

INTRODUCTION TO FOUNDATIONS OF MIND VII* ON FIELDS

Seán Ó Nualláin UOI/FOM

ABSTRACT: The “foundations of mind” series (O Nualláin 2014a, 2015, 2016a, 2016b, 2017, 2018) which began on *Cosmos and History* in 2014 is now the most downloaded series of conferences proceedings in the history of modern science of mind and possibly alt science in general. Perhaps not coincidentally, it is also the most various and here we review it. It is fair to say that the project took on a life of its own and far exceeded my relatively humble plans for it as I sat in my garden in Normandy in late 2013.

As ever, this collection features a wide range of papers from the rehabilitation of the ether by Rubik and Jabs that has perhaps been presaged by Nobel laureate Wilczek’s notion of the “grid” to a revisionist history of the field in physics by Meucci; moving from physics, Chris Langan continues his life project of metalevel thinking and writing; Shinninck et al explore the field in a context defined by Shel Drake; we continue to publish systems thought, as we do crossover from psychoanalysis to spirituality.

Our meeting with gestalt therapists in Italy bore fruit as expected with work on quantum mechanics and psychoanalysis and less expectedly Islamic spirituality; Cynthia Larson deals explicitly with the Wheeler “20 questions” as reformulated by Stapp. As ever there is a concern about health and some lost papers of the great Richard Strohman and Walter Freeman are interpreted to presage a new science of metabolism and health.

My papers attempt to synthesize these and others’ diverse thrusts. In this introduction I review the contributions we have made to the foundations of mind, foundations of physics, foundations of biology, and science/religion dialogue over the history of these conferences and point several paths forward. Consciousness studies is seen to emerge from consideration of the foundations of mind and its relation to the world. In particular, cognitive processes typically

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admit of the time intervals appropriate for the sampling speed of consciousness in tenths of seconds.

At a certain point, mind breaks free from its fetters in biology with observer status requiring that the laws of physics exert a top-down influence on biology. The fact that the brain is now capable of arbitrary levels of hierarchy changes the dynamics of biological fields at lower levels of the hierarchy. The observer is described with physics concepts like relativity and measurement in quantum mechanics; again, the sampling speed of consciousness can be achieved through the quantum zeno effect as Stapp has shown.

The overarching goal remains to ground higher-order speculation about healing, mentation and metabolism in insights and observations that are attested cutting-edge science often from the world's greatest universities. It cannot be long now before a hierophant, perhaps from the community of creation spirituality, generates a powerful new expression of what it is to be in the world defined by these new discoveries.

KEYWORDS: Foundations of mind; Foundations of physics; Foundations of biology; Metabolism; Health; Spirituality; Cognition

PREFATORY COMMENTS

We began this latest adventure with the following cfp; we were as always prepared to accept papers on other themes if sufficiently outstanding like that from the legendary Fred Alan Wolf in this volume.

“In the recent meeting of foundations of mind with European Gestalt psychologists and therapists held in Siena in April, 2018, the notion of “field” emerged as the core concept unifying the logico-mathematical drive in foundations of mind with the deep exploration of subjectivity in Gestalt therapy. While the current formulation of the concept arguably derives from the explorations of electromagnetism in Faraday, Maxwell, and Heaviside, the concept is more multifarious than may at first seem to be the case,

In particular, its ubiquity is impressive. While differentiation of stem cells turned out to be related to the elasticity of the medium in which they were placed, and even Hooke's law of elasticity turned out to be useful, the older concept of a morphogenetic field has survived largely intact. In brain science, it is clear that study of neural impulses in isolation will reveal only plumbing; the recent salience of waves in neuroscience clearly needs to be supplemented with an articulated view of the medium that they are waving.

Is this medium the scalar field of EEG and fmri, the vector field required by any theory involving attractor surfaces, or do we assert that, since the suitably

educated brain can understand tensors of rank/order 4, they must be neurally implemented? Recently, computer scientists began to see the virtues of transcending the scalar processing of traditional CPU's, speeding things up considerably with the vector processing of GPU's, while companies like Graphcore anticipate the next step in the tensor hierarchy as applied to computing.

In this context, it is worth noting that Freeman (2014) stipulates that field theory in brain science ended when Kohler mistakenly identified the vector fields of Gestalt with the scalar fields of EEG. Experimental observations confirmed that EEG did not reflect Gestalten in this manner,

None of this should dissuade potential contributors from examining the extension of fields to the intersubjective domain. While positing that quantum entanglement is involved may or may not be a bridge too far, the fact remains that all psychoanalysis uses concepts like projection, transference and counter-transference, and related concepts involving an entangled nexus of self and other. The radical proposal in this vein by the European Gestalt psychologist Kurt Lewin may indeed have been prescient”

THEMES EMERGING FROM FOUNDATIONS OF MIND 2014-2018

The first theme we dealt with was consciousness and Quantum mind. It seemed self-evident that Quantum measurement with its vocabulary of observation and determination needed to be brought into dialogue with cognitive science. Many of the names involved are well-known and were invited to the first foundations of mind conference in 2014; Henry Stapp, Stuart Kauffman and so on. What we did not expect was the many brilliant papers from physicists of the golden generation that brought quantum information theory screaming and kicking into the world; Sarfatti, Rausscher, Weismann, and others.

Nor did we expect Bell's inequalities to become so central. Finally for physics, the idea of “destiny waves” and influences from the future causing changes in the past sounded initially like a fugue state possessing Sheldon of the Big Bang theory. As John Wheeler added fuel to the fire with his bizarre take on the 20 questions game, with each answer causing a change in the wave function of the universe, it became clear that the structure of rationality was changing.

The field is perhaps the key concept unifying everything we have done in this very eventful 4 years. At the most ethereal level, we find that quantum field theory (QFT) provides an explanatory framework for how questions can be asked of nature a la John Wheeler's 20 questions. This could hardly be more consequential; Stapp has woven von Neumann's mapping of matter to mind into QFT. We experience a scenario in which

the observer changes the wave function of the universe with apparently no energy transfer..

Most of our cognition is far less austere. Yet the Bose Einstein condensates that the later Freeman saw as critical to all mentation, and clearly involve what is for the brain massive energy transfer, fall naturally into the QFT formalism. Moreover, in a development we hint at in my codes and fields paper, all Q+A can be seen as mapping to a psychological “scheme” or “schema” (respectively active or static) implemented neurally as a trajectory of an attractor simply by tweaking the QFT formalism. Finally, QFT provides a meta-language in neuroscience for concepts previously, approximated with the vocabulary of dynamical systems and adds the capacity to consider nature as noetic, thus moving neuroscience away from biology simpliciter

The other main player in FOM was the late Walter Freeman. We have seen that he warmed to QFT; however, he remained wedded to the idea that codes –as indeed all symbols - were entirely observer-dependent and had no place in science. His goal was a thoroughgoing third person account of the sensorimotor loops that he wanted neurodynamics to explain. I hope that he would at least countenance the argument that John Wheeler/Stapp/ Neumann allows us to construe an austere, ethereal form of mind-world interaction without energy transfer that exemplifies the more gritty reality when we engage with the world cognitively.

Beyond the use of fields itself, a the second most critical issue has probably been how we carve out nature. For example, the distinction between microscopic and macroscopic becomes absurd when one considers that Weber bars, weighing a tonne or more, must be considered microscopic as they are capable of quantum superposition.

I thus use the word “noumenal”, borrowed from Kant, to describe objects that can either be subject or object. This applies to anything describable under the quantum mechanics rubric; if capable of a superposition, it also can be part of a quantum system or classical apparatus.

Likewise, we are at pains in my meditation paper to work out what parsing of biological systems Strohman would have plumbed for, had he lived *compos mentis* for a further decade.

Bose-Einstein condensates in the brain are the quintessence of noumenal objects and also of a biofield. The latter notion gates a lot of our work on health and healing, and we regard it as an established scientific fact. We are also so bold as to claim that von Neumann’s inclusion of the observer into Quantum mechanics, by dint of which he was able to get rid of the absurd idea that pointers and other such were classical (ie non-noumenal), allows something new under the sun. We now have a means by which thought itself at its most ethereal can have downward effects on physiology.

As for Quantum mind itself, it became subsumed in a reconceptualization of the varieties of mind and world relations possible. This is treated in my paper here on codes and fields and was presaged in Pattee's notion of an "epistemic cut" encompassing the Heisenberg split between subject and object in Quantum mechanics on the one hand and how DNA acts as "train tracks" governing gene expression on the other.

Whether Stapp's "classical" approach, the radical Bohmian approach of Sarfatti, or something as yet unknown will prevail, or all turn out to emerge from a common deeper level of description is a question that will play itself out over the next century, and perhaps beyond. On a practical level, there clearly are consequences for AI systems as all these formalisms propose a capacity beyond Turing computability in the human mind. It is better to let the numerous physicists who have graced us speak for themselves from here.

The second theme was the further reaches of human potential including health and parapsychology. Those whose experience of this area extended only to Kirlian photography will find a wealth of detail here, from the biofield to biophotons. This work includes contributions by the great Bev Rubik, Karla Gadamez, Philip Shinnick, Tania Re, Juan Acosta, and many others.

I believe that the unbiased reader will be convinced about the experimental work showing practical consequences of entanglement, as about the further reaches of human perception, It is a follow-up from earlier work we did on the foundations of biology and my "presence" paper expands on this. There is a summary below in this introduction but the reader is encouraged to study the "presence" paper which has the first full review of Strohmman's later work since his death in 2009.

Finally, we treat the themes that started the project; Epistemology, ecology, spirituality and metaphysics. There are many beautifully written papers in the series with both Fritjof Capra and Chris Langan achieving record numbers of downloads. Perry and Whitney have written and published beautiful papers in the series. My "fields" paper attempts to do justice to this thrust in a manner that simultaneously unburdens of the relativism choking fine young minds in the academy, and the new plethora of distractions that prevent them thinking about their real lives and preventing a grim future.

In particular, we see a new role for ontology qua levels of being. As my fom 2 paper (see the 2015 edited collection) causality and information differ as we go from the quantum to the classical physical to the biological worlds; for example, we go from an attenuated efficient causality at the quantum level, with the issue of whether we can talk about causes for processes like radioactive decay a moot point, to efficient causality

at the classical level and the beginnings of formal and material causality in dynamical systems, to material, formal and teleological all clearly present at the biological level. Indeed, we can consider morality as causality at the human social level as explanations of behaviour cannot proceed without it. It seems to qualify as a Kantian schema for the category of causality.

Moreover, the brain, being both a physical and biological object, inherits attributes and constraints from these worlds, resulting in a far-from equilibrium dissipative system. This neurodynamics perspective, my fields paper below argues, solves problems on which many governments are wasting \$ billions. Similarly, we plead for formal adequacy in our neural models. Co-ordinate free flows in the brain can emulate math models put in more elliptical terms.

The above is a very short review and readers are encouraged to proceed to read the original papers.

THE FOUNDATIONS OF MIND AND A NEW SCIENCE OF CONSCIOUSNESS

What did we learn about the foundations of mind themselves, which was after all the stated goal of the project? Alternatively put, there is a paradox whereby reality is relative to consciousness but yet transcends it. Therein lies a long story; for of course, everything is eventually processed by the mind and so eventually is psychology? So how do we refute relativism?

Alert readers will recognize that last position as the stance excoriated by Frege as psychologism. Logic, he argued, is non-negotiable; it cannot be reduced to contingent psychology. Piaget (see my 2003 book) spent a very long career adducing experimental results and argument that the genesis of knowledge should reveal aspects of its necessary nature amid the contingent events of its development. Another episode in this history is the burdening of Einstein's original book on relativity with a preface construing the vocabulary of relativity as psychological, a move with which Einstein himself profoundly disagreed.

The alternative viewpoint which I believe handles these problems might usefully begin with another reference to Pattee's "epistemic cut" and "physics before consciousness" slogan. Please see our 2015 proceedings. Not only physics qua measurement before consciousness; it does seem as though sensorimotor behaviour as well as 99.9+% of cognitive processing does not require consciousness. The issue of what precisely consciousness seems to be is dealt with below; more specifically, a route map is suggested for its proper study.

In the introduction to the foundations of mind 5 proceedings volume, I outlined

what I believe we had learned. I was concerned to use vocabulary that is recognizably scientific to those who are au fait with how this vocabulary needs to be extended and the following is a summary of what my paper delves into at greater length. From cognitive science I adopted the terms “coupled” and “decoupled”. The former refers to what has previously been termed “egocentric”; sensorimotor behaviour that construes the environment only in terms of a set of possible actions that can be performed on it a la the Roomba vacuum cleaner.

So far, so conventional. Now we are about to make several radical moves.. The first move is to extend “coupled” mentation to the cognitive and noetic (roughly, math) realms. We argue that “coupled” cognition manifests itself in power relations as what has been called “subaltern” behaviour; in intersubjectivity as conformity, potentially inauthentic; in aesthetics as narcissism. All of these cognitive states are potentially accessible to consciousness; indeed, we have intercourse with each other in these realms perhaps because here the crucial events are in the seconds and tenths thereof that consciousness can sample.

There comes a stage of breakthrough for most people to the “decoupled” in several realms. The narcissist may begin to find it ironic that the same song he loves can sound “cheesy” to a different audience ; the subaltern may make the Kohlbergian breakthrough about his “superior” that what is legal is not necessarily moral; the scholar or artist may progress from early Mozartian technical virtuosity to “episteme”, a sense of what the work may mean in a wider context. In the exigent realm, the good worker may begin to relate his 5am rising to the massive debt of his country. He may become a less “good” worker and a far more aware individual.

All of these steps are taught at leading academies; all are colloquially related in some way to greater “consciousness”. We can, without violence to the word, speak of a relativistic stage as my 2017 introduction article does; we can also, adopting Kant, call the process of finding one’s place in various worlds “noumenal”. I invite readers to study Ma’s paper on Taoism here, to get a sense of a different on-western vocabulary.

And at the noetic level? The argument is that bunging in values for $f=ma$ is coupled, while choosing a Hamiltonian to exploit the “unreasonable effectiveness of math”, mystery as it is, is decoupled. Yet at the final stage, we enter an actual physical elision of subject and object; the noumenal allow us to invoke the numinous. Somehow in this reality distortion field may lie the thrust of the incantation of religion, as my paper claims. Of course, that requires a “numinous” capacity in the cognitive and social realms?

We need not go that far for the moment. What does seem to be the case is that consciousness is an underlying theme. Indeed, we are going to end with a reconstrual

of the relation between science and spirituality We can propose a spirituality in which these transitions from egocentric to the noumenal are the subject of rites of passage. If we do so, we will often simply be formalizing what has gone on in any case in academies. Indeed, that is perhaps what they're for; to provide a safe space for rehearsal of these vertiginous ascents to self-sovereignty.

The goal is to develop presence; that is, to be able to remember oneself even as one has to construe oneself as an object. The degree of traction of this observer within the organism determines the degree of presence. "Consciousness" or more correctly presence is such an unstable state that we need monasteries with attenuated lifestyles to preserve it; we create vast institutions so that we can concentrate on study topics.

The cultivation of presence is possibly the royal road to a new spirituality. What this section is attempting is to show how it can fit into an overall view that honors science. My "presence" paper in this volume expands on these themes while motivating them at the biological level. Many who imagine they want to study consciousness are actually seeking presence. As Suzuki famously put it when confronted with a student's question "Who is asking?" the more recent Kabat-zinn asks us to consider "Who is meditating?"

It is extremely unfortunate that consciousness has not yet entered the academy as the consequent creation of a discipline is now necessary. What is happening instead is that the distinction between consciousness and its contents has largely been lost, with the result that anything ever apprehended by the mind becomes a fit subject for "consciousness studies". In parallel with this trend, various physicists and biologists with their own pet – and often interesting – theories of consciousness insist on choosing battlegrounds in their own specialty, be that microtubules in biology or a Lagrangian that "explains" retrocausality in physics.

Surely the most appropriate first step in the creation of a science of consciousness is to distinguish consciousness and its contents? We could then posit as a first step that there are holistic, coupled to the environment, intuitive "right hemisphere" modes of consciousness distinct from the linear, analytic mode. We could move the analysis to experience of time and space. We could revive Polanyi's distinctions of the focal and subsidiary, the tacit and explicit to make useful predictions about sampling times. Most importantly, content would remain inviolate in this two sciences of mind scenario.

A second step is an allotment of tasks to the different disciplines. Physicists have gamely continued to insist on the relevance of measurement in QM to consciousness. As my "fields" paper here points out, the physics has by no means been finalized and may not be for another century. What seems to be the case is that observation/determination/ measurement in QM seems to put the subject in touch

with an entangled nexus, betokening a Noosphere. Moreover, to assert that measurement has effects on the wave function of the universe is correct. There is plenty there to be going on with.

Many papers in the series took on issues in physics en route to a theory of consciousness; Joye, Jameson, Engstorm, Baer, Wolf in fom₃ and of course Sarfatti and Stapp and many others. We did not expect to get quite so many good papers detailing new physics; Rauscher, Reiter, Johnson and the later papers by Fred Wolf all have radical and interesting things to say.

Biologists have discovered quantum coherent states at biological temperatures in the past decade. Unfortunately, over-interpretation has led many down a wormhole, or rather microtubule, of rather vicious debate. In the paper here on “presence”, I allude to Freeman’s work on the vibrational quanta of the electric dipoles of water molecules, the phenomenon that converted him to accepting quantum coherent states at biological temperatures. Again it will take decades to bring the stratospheric speculations down to earth.

Neuroscience is clearly critical for consciousness studies. The theory that seems to me to have the widest explanatory scope is that which views awareness as arising from global synchrony of gamma oscillation. That can be measured; so too can “awakeness” in the circadian rhythm, as can attention. So let’s measure them.

Cognitive science is another battleground. Add phenomenology, and we get consciousness studies. There is a phenomenon of subjectivity, but it is fugitive. We are more often “thrown” or “mundane” and have only what Michael Polanyi calls “subsidiary awareness” of ourselves. The idea of global synchrony fits well with the global broadcast necessary for consciousness to be con-scio, knowing things together. Cognitive science is perhaps the most exciting subject of the teens of the 21st century and is about to explode enrolment internationally.

Philosophers of mind have kept Cognitive science more honest than it might otherwise be. The old definition that consciousness is recreation of the world in an intentional sphere is quite profound. Information is a red herring and first let’s rephrase it as communication before exploring its Shannon meaning as entropy.

It seems to be the case that we can distinguish communication at the quantum level – which is instantaneous or more correctly unnecessary for entangled particles, and retrocausal in the limit – from classical “Shannon-type” information involving considerations of entropy and noise so clearly formalized, to communication/information at the biological level that seems to involve a work cycle, and so on. All this has been well worked out at the biological level in a manner explicitly designed to pre-empt more waste of time on the “hard problem” of consciousness and the excesses

of “it from bit” by Terry Deacon.

THE FOUNDATIONS OF BIOLOGY

Biology is of course treated in my 2008 paper. It is discontinuous from physics in many ways, not least being types of causal explanation, hierarchy superceding mere fractal structure, types of causality and communication, intrinsic syntax, and the considerations Strohmman brings to bear in the presence paper of metabolism, kinetics, control theory with parameters mediating the influence of fields further up in the hierarchy, and much else.

The schema emerging of course acknowledges evolutionary pressures on the individual, population of the particular ecosystem, and the species. However, evolutionary development may not necessary be the immediate consequence of genetic mutation; the first land creatures possibly were no better genetically equipped than their maritime siblings. What happens instead is a genetic assimilation of processes that were already in place as the first land creatures begot further generations that, better genetically equipped, found life less of a struggle.

Genetic determinism has possibly been the greatest error in molecular biology, and the reader is urged to proceed to Strohmman’s papers on this subject. He proposes “metabolic control analysis” (MCA) as a complement to genetic research into disease and health. Only 2% of diseases have a single genetic cause; conversely, folic acid taken by fertile women can prevent spina bifida.

In our 2014 collection, we made the argument that the computational models used so far do not reflect the fact that DNA is homoiconic; that is, both program and data. It would seem logical that homoiconic programming languages like LISP should be used; my 2008 paper gives further rationale. Finally on this topic, the notion of a “gene” qua circumscribed sequence of nucleic acid qua inheritable trait needs to be revised to cater for the reality of how individuals, populations, and species evolve.

The perspective on biology we take allows room for will and metabolism. This is consistent with the emerging lingua franca of QFT for neuroscience. My paper on presence here is a primer; the work of Shinnick has been critical in focusing us on this theme.

THE SYNTHESIS; BIONOETICS

Bionoetics as a technical term which I coined was first used to describe European embodied cognitive psychology. It was then extended in my 2014a monograph to express the inevitability that any thinking organism, in any possible cosmos, will find a set of coincidences akin to those we explain (away) with the anthropic principle. It has

accreted various meanings since, starting with the extension of the idea of mentation beyond the merely cognitive to topics like those handled in physics with the notion of the observer in re relativity and quantum mechanics.

The term is so neat and the concepts it naturally evokes so various that we also found it a substrate for the science-religion debate. The epistemology and metaphysics beginning with the coupled/decoupled distinction extends via its noumenal branch to the relativistic and determinative. All of these are respectable scientific terms. Where we posit that assertion of subjectivity we term “presence” at each level we have wandered into spirituality. When we find group experience of that spirituality with codes and ritual, and a sense of the sacred, we have a religion.

Our western religion might diverge enormously from the Abrahamic such. In particular, we assert as sacred those freedoms of speech, assembly and conscience that were gained only after bloody wars with followers of the Abrahamic paths. The all-encompassing sense of the infinity of Being which undergirds both is reparsed in our system to a partially-realized self-expression of the Infinite that is our cosmos and wonderful biosphere and the existential equivalent is the power of attention in its relation to selfhood.

This edition comes out strongly in favor of quantum field theory as the metalanguage for what we are trying to say. To echo my colleagues, and to try and emulate their *Weltanschauungen*, we actively participate in this evolutionary process by attending as we ask a question of nature. The context is nothing other than spacetime itself. This requires no energy transfer, and results in a change of the wave-function of the cosmos.

At a less ethereal level, the multiple hierarchies of the mind ask more embodied questions of less cosmic sources, and map to the basin of an attractor system. Through control theory, we get a sense of how the results can percolate down into the details of gene expression, and perhaps further. Luckily, Walter and Richard will help us full out the details here.

SUMMER SCHOOLS

Foundations of mind has begun to run summer schools to help students keep up with the dizzying gap between the availability of information on the internet and sluggish response by the academy. The first required knowledge equivalent to the cognitive science component on universityofireland.org to be of maximum benefit; the second, in 2019, will require Bionoetics from the same source. This is a rough outline of the 2018 school;

Foundations of mind residential summer school on “Natural and

artificial Intelligence”**Noceto retreat center, Siena, Italy, September 2-7 2018**

In the light of the current recent technological breakthroughs made in AI, the relative lack of progress in neuroscience and other sciences of the mind may come as a surprise. Surely success in one should spread to the other, as they are essentially the same object of study? While arguing that this is not in fact the case, this summer school will equip the student with cutting-edge tools both to take part in the current AI revolution and to understand where future breakthroughs in neuroscience and cognitive science in general are likely to come from.

Our worldclass instructors are offering courses in the foundations of cognition and consciousness studies; signal processing for neuroscience; techniques and sociophilosophical issues in AI; Quantum mind; and neurodynamics.

The instructors include Sean O Nuallain, Bruno Neri, Arnold Smith, Paul Werbos, and Giuseppe Vitiello.

The neurodynamics course is going to introduce techniques from physics from the harmonic oscillator through dynamical systems in general to field theory.

The instructors will be Seán Ó Nualláin and Giuseppe Vitiello

The quantum physics and mind course will centre on the fact that quantum physics has its own set of terms like observation which it shares with psychology. In general they mean different things but quantum physics has proven to be the most successful Theory in the history of science.

The instructor will be Giuseppe Vitiello.

Artificial intelligence has recently had many enormous breakthroughs. Both AI and brain science are the subjects of massive state investment. It is important for graduates in areas related to cognitive science that they learn basics of programming in a language like python, understand how “neural” nets work, and become au fait with the social and philosophical issues involved.

The instructors will be Paul Werbos and Arnold Smith.

One of the major problems in neuroscience is that the skull acts very effectively as a low pass filter. That has led to research in signal processing particularly for techniques like eeg.

The instructor will be Bruno Neri.

This is called “outer empiricism”, the projection of scientific techniques into phenomenal space. The remainder of this course will concern itself with “inner empiricism”, the experience of consciousness from within and this will be taught by Tania Re.

Cognitive science has become an extremely exciting area as algorithms used in deep learning have proved to be enormously successful. Yet many central issues about the relationship between mind and brain, the structure of language, and anthropology remained unasked in the current technological drive. The instructor will be Seán Ó Nualláin who is the overall programme coordinator

The format of the program will be five days of intensive instruction with one hour class from each presenter everyday. It is anticipated we will have 3 1-hour talks each morning and 2 such each afternoon, with each day ending with a general, moderated discussion followed by a trip to the thermal paths nearby, Siena or whatever is the participants' choice.

The next summer school will be on a synthesis of “cognitive biology”, symbolic approaches like Biosemiotics and Crispr-Cas9, the biofield, metabolism, aneuploidy as the major determinant of cancer, and metabolism and healing. This new synthesis we term Biooetics.

Sam Sternberg, the co-author of the basic text on Crispr-Cas9 with Jennifer Doudna, its co-discoverer, a book called “A crack in nature” has agreed to speak. The other faculty will be ready in time for summer 2019!

STROHMAN AND FREEMAN; THE JACK LEMMON AND WALTER MATTHAU OF INTEGRATIVE BIOLOGY?

From now this introduction will get more informal in tone. I was very fortunate in my US mentors; to my absent friends Karl, Pat Suppes, Richard Strohman and Walter Freeman, slán agus beannacht and this volume is dedicated to you.

The great Richard Strohman's view was that medicine is deeply flawed as a result of errors in the underlying biology. Much money is being wasted, and human suffering caused, by flawed assumptions. We consider some detailed examples in my paper on meditation. A lapsed Catholic who distributed Fr. Coughlin's screeds as a youth, Strohman would be sympathetic to the idea that modern biology labs resemble the vocation of the sisters of the personal adoration. An action shot of their mission is of two middle-aged women kneeling in front of an altar.

Whether the implicit abuse is a similar cynical exemplification of control, as brilliant students like those nuns waste decades of their lives, is a question we will leave open. Strohman loyally supported Peter Duesberg's work on aneuploidy in cancer, where the argument was that cancer resembled new speciation rather than oncogene manifestation, thus explaining its non-heritability, delayed onset, and the fact 50% at least of carcinogens are chemically inert. Again, this is not taught at university in general, and Duesberg, who spoke on cancer at fom3, has faced repeated attempts to

silence him. He bought his lab animals at the local pet shop, lacking any funds, until prohibited from doing even this for his cancer work which has nevertheless continued in the face of this harassment.

I must insert a personal note here as I think the reader will be grateful for the information. How did a cognitive scientist with not even high school biology - actually an asset, given the dogma and dreadful formation in the field - come to work with Strohman and Freeman at UC Berkeley to the point of having many of their most critical documents?

In a horribly ironic twist of fate, Strohman fell victim to Alzheimer's. Before this, knowing me from a group I chaired at UC Berkeley on emergence, he decided to invite me to become a visiting scholar in biology there as his anamnesis for the book. How I came to be in the USA is dealt with elsewhere as Ireland was recolonized; once ensconced in our office at the wild west end of campus in Donner lab, a department of energy building where old and heterodox biologists went to die, he told that some academic from the Midwest wanted to move in with us. That would be Walter Freeman.

Up to his incapacitation in 2006, Strohman was perhaps the world's leading theoretical biologist. He gave me the option of finishing his book with him; however, he was unwilling to give me an author credit. I believe it is vitally important to get the truth out here, as this work will emerge sometime whether under the planned title of "In the absence of theory", a phrase apparently adapted from El Sasser, or a more informative title and I hope my exegesis in the "presence" paper will be a catalyst for this.

I had the hardcopy ms of Strohman's unfinished book for some time; wishing to develop my own voice, which can be heard in my much-downloaded 2008 paper, I read only the first chapter on the Lake Como theoretical biology summits, which had to be retrieved by my personal computer tech and then scanned from hardcopy, before returning the rest of the book which I had only as hardcopy to his family. I am concerned that they should be allowed to publish this book as new and beyond the historical first chapter I will not quote from it. My work below uses only the publicly available Strohman texts plus two personal communications.

I still have the copies of his books Freeman gifted to his beloved second wife, who predeceased him; they and his awards were in the process of being thrown out. The awards are back where they should be; with his family due to the intervention of Melanie O'Reilly and then myself at the memorial in July 2016 at Tilden Park.

Please forgive the digression. Strohman's Alzheimer's incapacitated him from 2006. The book was never going to get finished; it would be interesting to identify the precise

moment; at which this potential masterpiece was no longer even potentially in existence, as the mind that would birth it was damaged. The reader may speculate about why Richard gave me other documents that indicated he wanted his legacy preserved, in the absence of his pristine mind, while stubbornly tilting at windmills even after Chicago University Press withdrew their interest as it became clear that no matter how long he stayed at his desk, no book was going to emerge.

In my meditation paper below, I attempt to synthesize what these two giants had to say about metabolism; use of dynamical systems will exercise the reader in the “codes and fields” paper. Their vocabulary was remarkably similar, and I hope to do justice to what neither hesitated to call a *Weltanschauung*.

It is worth pointing out that two female American biologists initially agreed to do experimental work on our meditation project before writing highly abusive letters that I still have on file, withdrawing from the project on hearing the central dogma of molecular biology was to be questioned. One is ex-Stanford and African American; the other, who instigated the withdrawal and abuse, is ex-Harvard and white. Me too!

POSTSCRIPT; WHY WE ARE NOT IN A LANDGRANT UNIVERSITY AND FOR ONCE YOU CAN BLAME THE CIA WITH THE FACTS ON YOUR SIDE

Foundations of mind and its educational wing, the award-winning universityofireland.org, came into existence partly as a reaction to the academic component of what can only be described as an incomplete coup d'état in Ireland. The later was initially a parody site and only became serious when the Irish state announced plans in 2010 to wind down the national university of Ireland, plans scrapped only after the government collapsed in 2011.

That involved getting rid of academic tenure in new contracts that in turn involved forging signatures of all parties “agreeing” them, firing senior and tenured academic staff and street-fighting in court with taxpayers’ money when the illegal dismissals were challenged. While management lost every case, they were Pyrrhic victories for us and legal costs are at best partially repaid in Ireland.

The goal was explicitly privatization of the Irish landgrant universities, a plan first enunciated with the creation of SFI, and there is every likelihood that the model of privatization, ditching tenure and flying in “superstar” academics for a month every year or so was meant to travel to the USA, starting with the landgrant universities in Arizona, where the first head of science foundation Ireland ended up. The model is planned for Russia instead, and is probably being implemented with the Irish experience being of *Omerta* as academics fear for their jobs.

Even more significantly, science foundation Ireland was set up with a budget of

almost exactly \$1 million a day of taxpayers' money continuous since 2003 even when the country went bankrupt (thus the collapse of the government). The fact that it is ultimately a CIA front/piggy bank is not in dispute, and can be checked through reliable sources on the internet as you read this.

The CIA had been hampered by federal funding guidelines in the USA prohibiting their investing at the scale they wished in tech. They thus set up a front called InQTel, whose Dr Anita Jones was the main mover behind science foundation Ireland. The WSJ has described how she personally benefitted from InQTel investments.

Yes, there were objections. As described in my 2012 monograph, science foundation Ireland took as its foci” (a)information and communications technology (b) biotechnology. “ (P. 208) These as it turns out are precisely the foci of InQTel, though the website page is now conveniently 404ed as clearly the CIA cannot afford a webmaster.

When the Chief state scientist in Ireland objected to this narrow focus, the government suddenly remembered that he had a “bought” Ph.D (ibid. 208-9) and he was forced to step down. His lesson learned, he accepted a humbler state job in science with no new qualifications as apparently Bertie Ahern did not want to “throw him out on the street”, an unusual act of clemency for someone who suggested his critics commit suicide for pointing out that his policies were about to bankrupt the country, as they did.

Just in case the colonization was not clear enough, they favoured importation of whole labs from countries other than Ireland. In general, the Irish – with their attested scholarship going back over 5 millennia to the Boyne valley passage graves – were hired as admin. Just in case that was insufficient, labs run by native Irish were closed, and money disputes engineered while litigation a la the Paul Cahill tenure case was ongoing.

I confess it is important to me that, at around 220k a year, Foundations of mind almost certainly gets more downloads than the entire SFI. I confess also that it was important to me to get my new courses accredited at Stanford and Berkeley, where I taught them, before offering them through universityofireland.org.

My case was even more extreme than the Paul Cahill tenure case and betokens something even darker, at a time when grad students are encouraged to waste a decade of their lives doing meaningless work in outdated paradigms in order to maintain this new, covert science hierarchy. In both my papers here, the inadequacy of the neural model still taught at the best colleges is pointed out and an alternative formally described.

I do not expect this alternative model to be adopted; there is simply so much money being thrown at neuroscience that there is a perverse incentive to keep failing. Were I to construct an appropriately paranoid narrative, I would begin with the simplified model of neuronal updating that can be found over a generation ago in Hertz et al (1991, P. 3) and is still used worldwide 14 years after we presented our revised model at Stanford and 12 years after I taught it there in an advanced seminar.

I would point to the work of Izhekevich and his followers. Then I would I point to the papers by Freeman (2014) and Fregnac, (2017) that are described in my contributions and which point out the indescribable mess that its 21st century neuroscience.

My Ph.D thesis “Language games and language engineering” (TCD, 1992) is publicly available via TCD; the system therein, named Bloom as it guided tourists through NLP including a speech interface around Dublin and was in prototype by 1986, can be seen to have a functionality greater than SIRI of 20 years later. Unlike SIRI, the product of over \$250 million of US military funds, it was done with no funding before being destroyed by DCU, my employer. The computer disappeared one day, and no explanation was given.

It is my belief that Karl Pribram’s work can be interpreted in the manner he wished to show how neurons, acting in concert, can do Fourier transforms. If true, that is the “neural code” problem solved at the sensory level and no more massive funds are necessary. So, with Karl overseeing, we implemented this work as a computer simulation. Again, this is now inaccessible at DCU.

I was invited to Stanford in 2000 on foot of an HCI system that combined NLP, mouse clicks, a data glove and speech. This too was destroyed at DCU. The common thread seems to be the denigration of Irish scholarship. I am no nationalist; Ireland was one of many countries that could have developed a software industry to compete with silicon Valley, as all that is needed is to let talented programmers hold on to their IP. As it happens, the only success story from Ireland is Stripe, headed by the Collison brothers, and – given that students in Ireland are compelled to hand over IP to their college – it is no coincidence these outstanding young minds did not attend college in Ireland.

I can perhaps console myself that, while I missed the greatest “legal” accumulation of wealth in human history in silicon Valley as a result of DCU’s criminality, so far what has been achieved via the web is “Mom emulators” (taxis and general delivery) massive copyright violation (GAFA), and snooping. Through airbnb, Uber and their clones, silicon Valley is now attempting to undo generations of regulation that hamper businesses; why provide fire escapes in your accommodation if you get a free pass

because the booking is made on a smartphone?

Why publish a newspaper and become vulnerable to the tender mercies of the press council, libel laws and so on if you have complete freedom to publish anything on the web, a fact that Messrs Mercer and Bannon of Cambridge Analytica saw as the way to elect Trump, after trial runs in the third world. The response in the EU has been vigorous through Ms Verstager and occasionally violent via cab drivers; what is for sure, with Ireland disgracefully providing a tax paradise, is that already plainly corrupt businesses like Google and Facebook see no limit to their power by broadening the scope of the aspects of society they are allowed affect.

We have had absolutely no funds to run these conferences, summer schools, or the online university. They are clearly quixotic projects. Yet somehow utter intellectual and personal freedom continues to triumph, as we issue wide-ranging cfp's, refuse to charge authors to maintain copyright, refuse to charge readers for reading and downloading. As for our online college, we have no campus, no teachers, nothing except your will to learn. Could we ask for more?

Well, yes! Finally, please note that donations to foundations of mind are still very insufficient – nay, derisory – and if you want us to continue please be generous at foundationsofmind.org/donate. For reasons that I respect, *Cosmos and History* refuses to run ads, so we are dependent on you as nobody in the core group has a salary from this or any other occupation.

Seán O Nualláin PHD Founder and director, foundations of mind; editor of foundations of
mind series
Tuscany, Italy and Normandy, France April to August 2018
info@foundationsofmind.org

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