ultracalculus that can measure the continuity of flow in analog reality without breaking it up into digital pieces. It may or may not be an inherent problem. Who knows? Perhaps one day there’ll be a breakthrough that will allow us to measure raw consciousness. Maybe the very reason why quantum uncertainty exists is because there is agency and choice at the most nano-level of existence.”²¹

“If consciousness is omnipresent in the Universe,” Leo asked, “what about its interaction with things like gravity, space-time and electromagnetism? That’s something I’ve always been curious about.”

“It’s something we’re all curious about,” Soluna replied. “Do you have any insights, Thaba?”

“There’s some exploratory work being done around the potential coaxial nature of fields of consciousness and electromagnetic fields,” he replied. “When it comes to gravity, which as Einstein taught us is the warping of space-time by mass, I know of research that’s looking into quantum entanglement at the moment of the Big Bang, communication between entangled atoms, and whether syntropy might be an expression of the same mutual attraction of like-for-like in consciousness that gravity expresses in matter. But maybe we’ve laid enough groundwork. What do you think, Soluna?”²²

“Yes,” she replied. “I would just like to recap the shortcomings of the standard model of physics: the peas under the mattress that make for an uncomfortable sleep and drive scientists to seek a new model. As well as the known shortcomings, such as its inability to explain gravity or

²⁰ *Shifting Assumptions in Science*. Hokkaido-8 symposium. See above. See also *The Evolving Story of our Evolving Earth*, by Elisabet Sahtouris, Ph.D. Seattle, November 4/5, 1999.

www.ratical.org/LifeWeb/Articles/H3Kevol.html

²¹ *How to measure consciousness: A neuroscientist seeks to quantify our awareness according to a new metric: phi*. Joshua Rothman, Boston Globe Ideas, Aug 19, 2012.

www.bostonglobe.com/ideas/2012/08/18/how-measure-consciousness/cl7K8Xk5eIpGsNyl5TMIzM/story.html

²² For a rich source of debate, see *A Quest for the Theory of Everything*: www.toequest.com

dark matter and its inability to explain the fixed universal constants, we've got the problems with free will, consciousness, development and intentionality.

"In a stable, peaceful world there might not be an urgency to solve these problems. After all, philosophers have been trying to understand them at least since the Greek philosopher Thales of Miletus, who lived around 600 BC.²³ But in a world in such turmoil, where we face such enormous threats to our existence, the questions become extremely important. If we're about to blow it, it would be good if we at least knew what it is we're about to blow. Who among us has never asked those big, fundamental questions—the 'Who are we, what are we doing, where are we going?' kind of question?"

"Count me in," I said. "I sometimes feel as if they're the *only* questions I'm asking."

"Me too," Aliya said. "Some Muslims say the Koran contains all the knowledge we need, but I don't accept that. So yes, what *are* we doing? What *is* our purpose in the Universe?"

"Syntropy doesn't answer all those questions," Thaba said, "but it's a big step forward. It's being proposed as a fifth fundamental interaction, alongside gravity, electromagnetism, weak interaction and strong interaction. It's the first time science has been able to consider a possible Theory of Everything that includes the subjective realities of consciousness, intention and life alongside the objective realities of matter, energy and space-time.

"Syntropy has been around as an idea for almost a hundred years, but the version we're talking about is Satyanendra Mukherjee's, which he published during the OMEGA Days. Let me see if I can find his First Law of Syntropy. Thaba picked up his device, said 'Search, Mukherjee, syntropy, first law,' and projected Mukherjee's words onto the wall:

Acting through consciousness, syntropy motivates individual units of being to self-organize cooperatively within their empathic reach to achieve greater organizational power, range, competence, integrity and freedom for their common good.

"That sounds rather grand," Thaba continued, "but when we understand that 'units of being' embraces everything from a particle to a human we can see how radical it is. The fundamental premise of syntropy theory is that the Universe contains an omnipresent unifying force that causes all units of being to seek greater self-organization for their mutual benefit, using consciousness as the agency of motivation, intention and change. So the premise that consciousness is an omnipresent reality is very much entwined with syntropy theory. There are those who argue that syntropy can exist without bringing consciousness into the picture, just as gravity appears to operate without consciousness, but this would imply that syntropy was simply a means of delivering a pre-determined reality, which most of us intuitively reject. How are we doing? Are we making sense so far?"

"What does Mukherjee mean by the phrase 'within their empathic reach'?" Betska asked.

"That's a very important question," Thaba replied. "As humans, we experience compassion when we feel empathy for someone who is suffering, for a creature that has been hurt or a child who is crying. But if we really want to understand empathy we need to consider its reach, which includes its boundaries. History is full of humans who had empathy for their fellow tribe-members but not for other humans, and not for most creatures in the animal realm, who we have treated abominably. Empathic reach is the limiting condition that denotes these boundaries."

"Like Hitler?" Leo asked. "He had empathy for his fellow Nazis, but not for the Jews and communists, the gypsies and the gays. And the Nazis were very good organizers, too."

²³ *Thales of Miletus*: <https://en.wikipedia.org/wiki/Thales>

“Precisely,” Thaba replied. “So now we come to the interesting part. We are all part of nature. We have all evolved through the same combined intelligent learning processes of syntropic self-organization, cooperative symbiosis, mutation and natural selection.

“Many of syntropy’s critics fail to understand Mukherjee’s point about empathic reach, and its gradual extension. When Hitler organized to lead Germany into war against the rest of Europe, the German people’s drive to attack was immediately matched by the instinct of the British and their allies to defeat them. The empathic reach of the Nazis, who simply wanted to impose their will, was narrower than the empathic reach of the Allies, who were defending the sacred principles of truth, justice and freedom, so ultimately, the Germans didn’t have the inner resources to win. Their higher cause of a thousand-year Reich was less motivational than the Allies’ higher cause. There were many other factors at play, of course, such as who had control over the world’s oil supply, who had the best code-breaking capacities, and the military oomph that the Americans provided when they entered the war, but we should never underestimate the power of the motivational factor.

“Following Hitler’s defeat the Allies went on to form the United Nations to try to prevent such a war from ever happening again. The world’s nations had tried to self-organize after World War One with the League of Nations, but the League didn’t have the teeth or the willpower to do anything, so nations continued to invade each other and seize territory during the 1920s and 1930s. The United Nations, on the other hand, is still with us, and for all its shortcomings it still represents our highest impulse for global self-organization and the common good.”²⁴

“So let me get this right,” Betska said. “Is syntropy then, in effect, a guarantee of ultimate happiness? Are we destined to self-organize ourselves into some kind of cosmic bliss?”

“That’s a really big question,” Thaba replied. “The way I see it, syntropy is an invitation, which we are free to accept or reject. It’s a choice. I’m sure you know the words of Dr. Martin Luther King, who said ‘the arc of the moral universe is long, but it bends towards justice.’ I’m sure my countryman the great Nelson Mandela—Madiba—saw things the same way. Where else would he have found such courage and determination during his years of solitary confinement? That’s how I see syntropy working among humans. We are the ones who bend the moral arc of the Universe towards justice—or who fail to.

“No-one is suggesting that entropy is not also a powerful force. There are plenty of negative social, economic and political conditions that feed entropy. Maybe all social and political activism is a struggle between entropy and syntropy: between entropic forces that generate cynicism, despair and defeat and syntropic forces that inspire hope, determination and courage.

“It’s right there in the Pre-ambule of the Constitution of the United States,” Thaba continued: “‘We the People of the United States, in order to form a more perfect Union....’ A more perfect union. That’s what syntropy is all about. And so we need syntropic politics, syntropic economics and syntropic families, as well as syntropic science.”

There was a deep, concentrated silence around the table.

“Mukherjee has suggested that since there’s a fundamental unity to all existence, as long as we accept the invitation, the pull of syntropy will gradually cause the boundaries of empathy to expand until they embrace all living beings, and all existence. His thinking is very similar to that of the celebrated French Catholic priest and scientist, Teilhard de Chardin, who saw evolution as a co-creation of consciousness and material complexity, which would culminate in the Omega Point, the mystical apex of all creation. Teilhard saw things the same way as Schrödinger: he believed that we live in a pan-psyche Universe. Let me see if I can find the quote....” Thaba spoke some words to his device and projected Teilhard’s words onto the wall:

²⁴ League of Nations Failures: www.historylearningsite.co.uk/league_nations_failures.htm

*We are logically forced to assume the existence in rudimentary form... of some sort of psyche in every corpuscle, even in those (the mega molecules and below) whose complexity is of such a low or modest order as to render it (the psyche) imperceptible.*²⁵

“That’s pretty trippy!” Leo said. “And to think that we are part of all this—that this is our heritage! It certainly beats feeling defeated because of the miserableness of human existence.”

Thaba continued. “Mukherjee is fond of quoting Albert Einstein—you probably know the quote. You’ll have to excuse the sexist pronouns; he was writing in the mid-20th century. Here, let me pull it up....”

*A human being is part of a whole, called by us the Universe, a part limited in time and space. He experiences himself, his thoughts and feelings, as something separated from the rest—a kind of optical delusion of his consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest us. Our task must be to free ourselves from this prison by widening our circles of compassion to embrace all living creatures and the whole of nature in its beauty.*²⁶

“I love that quote!” Aliya said. “I would love to believe that we will ultimately be drawn together into one compassionate family, embracing all living creatures and the whole of nature.”

“Maybe we will,” Thaba replied. “But we’ve got to remember, it’s a choice: it was syntropy too that inspired the Nazis to believe they were the Master Race, who would rule the world for a thousand years. They self-organized too, but their empathic reach was limited to the Aryan people. If you embark on a conflict using empathy that only embraces a limited circle, you will ultimately lose when you confront the self-organizing power of circles with larger empathic reach. This is the dichotomy that led Mukherjee to formulate his Second Law of Syntropy:

In the long run, due to the deep fundamental unity of the Universe, any unit of being that extends its empathy beyond its familiar reach will discover affinity with other units of being. Over time, the syntropic impulse will result in ever-widening circles of empathy, until they embrace the entire Universe.

“The entire Universe?” Dezy queried. “But that’s incredible! You were just telling us how absolutely tiny and insignificant Earth was compared to the size of the Universe.”

“That’s true,” Thaba replied. “It certainly stretches the imagination. But you’ve also got to realize that your human body has a thousand times more atoms in it than there are stars in the Universe, and somehow or other they have self-organized themselves to create you and me.”

“More atoms in my body than there are stars in the Universe?” Aliya chimed in, her eyebrows raised high. “That’s amazing. I had no idea.”

“Yes: ten to the power of twenty-seven compared to ten to the power of twenty-four for stars in the Universe,” Thaba replied.²⁷ “Many people use the expression ‘God’ or ‘The Great Creator’ when they contemplate such an enormous mystery. I have many friends who use the term ‘God’ to express the sacred unity of all that exists and the process of creation in all its wonder, both

²⁵ *The Phenomenon of Man*, by Teilhard de Chardin. Fontana paperback, 1969 edition, Postscript page 329. www.amazon.ca/Phenomenon-Man-Pierre-Teilhard-Chardin/dp/0061632651

²⁶ *The Delusion*. A letter Einstein wrote on February 12, 1950: www.lettersofnote.com/2011/11/delusion.html

²⁷ *How many atoms are in the human body?* 7×10^{27} <http://chemistry.about.com/od/biochemistry/a/How-Many-Atoms-Are-In-The-Human-Body.htm>

subjectively and objectively. I relate to syntropy in a more immediate way, since it provides a useful explanation for the symbiotic impulse towards mutual aid and cooperation, and the self-organizing tendency among atoms and molecules. It may even be the frustrating ‘X factor’ that has dogged complexity theorists for so long.”²⁸

“My father used to say God was a G.O.D.—a General Omnipresent Diaphany,” I interjected, happy to be able to bring him into the conversation.

“It sounds like you had a very thoughtful father,” Thaba replied. “That’s an interesting definition, especially if we equate the word ‘diaphany’ with a field of consciousness.”

“But where does this force of syntropy come from?” Aliya asked. “And how do we know it’s real, and not an imagined fantasy? I *want* to believe, but I don’t want to be taken in by an idea just because it’s warm and fuzzy. I’ve seen enough self-organization by warring Sunnis and Shiites to last me a lifetime.”

“Aliya, this may quite possibly be the most important question of all,” Thaba replied. “It’s one of those questions that make me feel I might go to my grave without having resolved it. Maybe death itself will be the doorway to understanding, when we finally lose the flood of daily detail that prevents us from experiencing pure consciousness.

“Speaking as a scientist, however, we might as well ask where gravity and space-time come from, or magnetism. We don’t know the answers to those questions either. For all that we do know, we are still very limited in our knowledge compared to the immensity of what we don’t know. We have only been seeking answers in a scientifically rigorous manner for a few hundred years. Imagine a civilization that has been at it for forty thousand years, or four hundred thousand years. Imagine how much more they will have had time to unravel. If we can get through the current global crisis and learn to live together as a family of nations, maybe there will be a golden age of tranquility on the other side. After all, the Sun will be good for more than a billion years, which gives us a long time to enjoy the fruits of consciousness and harmony with nature. Dezzy—what on Earth did you put in my coffee? I don’t normally speak like this.”²⁹

“It’s wonderful,” Aliya said. “Please don’t stop!”

“I don’t normally think of myself as religious,” Thaba replied, “but I can enjoy my imagination being blown wide open as much as anyone. Give me a Mahler’s *Second Symphony* or some Hugh Masekela jazz any day. As a scientist, however, I prefer to leave the question marks hanging rather than bundling them up and calling them ‘God.’ I find that it serves to keep me curious. But forgive me: what was your question?”

“I asked where the force of syntropy comes from,” Aliya said.

“Right. We know that consciousness is real, and we believe that it may permeate all existence. We know that units of existence have self-organized cooperatively throughout evolution for their own benefit to create greater capacity and reach; and we know that the self-organizing impulse operates in physics, chemistry and biology as well as among humans. So the hypothesis is that there’s a deeper universal force at work, a fifth fundamental interaction, which Mukherjee calls syntropy. He didn’t invent the term; he simply brought it into the mainstream. The concept was dreamt up by Luigi Fantappiè, an Italian, nearly a century ago. He was a well-regarded mathematician, a colleague of the physicist Enrico Fermi. He was working on an aspect of quantum theory concerning the anticipated potentials of a wave equation when he had this sudden insight that there was a new category of phenomena that he termed ‘syntropic’ that were totally different from

²⁸ For a good survey of complexity theory, see *Complexity: Life at the Edge of Chaos*, by Roger Lewin. Macmillan, 1992. www.amazon.ca/Complexity-Life-at-Edge-Chaos/dp/0020147953

²⁹ *Are We in the Midst of A Scientific Revolution?* Cassandra Vieten. Science and Non-Duality (SAND) Conference, 2014. www.scienceandnonduality.com/are-we-in-the-midst-of-a-scientific-revolution-cassandra-vieten/

entropic phenomena, which obey the principle of classical causation and the second law of thermodynamics—the law of entropy.

“If I can borrow your device, Soluna, I’ll show you the page from his journal where he related his discovery.” Thaba spoke the relevant words to the device, swiveled his chair to face the wall and projected Fantappiè’s words:

I have no doubts about the date when I discovered the law of syntropy. It was in the days just before Christmas 1941, when, as a consequence of conversations with two colleagues, a physicist and a biologist, I was suddenly projected in a new panorama, which radically changed the vision of science and of the Universe which I had inherited from my teachers, and which I had always considered the strong and certain ground on which to base my scientific investigations.

Suddenly I saw the possibility of interpreting a wide range of solutions (the anticipated potentials) of the wave equation that can be considered the fundamental law of the Universe. These solutions had been always rejected as ‘impossible,’ but suddenly they appeared ‘possible,’ and they explained a new category of phenomena that I later named ‘syntropic,’ totally different from the entropic ones, of the mechanical, physical and chemical laws, which obey only the principle of classical causation and the law of entropy.

Syntropic phenomena, which are instead represented by those strange solutions of the ‘anticipated potentials,’ should obey two opposite principles of finality (moved by a final cause placed in the future, and not by a cause which is placed in the past): differentiation and non-causability in a laboratory. This last characteristic explained why this type of phenomena had never been reproduced in a laboratory, and its finalistic properties justified the refusal among scientists, who accepted without any doubt the assumption that finalism is a ‘metaphysical’ principle, outside Science and Nature. This assumption obstructed the way to a calm investigation of the real existence of this second type of phenomena; an investigation which I accepted to carry out, even though I felt as if I were falling into an abyss, with incredible consequences and conclusions.

It suddenly seemed as if the sky were falling apart, or at least the certainties on which mechanical science had based its assumptions. It appeared to me clear that these ‘syntropic,’ finalistic phenomena that lead to differentiation and could not be reproduced in a laboratory, were real, and existed in nature, as I could recognize them in living systems. The properties of this new law opened consequences which were just incredible, and which could deeply change the biological, medical, psychological and social sciences.³⁰

“Syntropic phenomena obey opposite principles of finality, Fantappiè said, being moved by a final cause placed in the future, not in the past. That needs a lot of thinking about. A final cause, set in the future.”³¹ Thaba paused, as if pondering the thought himself.

“That’s hard for me to wrap my mind around,” Betska said.

“At first blush, it certainly seems so,” Thaba replied. “When we observe the material world it seems clear that causation flows from the past to the present. When we observe the world of consciousness, however, which we can do any time we’re awake, we define the goals we want to achieve through intentions set in the future and we use agency, effort and free will to move towards them. Causation flows from an anticipated future, back to the present. That’s how Dezzy organized this lovely dinner party; that’s how we achieve everything in life apart from routine, unconscious habits.”

³⁰ Luigi Fantappiè: www-history.mcs.st-and.ac.uk/Biographies/Fantappie.html

³¹ Luigi Fantappiè and the physics of life, by Mary Leonard. Frontiers, March 17, 2013. <http://frontiersmagazine.org/luigi-fantappie-and-the-physics-of-life/>

“This is getting beyond me,” Aliya said. “If atoms have some kind of rudimentary consciousness, and if, in the world of consciousness, causation flows from the future to the present, does this mean that even atoms experience agency and causation this way? What does that mean for the nature of time?”

“A lot of things in physics appear far-fetched,” Thaba replied. “When you contemplate the immensity of the Universe and the mystery of our origins it’s hard not to blow a fuse. So far, we have no means of knowing if atoms experience agency and causation. But we know that atoms are drawn to each other, and we know that they self-organize to form molecules and ultimately to form elephants and humans.

“Self-organization occurs in every realm of existence.³² If you remove the assumption of consciousness, it becomes very difficult to explain. Who or what is doing the self-organizing? People like the polymath Stu Kauffman talk about sets of molecules that are collectively autocatalytic, emerging spontaneously from their previous level of order.³³ Biologists talk about organisms having plasticity, and an ability to self-organize that emerges internally without being caused by any external factor. The South African mathematician and cosmologist George Ellis, who taught me when I was a student at the University of Capetown, was very clear that the Universe was not entirely a bottom-up creation, as most physicists believed, and that there are multiple levels of what he calls top-down causation, without going so far as to attribute them to consciousness and agency.³⁴

“Back in the 1970s, the Hungarian biologist Albert Szent-Gyorgyi used the same term ‘syntropy’ to describe the way living systems evolve into forms of organization that are more complex and harmonic, in contrast to ‘entropy,’ which leads to the disintegration of all types of organization. He defined it as the ‘innate drive in living matter to perfect itself.’ Earlier in the century, the British philosopher and mathematician A.N. Whitehead spoke about the primacy of process; and the South African thinker and political leader Jan Smuts, one of my countrymen, spoke about holism, which he defined as the tendency in nature to form wholes that are greater than the sum of their parts, through creative evolution. It’s very similar to syntropy. Einstein thought very highly of Smuts’ concept; he wrote that it would be the most influential concept in directing human thinking over the next millennium, alongside relativity.

“Even the legendary biologist Richard Dawkins spoke about selfish genes as if they had purpose and intention, with the ability to mold matter and create form. When pressed, he said he didn’t actually mean that, but he often spoke as if he did.³⁵ Kauffman believes there is a ceaseless creativity in the Universe, which comes from existence always being poised on the edge of chaos, where there is maximum choice. He has never suggested that organisms are conscious, however, or that it is the experience of agency experienced within consciousness that enables an organism to self-organize, the way we do. That’s the leap Mukherjee made when he integrated syntropy with consciousness. Elisabet Sahtouris, the famous evolutionary biologist, believes that the Universe itself is consciousness, creating living systems within itself, and that all living systems are therefore

³² *Self-organization*, by Hermann Haken, Institute for Theoretical Physics I, Center of Synergetics, University of Stuttgart, Germany. Scholarpedia: www.scholarpedia.org/article/Self-organization

³³ *At Home in the Universe: The Search for Laws of Complexity*, by Stuart Kauffman. Viking, 1995. www.amazon.ca/At-Home-Universe-Self-Organization-Complexity/dp/0195111303 *At Home in the Universe: The Search for Laws of Complexity*, by Stuart Kauffman. Viking, 1995. www.amazon.ca/At-Home-Universe-Self-Organization-Complexity/dp/0195111303

³⁴ *Physicist George Ellis Knocks Physicists for Knocking Philosophy, Falsification, Free Will*. John Horgan, Scientific American, July 22, 2014. <http://blogs.scientificamerican.com/cross-check/2014/07/22/physicist-george-ellis-knocks-physicists-for-knocking-philosophy-free-will/>

³⁵ See *The Selfish Gene*, by Richard Dawkins. http://en.wikipedia.org/wiki/The_Selfish_Gene

conscious, intelligent and able to learn. Mukherjee built on the work of Sahtouris and many others, pulling it all together.”³⁶

“I’m still stuck on the implication for the nature of time,” Aliya said. “I can understand an intention being set in the future; that’s imaginary. But you seem to be saying that Fantappiè claimed that all living systems respond to a cause set in the future.”

“Fantappiè did not relate syntropy to consciousness either,” Thaba replied. “Modern scientific research into consciousness did not begin in earnest until the late 1980s. He just had the intuition about syntropy, as did many others, including Szent-Gyorgyi, and Whitehead, who used the term ‘creativity’ where Fantappiè used ‘syntropy.’³⁷ They’re not the same, but they’re very similar. In the early years of this century, Fantappiè’s work was championed by an Italian couple, Ulisse Di Corpo and Antonella Vannini. They publish a journal and organize conferences that bring scientists and philosophers together to explore the theory of syntropy.”³⁸

“Fantappiè had to frame the concept of syntropy within the classical quantum paradigm he was familiar with, not the new psi-quantum paradigm, which includes the reality of consciousness. In classical quantum physics, time has no inherent direction: it can go both forward and backward. There is also no free will, so if something has a cause set in the future it doesn’t matter, since there’s no choice about the way things work out. It’s not a way of thinking I embrace any more, but it’s the way most physicists used to think, myself included.

“When we embrace the psi-quantum paradigm, consciousness takes center-place, and subjective agency with its potential to act arises as an active response to observation and change. That causes us to think about time very differently. You referred to imagination. In the old paradigm, imagination belonged to the realm of the mind, which either co-existed dualistically alongside the material realm or was totally secondary to that realm, as a subset of brain activity. The psi-quantum paradigm opens up the relationship between consciousness and time. There have always been anecdotes about precognition; about people, for instance, who find themselves thinking about someone they haven’t met for years, and suddenly he or she is right there on the street.”

“That happened to me just recently,” Dezzie said. “I was having a coffee in a café on 4th Avenue and I started thinking about an old school friend I’d known in Montreal. When I got home, there was an email from her. It was really weird.”

“We know this kind of precognition happens; there’s very solid evidence for it,” Thaba continued.³⁹ “Until recently, however, we didn’t have a clue how to understand it, so it was easier to ignore it or deny that it happened. In this new way of seeing the world, consciousness is an omnipresent dimension that may pre-empt time, making time a secondary phenomenon. If that’s the case, then a glimpse into the future becomes possible, and so does the conscious creation of the future by intention, accompanied by effort. I’m not sure if this answers your question, Aliya, but it’s the best I can do for now.”⁴⁰

“Maybe this is a good time to open it up for discussion,” Dezzie said.

“This is fascinating,” Betska said. “Your mother would have loved it, Leo. I’m wondering whether it speaks to Jung’s idea of a collective unconscious, and the idea that we swim in an ocean

³⁶ *Prologue to a New Model of a Living Universe*. Chapter by Elisabet Sahtouris in *Mind Before Matter: Vision of a New Science of Consciousness*. O Books, John Hunt, 2007.

www.sahtouris.com/pdfs/MindBeforeMatterChapter.pdf

³⁷ A.N. Whitehead: http://en.wikipedia.org/wiki/Alfred_North_Whitehead

³⁸ Syntropy: www.sintropia.it

³⁹ *Supernormal: Science, Yoga and the Evidence for Extraordinary Psychic Evidence* by Dean Radin. Deepak Chopra Books, 2013. Chapter 9. www.amazon.ca/Supernormal-Science-Evidence-Extraordinary-Abilities/dp/030798690X

⁴⁰ For further exploration, see The Center for Integral Science: www.integralscience.org

that contains deep unconscious currents of memory and experience which occasionally surface into consciousness.”

“I’m not a psychologist,” Soluna said, “but when I worked in Mexico I had friends who were Mayan, and they certainly thought that way. I’m beginning to think that we should require our future physics students to spend a year in an ashram or a monastery or with an indigenous tribe before they join us, to give them familiarity with the different realms of consciousness. My snowboarding accident did wonders for me in that department. It made me sit still and go within, opening new doors of perception. Did I tell you, by the way, Dezy, that I’m on the waiting list for a stem cell nerve repair operation?”

“Does that mean you’ll be able to walk again?” Dezy responded with excitement. “That would be incredible!”

“My specialist has warned me not to raise my hopes, since the science is still quite new.⁴¹ But we’ll see what happens. Sometime in the next two or three months, he said. I have also been using a form of electro-biotherapy called functional electrical stimulation. I wear an electrode cap that picks up my brain signals whenever I think about walking or standing, and it responds by activating the nerves in my leg muscles I’ve been doing it for about a year now, and it has enabled me to walk about five metres. So combined with the stem cell repair, I’m feeling very hopeful, in spite of what my doctor says.”⁴²

“That’s amazing,” Dezy replied. “Sometimes I think that the entire progress of humanity has scientific progress at its core.”

“Has anyone found a way to test syntropy theory to see if it’s false?” Leo asked.

“It’s not as easy as measuring the rate of fall of an apple to test the theory of gravity,” Thaba replied. “You can do a simple thought experiment in which you remove consciousness and see what happens: everything grinds to an immediate halt. What we’re looking for is evidence of an omnipresent field of influence, similar to gravity, which shapes the way units of existence operate, driving or pulling them to greater self-organization and complexity. We can observe it happening in any realm we choose to study, from anthropology to economics and from physics to biology, but no-one has been able to locate the source of the influence, or test what would happen if you removed it. We face the same quandary with gravity. We know what it does, and we can measure its effect down to the nanometre, but nobody has been able to explain how it integrates with the other fundamental interactions. It’s a mystery. Gravity, which comes from the interaction of mass with space-time, must have a fundamental entanglement with the other dimensions of existence, but we have no idea how it combines with the fundamental syntropic drive within matter and space-time towards unification.”

At that moment the lights in the house flickered for four or five seconds, then returned to normal.

“Are we about to have a power cut?” Soluna asked. “Or is that an answer to Aliya’s questions?”

“No,” Dezy laughed. “That’s our daughter Gabriela in Montreal. She does it every night when she’s about to go to sleep. It’s our way of saying goodnight. She knows that if I’m home I’ll respond by doing... this.” Dezy reached for her device and pressed some buttons. “There: I’ve just sent her a goodnight kiss.”

“That’s so cute!” Soluna said. “Are you using the SoulTouch app I’ve been reading about?”

⁴¹ *Rebuilding the Nervous System with Stem Cells*. National Institutes of Health.
<http://stemcells.nih.gov/info/scireport/pages/chapter8.aspx>

⁴² *Paralyzed man uses mind control to walk again*. New Scientist, Sept 24, 2015.
www.newscientist.com/article/dn28226-paralysed-man-uses-mind-control-to-walk-again

“Yes. Gabriela has coded our home’s password into the app, so all she has to do is touch it and the lights dim.”

“That’s so sweet,” Betska said. “You must show me how it works.”

At this point, I thought I’d better jump in before the opportunity was gone. “During the last few days,” I asked, “I’ve heard several people refer to syntropy as an important factor in motivating people to work for a better world. How does that work?”

“It’s to do with the motivational power of the stories we tell ourselves,” Soluna said, turning to face me. “The stories about who we are, what we’re doing and where we’re going: the big questions we spoke about earlier. I have a colleague in the history department, Frances Wellsmore, who is researching what she calls ‘ultimate storytelling’: the foundational framing stories which humans have used throughout history to answer the huge, imponderable questions. She is fascinated by syntropy as a new ultimate story, in addition to its value as a scientific hypothesis. Every culture needs an ultimate story, she says. The need is deeply embedded into our psyche. It’s probably got to do with the mystery of death, which is so absolute, and makes us wonder what it’s all about.

“For thousands of years, she says, our palaeolithic forebears told themselves a story about how their ancestors enjoyed the happy hunting grounds in the spirit world after they died. Through their shamans, they discovered portals to a world filled with magic, which integrated them with nature and the great beyond. She calls it Frame One in the history of ultimate storytelling.

“When we settled down and started farming we created Frame Two. Our needs turned to the sky, for good rain and a safe harvest, so our stories grew to include the gods and spirits of the sky, the earth and the trees, who governed our lives. As empires grew, however, we became conscious of the enormous diversity of gods, and how little sense they made, so we created Frame Three, in which there was just one God, divine and omnipotent, who ruled over everything. If you obeyed God’s commands, the story said, when you died you’d join God in Heaven. Misbehave, on the other hand, and you’d go to Hell. That was very handy for keeping social control in a complex society.

“But then science arose with its powerful ability to explain the world, and it shattered many gods, new and old. In their place humans created two new stories. Frame Four told of the incredible progress that could be achieved if we discarded kings and bishops, ignorance and superstition, and embraced in their place science and reason, exploration, enterprise and commerce. It brought us the Age of Enlightenment, inspired by philosophers like Voltaire, Locke and Rousseau and geniuses like Benjamin Franklin, and it continued to inspire until Europe collapsed into the brutality of the Great War in 1914.

“Frame Five ran alongside it during the 19th century and well into the 20th century. This was the story of socialism, which promised peace and the universal brotherhood of man if we would cast off the shackles of capitalism, which condemned so many to be prisoners of poverty, low wages and the bourgeoisie. When the Soviet Union finally collapsed, the hope of socialism died with it. God was dead, and the optimistic faith in progress that the Enlightenment brought had long since been chased away by the villainies of the 20th century. There are strands of socialism that are alive and well, such as our healthcare system here in Canada, Citizens’ Income, and the rediscovery of public banking, but as a stand-alone story it has lost its pull. With its death, we were left with no new stories at all: only the old religious stories. There was a vacuum, which people tried to fill with shopping, alcohol, sex, drugs and fundamentalist religions, whether Christian, Hindu, Jewish or Muslim.

“Then came the assault on nature, with global warming, the pollution of rivers and oceans, the extinction of so many species, the destruction of forests and all the rest. So a new story emerged which Frances calls Frame Six. It speaks of humans as aliens in our own land, transgressors against the beauty of nature, destroyers of everything good. In its darkest expression, it says that it might be better if we allowed ourselves to go extinct and left the Earth for nature to recover.”

OMG. This was the story of my generation, back in my time.

“Hollywood picked up on the theme and packaged it into a host of dark movies about apocalyptic plagues and disasters,” Soluna continued. “The looming catastrophe of global warming hung over the world like a doom-laden cloud, making people feel deeply worried about the future and driving others into full-on denial. Fundamentalist religions made a comeback, with their simpler stories. It’s quite remarkable, when you dig into religious predictions. When it comes to the long-term future, Christianity, Islam, Hinduism and Buddhism all prophesy apocalypse and disaster.

“Among the world’s major religions,” Soluna continued, “only the Jewish faith has a positive vision of the long-term future. Jewish belief has always been tied to their covenant with God, who would deliver the Jews from bondage and bring the ultimate return of the Messiah to Jerusalem, leading to a Garden of Paradise on Earth. It has always puzzled me why the other major religions revert to fatalism in their eschatology when they look into the future, as if they have never escaped the ancient Sumerian belief in the endlessly repeating wheel of birth and death. Only the Jews developed a positive vision of the future and a progressive sense of time, thanks to their covenant with God. It was such a tragedy that in the years after World War II and the Holocaust, they believed that they needed to keep this paradise to themselves in Israel, to the exclusion of the Palestinians from whom they took the land. I’m so glad that they seem to be finally making progress, after so many years of conflict and suffering.”⁴³

“I may be only Jewish on my father’s side,” Betska said, “but I’m very proud of my heritage. I much prefer that we don’t all have to die in order to experience paradise.”

“It has been a long time since anyone believed that scientists could deliver a Garden of Eden,” Soluna said. “For many years, people saw us as being responsible for toxic chemicals, genetic manipulation and new weapons of war. In recent years science has been quite useless when it came to providing a story. Our miserable attempt said that all existence was material, life had happened only by chance, and there was no inherent meaning, purpose or direction in the Universe. Subjective reality was an illusion, and there was no such thing as choice or free will; but what the heck, wasn’t the Universe amazing? The Earth was insignificant in the measure of the Universe, and everything was ultimately going to collapse, since the second law of thermodynamics stated that entropy and disorder would always increase. It was unrelentingly pessimistic. No wonder people felt hopeless and preferred to go shopping.”

“Whoa. You’re getting me depressed!” Lucas said. He had been sitting quietly during the discussion so far. “We never thought about any of these things during OMEGA Days, when we were putting everything on the line.”

“No?” Soluna asked.

“No. We weren’t thinking that humanity was some kind of plague, or that it might be better if we died off, leaving Earth to the bears and the earthworms. We simply had a determination to make a difference. It’s true, we didn’t have a larger story to frame our beliefs; we didn’t feel that we needed one. My engagement didn’t come from a story in my head. It came from my gut, my anger at the abuses that were going on against people all over the world, and against nature.”

“So you didn’t have a deeper story that motivated you to act?” Soluna asked.

“No. Some of us felt motivated by a personal sense of spiritual purpose. Some joined because they could see we were having more fun, and it was better to change the world than complain about it. Personally, I don’t have a clue about physics, philosophy, or the things Leo goes on about. I just feel that whatever’s happening in the Universe, and whatever life is really about, it’s just friggin’ amazing to be alive, to be part of it, and to feel it in my body. I felt really happy when I was engaged in making a difference, compared to moping around, feeling that I couldn’t contribute anything.”

“Bravo!” Thaba exclaimed. “You are my kind of man.”

⁴³ Wikipedia entries on eschatology: <http://en.wikipedia.org/wiki/Eschatology>

“So let me modify what I just said,” Soluna replied. “The kind of instinctive rebellion that you describe has happened throughout history. It simply needs enough people to feel a strong enough sense of injustice, and a feeling that ‘this is wrong: we deserve something better.’ Life itself provides the motive and the determination. But to sustain a movement so that it becomes more than a rebellion: that needs a deep, compelling story, and a vision that inspires. Negative energy slays hope, surrendering the field to entropy. Positive energy inspires hope, inviting syntropy to flourish.

“Regarding the OMEGA Days,” she continued, “it was the power of the commitment to make Vancouver the greenest city in the world, combined with the belief that it was possible and the determination that it was necessary that provided the deeper, more lasting inspiration. It was the vision of the greenest city itself that provided us with the fuel to do what we did.”

It was then that the light bulb clicked on in my mind. It was so simple; it had been staring me in the face all the time. I had wanted to know what inspired people to make Vancouver the greenest city in the world. It was *the vision itself* that inspired them. It had sufficient power, without any need for the understanding of syntropy that I was gaining. I felt a smile light up inside me.

“So let me relate this to syntropy,” Soluna continued. “For everything we do in life we need both vision and intention. We set them as markers in the future, and we move our lives towards them. We do this for everything, from huge global campaigns to small dinner parties. But what is the story that inspires our intentions? We need a story that is *a positive attractor*, which will attract us to build a better future, giving us purpose and hope, reason to dream and reason to work. When a story tells of desolation, painting humanity as a transgressor against all that is good and beautiful, it’s hard to have hope.

“My friend Frances Wellmore believes that when people understand what syntropy theory is really saying, it will transform the entire way we think about our purpose and our reason for being here on this planet. It will be like taking the power of the greenest city vision and multiplying it a thousandfold. Humanity has never known a story which carries such power, she says—one that embraces the scientific impulse, the spiritual impulse *and* the impulse for social and political change, and which also provides such a positive vision of the future.”

My chance to jump in. “Do you think the new syntropy story will increase people’s motivation to build a better world?”

“I think I’ve believed in something like this all my life,” Betska responded. “I just didn’t know it had a name. In my work as a therapist I have so often observed a deep resilience within the human spirit, however wounded someone might be. Humans have a deep unconscious drive to seek wholeness, and an internal capacity for healing. Where does it come from? I concluded that it was inherent in the human condition, and that deep down, the bottom is solid and can be trusted, if we are willing to surrender to it. But maybe it’s also because I have Jewish roots, that I do in fact believe that one day we will restore the Earth to the Garden of Eden.”

“What about you, Lucas?” I asked.

“I’m not a big one for philosophy,” he replied. “I leave that to people like Leo. But what I’m hearing is that syntropy says all beings are related and it’s natural for humans to want to come together instead of fighting. It’s natural to want to live in harmony with nature instead of abusing her. It’s natural to want to love instead of hate; to cooperate instead of compete. It’s natural to feel drawn to a vision of unity and harmony instead of one of hatred and hostility.”

When Lucas spoke, the room became quieter. He had a raw magnetism, which must have been very powerful when he was in the thick of the OMEGA Days.

“Dezzy said you could be pretty inspiring, Lucas. I can see why!” Soluna said.

“Lucas, can I clone you and bring you back to Seattle?” Thaba said, smiling. “We could do with energy like yours. Personally, I love big picture thinking, but you’re right: most people get by quite happily without it. They just need to believe that their instinct to make the world a better place is on solid ground and not about to disappear down some post-modernist hole, deconstructing the

context of trans-dialectical vision through post-textual analysis, shredding the neo-cultural narrative to trigger a post-paradigmatic collapse. So yes, as the popular understanding of syntropy theory spreads, I believe it will accelerate positive social change.”

“That was hilarious, Thaba!” Soluna said. “However do you come up with that stuff?”

“I have a post-modernism generator chip embedded in my brain. I find it very useful at dinner parties with my fellow academics.”⁴⁴

Leo laughed uproariously, and everyone chuckled.

“How about you, Aliya?” I asked.

“I find these ideas deeply inspiring,” she replied. “It’s more than a little bit amazing. It enables me to integrate my love of science with my love of God and my activism. Is it really true that syntropy has been operating since the very beginning of the Universe?”

“That’s the theory,” Thaba replied.

“And that it fits with both physics and biology?”

“Yes. The syntropy concept says that the impulse we experience to organize an activity or to plan a new venture is the same impulse that hummingbirds experience when they build a nest and the immune cells in our bodies experience when they heal a wound.”

“That’s so beautiful,” Aliya said. “It gives me incredible hope. I’ve heard people talk about syntropy at the hospital, but I didn’t understand it properly until now. Mind you, I’m still not sure I really do. It feels as if syntropy is expressing the creative will of Allah, peace be upon Him. It’s telling me that the Universe Allah created has a moving, dynamic aspect in which we, who are part of the beauty of Allah’s creations, seek a greater and more perfect union. Not with Allah Himself, but with His creation.”

“Don’t the Sufis seek union with God directly?” Betska asked.

“Yes, but I’m not a Sufi; I was raised as a Sunni Muslim. I was taught that it’s blasphemous to even suggest that a human could have union with something as great and unknowable as Allah. But I love the impulse towards greater unity that syntropy theory seems to express.”

“What about you, Leo?” I asked.

“It’s very powerful,” he replied. “What matters for me is to strip it of any woo-woo factor and be able to present it with as much gravitas as we do the theory of gravity, if you’ll excuse the pun. Less than half the human population responds to things that are intuitive and philosophical. If it’s going to have an impact, it’s got to be practical and grounded.

“I would go further,” Leo continued. “If early Chinese, Greek and Islamic science is Phase One of science, and Copernicus to the present is Phase Two, then maybe syntropy is launching Phase Three. That’s how fundamental the integration of the inner and the outer is, after so many centuries of separation.”

“I agree,” Soluna said. “It tells us that the Universe is biofriendly, as the physicist Paul Davies has claimed.”⁴⁵

“Can you explain in simple words the difference between syntropy and entropy, and how they relate to each other?” Leo asked.

“That’s a big question,” Thaba replied. “If we look at them separately, syntropy operates in the realm of consciousness, while entropy operates in the old-fashioned realm of matter. In the material worldview there is no free will, no purpose, and entropy’s the only game in town. Heat has never been observed to pass from a colder to a warmer body. And when we measure events in the

⁴⁴ The Post-Modernism Generator, written by Andrew Bulkak using the Dada Engine.

www.elsewhere.org/pomo

⁴⁵ *The Science Interview: Paul Davies*. Financial Times Magazine, Nov 15, 2013.

www.ft.com/intl/cms/s/2/f2479d9a-4cc5-11e3-958f-00144feabdc0.html

material world, the second law of thermodynamics, which states that the entropy of an isolated system will always increase, always holds.

“Strictly speaking, entropy only speaks about heat. It does not speak about organization, though many people have misunderstood the second law, thinking that it also says that disorganization in a system will always eventually increase.

“But now we know that the Universe is not solely material, and that consciousness and matter are intrinsically entangled. We also know from personal experience that disorganization does not always increase. Indeed, we have observed a tendency to self-organization throughout evolution that is clearly *negentropic*—it has negative entropy. Syntropy, operating through consciousness, appears to balance entropy, enabling the progress of evolution and civilization to occur. How they integrate in the long run is still a mystery, just as it’s a mystery how the Universe came to have such a low state of entropy at the time of the Big Bang, when it all kicked off. Does time flow with entropy, with syntropy, or with both—or is time strictly a secondary experience? It’s a big unanswered question.”

Silence around the dinner table.

“How about you, Dezzy?” I asked. “What do you think?”

“I’m wondering what Derek might have thought if he was with us today. He would probably have wanted to make a movie about it, to reach the widest possible audience. Something that showed the tension between entropy and syntropy in the world that would make people realize that we *do* have a choice, we *can* influence what happens in the world.”

“And what do you think, Patrick?” Soluna asked me.

I wasn’t expecting that; my mind was still processing. “I’m still taking it all on board,” I replied, playing for time. And then it came to me: “Would you say that on days when we doubt everything, syntropy offers us a deep confidence that the Universe wants us to succeed?”

“Maybe,” Soluna replied. “But we can only succeed if enough humans get involved to make it so. The Universe does appear to be programmed to want to make it so, which is the good news, but the decision to proceed always rests with us. There have been many civilizations that collapsed because the hubris and self-entitlement of those who controlled things inhibited innovation and change and brought about their downfall.”

“But they didn’t have the story of syntropy to encourage them,” I responded. “And their people were probably following one of monotheism’s apocalyptic stories, which said the world was full of sin and evil and the only goodness lay in Heaven, after death.”

“I see what you’re saying: that the very fact that we understand syntropy theory makes the Universe a more hopeful place.”

“Yes. Something like that.”

“My worry is that we might be fooling ourselves,” Betska said. “The human mind is at its most vulnerable when it really wants to believe something. It’s one thing to believe that the human soul can find healing if it surrenders to a greater whole, whether one calls it God, Nature or The Universe; but it’s quite another to believe that the entire Universe is set up that way. It would be truly amazing if it is.”

“Science is not a perfect art form,” Thaba responded. “If you think of ‘mystery’ as a veil that covers all reality, we’re still only lifting a tiny corner of the veil. The veil still hides almost all of the known Universe—and the entire unknown Universe. We lift the veil a tiny bit, and we tackle the puzzles we find. Sometimes we find a piece that makes sense of some loose edges. Sometimes we see a pattern. And sometimes we see a larger pattern, which obliges us to throw away our previous ideas.

“Syntropy is one of those larger patterns. It’s totally possible that future scientists will find a new pattern that makes more sense, in which case they’ll discard syntropy, or limit it to a special case. For now, however, it’s making sense, and it’s enabling us to put a lot of pieces together. Our

understanding of consciousness is still incredibly young; who knows where it will go when we integrate modern understandings from the West with ancient understandings from the East? There's an awful lot that's still taboo. Take death, for instance, and the fact that some people seem to have memories of a past life, backed by evidence that seems pretty solid....”

At that moment, a phone rang....