AISB Quarterly

THE NEWSLETTER OF THE SOCIETY FOR THE STUDY OF
ARTIFICIAL INTELLIGENCE AND SIMULATION OF BEHAVIOUR

No. 145 February 2017

About the Cover

Hugh Loebner, American inventor and holder of six US patents; born 26 March 1942, died 4 December 2016. The photo is a self portrait downloaded from Wikimedia Commons.

Editorial

Elon Musk has been back in the news with his doomsday warning that human beings must "merge" with machines to avoid becoming tomorrow's house cats for super-intelligent AIs. Claims like this fall into a tradition of hyperbole that misrepresents the nature of AI research to date, in the process diminishing rather than promoting its remarkable successes. Sixty years after Dartmouth, we do not have artificial agents that interact with their environment with anything like the sophistication of a cat – never mind a human infant. What AI consistently has delivered are not nascent prodigies or Skynet-like systems but evidence that activities previously thought to require advanced intelligence can successfully be mechanised. That raises provocative questions about how much of vaunted human intelligence amounts to mechanistic ritual; but it in no way proves that intelligence can be reduced to algorithms, however clever or complex – only, perhaps, that we tend to locate intelligence in many of the wrong places.

The hallmark of conceptual agency as of consciousness – two (deeply interrelated, I think) areas of personal interest to me – is the convincing appearance if not the actuality of flexible response to one's environment and the consequent ability to deal (strikingly well, much of the time) with the unexpected. Here the recent controversies over Tesla's "self-driving" cars, for all they can and cannot do and their demonstrated ability to foster a false sense of security in drivers, prove revealing. There are good reasons why the film *Ex Machina* – for which the AISB's own Murray Shanahan served as scientific advisor – and its Turing test on steroids focused so much attention on consciousness; Ada's mission is to convince Caleb and the viewer not that she can hold up her end of a conversation but that she is a fully reflectively self-aware being with needs, fears and desires. Occasional claims of existing artificial systems having achieved "minimal" consciousness notwithstanding, there is no evidence, to date, that the machines are "waking up". Direct neural interfaces, which Musk also talked about, are real, if still in an exceedingly primitive state, raising all manner of urgent ethical issues for the foreseeably near future. But perhaps Musk would do well to think more about Andy Clark's *natural-born cyborgs* and less about the cyborgs he seems to have in mind.

This special issue of the *Quarterly* remembers and honours Hugh Loebner, who devoted so much of his time and resources to realising Alan Turing's dream of domain-general intelligence and the appearance of conscious agency, as measured through the rather modest requirements of Turing's Imitation Game (which, unlike *Ex Machina* and much contemporary AI research, deliberately sidesteps issues of embodiment). The 2017 Loebner Prize competition, coming up in September, will be the first since Loebner's untimely passing. Loebner may no longer be with us, but his dream of "true" machine intelligence – so different from

Musk's apparent vision – lives on.

Joel Parthemore, Editor

19 February 2017, Skövde, Sweden

In Memoriam

Our members will be sad to learn of the passing of philanthropist and inventor Hugh Gene Loebner, PhD, who died peacefully in December in his New York home at the age of 74. Hugh was founder and sponsor of The Loebner Prize, an annual embodiment of the Turing Test now run under the auspices of the AISB. He was the heartbeat of the contest, attending all 26 annual competitions and even on one occasion hosting the event in his apartment, just off Broadway in New York. In his patronage of the contest, he travelled to numerous locations in the USA; Reading, Exeter and Derry in the UK; and, of course, Bletchley Park, where the contest has been held for the last three years. I think Hugh was very pleased that the contest will be hosted here for the foreseeable future in the contest's spiritual home. In addition to his philanthropic activity, Hugh was a successful businessman with Crown Industries and an inventor with six patents for inventions in widely divergent fields – including his most recent, a form of exercise that he was keen to demonstrate to all at the 2016 contest.

I first met Hugh in 2010 at the AISB convention in Leicester, at a symposium entitled *Reconsidering the Turing Test for the 21st Century*. He defended Turing's original test against a host of proposed alternatives (including mine) – but, in his own inimitable style, did so wearing a skull-and-crossbones themed shirt and Wellington boots. In 2014 I was fortunate enough to visit him at his apartment in New York, which his family had owned since the 1940s and in which he grew up. He was a generous host and his apartment was adorned with an eclectic mix of art and technology befitting a man with such diverse interests.

Hugh was no stranger to publicity and controversy; his feuds with various members of the AI community in the early years of the contest are well documented on the internet and in print. However, beneath the controversial exterior was a man with a strong sense of fair play and a passion for technology, with all the benefits it could bring to humanity. This year will be the first Loebner Prize without Hugh in attendance. His unique style and personality will be missed, as it will be until such time as the gold medal is finally won and it can be said that the Turing Test has been passed. If and when this happens, I'd like to think that Hugh's vision for a better world, freed from menial tasks, will have been realised.

Ed Keedwell is associate professor in computer science at the University of Exeter. He was the AISB Loebner Prize officer from 2014-2016.

A letter from past Loebner Prize winners

January 9, 2017

Dear Professor Keedwell and organizers of the Loebner Prize for Artificial Intelligence:

We, the undersigned, are writing as past winners of the Loebner Prize for Artificial Intelligence.

We were deeply saddened to learn recently of the passing of Dr. Hugh Loebner. He had an influence on the course of all our lives. We appreciated greatly the opportunity to participate in the Turing Test contest he founded and created.

Some of us remember Hugh expressing the sentiment that he wanted to create a "pool of winners" – he didn't want the same person to win every year – so that we would have a vested interest in keeping the contest going after he passed. According to Elaine Loebner, there will be no funeral or memorial service for Hugh, so we thought that the best way we could honor his memory would be to fulfill his wish and express our collective desire to have the contest continue.

We believe as Hugh did that there will always be contestants interested in submitting entries every year, at least until the Silver and Gold medals are finally awarded. We would welcome the opportunity to assist you in any way we can so that any of us, anyone else who has entered, and anyone in the future who has an ambition to create "the most human computer", will have the chance to enter the Loebner Prize competition.

Finally, we'd like to thank you for giving the contest a permanent home over the past few years. The venue at Bletchley Park is an incredible tribute to Dr. Loebner's legacy for creating the first real-world Turing Test. We hope that you will be able to continue holding the contest every year, and will gladly lend our names to any effort to sustain it.

Sincerely yours,

Rollo Carpenter (2005, 2006)
Kevin Copple (2002)
Mohan Embar (2012)
Robby Garner (1998, 1999)
Jason Hutchens (1996)
David Levy (1997, 2009)
Robert Medeksza (2007)
Jürgen Pirner (2003)
Fred Roberts (2008)
Richard Wallace (2000, 2001, 2004)

Anna Weintraub *on behalf of Joseph Weintraub* (1991, 1992, 1993, 1995) [deceased]

Thomas Whalen (1994)
Bruce Wilcox (2010, 2011, 2014, 2015)
Steve Worswick (2013, 2016)

Consciousness-inspired AI System

Eva Deli*, *eva.kdeli@gmail.com

Abstract

Interaction produces change. Responses to stimuli improve the brain's operational symmetry vis-à-vis the physical world and engender the mind, an analogue system to elementary particles. Photons are the fundamental forces for interaction between fermions and emotions are energy imbalances of the brain, which trigger actions that recover the energy neutral state. Emotions are forces and fundamental motivators of the mind's self-regulation.

Discussion

Thanks to its neuronal organisation, even a worm can crawl toward food and shelter. Of all the organs in the human body, the brain regulates itself and successfully organises the whole body into a seamless orchestra. In the human brain, sensory stimulus increases oscillation frequencies, a syntactic coding for projecting information about the environment to the cortex and back. For over a century, the electromagnetic activity of the brain has been measured by placing electrodes over the scalp; more recently, science has learnt that external magnetic and electric fields can change brain activity. Complex electromagnetic flows and oscillating rhythms conspire to make the mind much more than simply the cortex, the amygdala, and other structures that constitute the brain leading to the immense energy consumption for the maintenance of the electric potential of neuronal cells and management of their synaptic activity. The complex organisation of the human brain is perhaps the most discernible example of increasing complexity throughout evolution. Because the mind identifies with the body [7], causal experience leads to homeostatic self-regulation. Constant interaction with the environment evolves consciousness into an operational reflection of the physical world. Stimulus projects spatial information to the brain, where it is transformed into temporal oscillations that activates cortical neurons. As successive regulatory layers in the brain unbalance due to stimulus and emotions, energy imbalances form, which trigger actions that restore the energy-neutral state, while changing the neural landscape (the neuronal map of connections, such as their strength); mental operation is reflected in the ebb and flow of our emotions, as the brain changes and adapts to its constantly changing environment [4].

Such discrete energy processing turns the mind into a quantum system. Quantum mechanics describes not only elementary particle behavior, but human decision-making as well [3, 9]. In contrast to classical systems, where

measurement merely observes a pre-existing quality, quantum measurement (i.e., decoherence) actively changes some property of the system and leads to cognitive change in the mind [5]. Consciousness shows non-locality, entanglement and hysteresis-like behavior. In analogue to quantum interference, the presumed context of the first judgment or decision interferes with subsequent judgments or decisions.

The brain's drive toward energy neutrality evolves a dynamic, self-regulating system, which forms a unified experience in spite of the cacophony of ideas and sensory stimuli it receives from the environment. The holographic principle recognises the importance of the horizon as the information record of interaction. In the brain, experiences and memories form a holographic record in the neuronal connections of the cortex. While matter takes shape in space, life exists in time, due to biological dependence on air, water, rest, and food. As micro-dimensional energy resonances manifest as fundamental particle behaviour in physical space, the mind forms along orthogonal manifold in the temporal space of emotional functioning. Based on the frequency of oscillations, only two energy brain states are possible: positive emotions (characterised by low frequencies) and negative emotions (characterised by high frequencies), corresponding to up and down spin, respectively. In scientific literature, this frequency/emotion relationship is overwhelmingly corroborated [2, 10]. Therefore emotions are energy states, which are part of the general neural architecture.

In the brain, the laws that govern the physical world, such as Newton's laws or the Laws of Thermodynamics, enforce temporal relationships over social interactions. Even though we cannot see or feel the temporal field of society, it is felt as soon as a passenger walks out of the airport in any country. It forms our beliefs and our uncertainties, which give rise to the cultural habits, customs, and palpable social fabric of society. Just as gravity is the most important force in the material world, emotional (temporal) gravity permeates society and the individual's place in it. Gravity is the ever-present force of the physical world that holds onto matter, and temporal gravity is the strength of relationship to things and people. Just like gravity directing matter in space, these belief energies control behavior over time and form the temporal field and the individual's place within society.

Greater temporal gravity layers (Figure 1) induce a temporal pressure, perceived as the lack of time and appropriately called stress. Stress leads to rigidity and turbulent, chaotic emotional life, forcing a constant struggle for everyday needs and even survival. Lesser temporal curvature is the luxury and comfort of time, leading to freedom and flexibility. Although the temporal curvature is highly influenced by financial means, it is not determined by it. Therefore, social changes and historical upheavals as well as individual social mobility are subject to physical laws. Social evolution is the evolution of the temporal field, manifested as decreasing social distance (decreasing temporal-field curvature differences

of society). Today the increasingly prevalent availability of information leads to more informed decisions, from consumer choices to social media and elections. Increasing access to information democratises opportunities, increasing trust in our social institutions and each other. Decreasing social distance generates greater democratic freedom and congruence in society.

Quantum System and Self-regulation

The resting brain forms a neutral, resting potential, known also as DMN, characterised by a recurrent cyclic operation between the major modules of the brain [8] that emerge as highly reproducible harmonic function [1]. Stimulus generates energy (information) flow in the brain (Figure 1, steps 1 through 3). The energy of the stimulus activates cortical neurons and builds a potential difference between the cortex and the limbic brain (as information converges in the cortex), which reverses information flow via low-frequency oscillations, eventually recovering the energy-neutral state [6]. The brain is a temporal quantum system, insulated *in time* via neural activation (Deli, 2016). Energy imbalances manifest as emotions. Hence, emotions are unstable and move the system towards equilibrium via the principle of least action. This way the cortical brain, regulated by its energy states, formulates an intelligent response.

Quantum mechanics is incompatible with general relativity, the science of gravity, which forms a smoothly changing field. In contrast, both string theory and quantum mechanics form discrete wave functions, which might occupy micro-dimensions. For this reason, connection between the field of gravity and the micro-dimensions is limited to interaction. The smoothly changing field's attempt to connect with the energetically appropriate standing wave function of the micro-dimensions leads to the Heisenberg uncertainty principle, quantum walk and other quantum phenomena.

In the brain, sensory perception is an automatic and involuntary process. Reading road signs is instinctive; the sensory stimulus impinges on the mind by shifting the energy balance of the brain. This interrelated connection to the environment must also characterise AI. In a feeling robot, in place of neurons, sensory pattern recognition can be formed by, for example, neuro-synaptic chips. A highly precise response is possible by utilising deep-learning systems, which are getting more powerful. Propagation of stimulus is a series of activations traveling according to the principle of least action. In the computer "brain", just like in the organic brain, continuous changes of energy balance would recover the energy-neutral state, corresponding to an intelligent response; energy imbalances would equal the emotional states of mammals and birds. Previously activated units require less energy, because activation strengthens connections between units forming a segregated, hierarchical and modular structure. This organisation is highly efficient; new information activates the modular structures in a new way.

The potential, the incredible com-

puting power, and also the current limitations of the quantum computer are well-demonstrated by the operational quantum computer at IBM, which needs to be carefully insulated from environmental interaction due to sensitivity to noise: i.e., interference. Stimulus is a specific-frequency input that programs the system. Such manipulation of neural tissues has been extensively studied. Clearly the nuanced regulation of neural operation including entanglement can be achieved through electromagnetic means: e.g., appropriately chosen potential differences. Eventually programming will be achieved through visual and verbal triggers akin to sensory perception. Indicative of the moderate energy needs of the temporal computer, the brain's 20 watts of power can perform 10^{16} operations per second. Ability to function at room temperature gives it great potential in varied applications.

Conclusions

Interaction with the environment through sensory stimulus corresponds to the energy-information exchange of the mind. As cortical neurons are activated by stimulus, local electromagnetic imbalances form, while preserving the global charge neutrality; thus, response to stimulus recovers a neutral potential, called the resting state.

The brain's inherent drive for charge neutrality leads to self-regulation, which changes and evolves the brain. Evolution via increasingly successful responses to stimuli gave rise to a brain organisation that is symmetric to the physical world and to its building blocks, the elementary particles. Indeed, particle-like features in the brain's operation have been demonstrated. Other characteristics include: (1) self-regulation via energy neutrality, (2) dynamic regulation over time, and (3) repeated activation requiring less energy.

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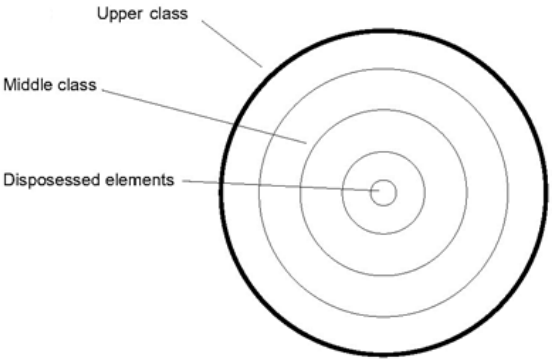

Figure 1: Structure of society: interaction generates increasing differences in the various temporal-curvature layers of society. The least-curvature layers are characterised by great access to goods. The middle class, who occupy the central layers, is highly stable. Within the layers with the greatest curvature, dispossessed people are stuck in a constant struggle for survival.

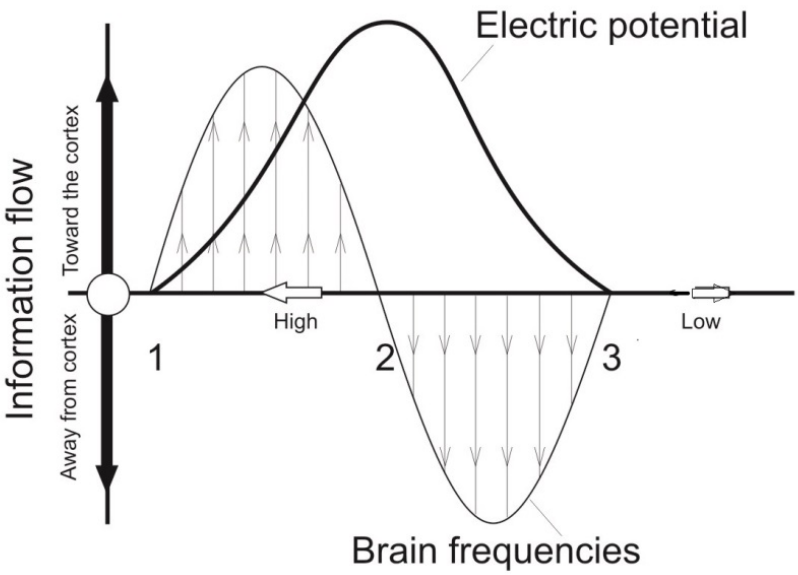

Figure 2: Energy balance changes of the brain over time. The high-energy needs of enhanced brain frequencies curtails the volume of vibrating brain tissue, limiting information transmission capacity (#1), whereas the energy transmission capacity disappears during the lowest frequencies (#3). Neuronal activation of cortical neurons extinguishes the energy of the stimulus but generates an electromagnetic potential difference, which initiates a flow reversal and recovers an energy-neutral state: the DMN.

In the News

The AISB's social media officer, Kate Devlin, talks with BBC Radio 4's news programme *The World at One* about love and sex with robots: `http://www.bbc.co.uk/programmes/b08dnr3r`.

The Linguistics Association of Great Britain (LAGB) issues a statement on Brexit: `http://lagb.org.uk/brexitstatement`.

LBM to LPM: An Investigation into Computational Music

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Introduction

Many arenas have been influenced by progression in the AI domain, including the fine arts. Indeed, creativity as an intellectual behaviour has become a focus of attention within AI society. However, the advent of computational creativity has raised much controversy, with many arguments of a type that has existed for as long as AI and computers have. Nevertheless, creative machines could be part of the next wave of technological revolution.

Art as a bed for emerging creativity is one of those avenues that have been considered in the area of computational creativity. Equipping a machine with the capability of creation requires insights into the nature of creativity and how it can fit into computational models. Defining creativity from the artefacts considered as such seems like defining the universe towards the single reflect of the telescope lens or determining the detailed shape of a jungle full of tree branches by blurred shadows of it. Yet this has not stopped researchers from trying to philosophize about its nature or mechanisms [1, 2]. One of the most important insights into the processes involved in creativity has been identified by Boden [3]. Put simply, there are three types of creativity: namely combinatorial, exploratory, and transformational. Combinatorial creativity relies on linkages between subjects that might be indirectly associated with each other. Exploratory creativity searches inside a conceptual space to find new forms and ideas. This navigation may include altering the governor dimensions. The occurrence of new styles is the theme for transformational creativity.

In this short paper, a concise overview of a current project for creating Persian-like music is presented. It outlines some of the main concepts, and concludes with brief remarks on the evaluation of the generated audio to date.

What is It About?

Dastgāh is an important concept in traditional Persian music. Each Dastgāh consists of musical pieces that often follow the same modal systems [4]. Most of the pieces in a Dastgāh are rhythm-free and consist of patterns that may recur in different parts of the Dastgāh. Composing in different musical Dastgāh is considered a task requiring ingenuity and proficiency: a level of expertise that seems inaccessible for novice musicians. The art is reliant on the emergence of masters of the form and the instruments upon which it is played. At the same time, creativity is an eternal avenue. It is hoped that with the application of AI tools and computer music techniques, new forms of Persian music can emanate and assist musicians in this area.

Nature have always been an inspira-

tional source for humans. Natural geometrical structures have been attractive for artists. The usage of fractal-like structures can be traced back to ancient architecture, ornamental paintings, and Persian carpets. The music of Persia has not been exempt from benefiting from these types of patterns.

Cellular automata (CA) [5] are complex systems capable of providing interesting patterns as well as fractal-shape or nested patterns. In a CA the interaction of simple, identical individuals dictate the global dynamical behaviour of the system [6]. The interesting thing about them is that they can produce novel creative material without the intervention of human domain knowledge [7]. The emergent nature of CA have kept the attention of artists since its advent. The number and the variety of emerging patterns can increase exponentially by adding to the dimensions of CA and the number or type of CA neighbourhoods.

From LBM to LPM

Liquid Brain Music (LBM) [8, 9] is an audio-generator software based on the concept of elementary CA. The software was developed at the University of Hull. It relies on a set of pattern-matching rules for extracting features from CA progression and populating the parameters of a synthesizer. The parameters ensure a rich palette for acoustical effects: in other words, a high range of acoustical possibilities for the produced audio. Liquid Persian Music (LPM) [10, 11] as an expansion of LBM targets the production of Persian-like music. Figure 1 depicts an early version of the LPM user interface. The synthesizer has been replaced by Persian musical-instrument synthesizers. A series of sound-synthesis techniques and models have been employed for achieving sitar and Persian santur tones [12, 13]. By application of different CA and pattern-matching rules, a series of voices are generated that can be considered as musical motives. By having 88 distinct CA behaviours for one-dimensional CA, twenty pattern matching rules, and seven synthesizer parameters, a series of $88^7 * 20^7 * n$ possibilities for voices are gained. where n is the number of CA iterations. (More details on this and the produced system can be found in [10, 11, 14]).

The next phase in development of this project would be to sequence the voices in a musical manner. This resembles navigating a space of LPM-generated sequences and evolving them by adhering to some aesthetic criteria. This type of exploratory creativity is a case for evolutionary algorithms, which are discussed further in the next section.

Referring Back to Nature: The Case of Evolutionary Adaptation and Creativity

Creativity is not limited to humans and not constrained to producing artefacts. Other species have developed behaviours that may have become part of their evolutionary process – some of which may seem amazing from the viewpoint of observers. For instance, a species of monkeys feed from a fruit with a very thick skin. To access the soft core, the monkeys started at some point to employ utensils, as well as

stones. The choice of stone, hitting angle and pressure represent expertise gained over a lifetime. Another inspirational example is a strategy crows have developed for breaking the hard shell of nuts by observing the colour of traffic lights, using the traffic to crack open the nut. (These examples are seen in recent BBC documentaries.)

Genetic algorithms (GAs) are a type of evolutionary computation based on natural selection [15]. In a GA, the individuals of a population can be considered as solutions to a predefined problem. The algorithm iterates through a number of generations. During each generation, the members of the population reproduce and evolve through a number of processes: GA operators that raise the chance of finding a solution by exploring the search space for fitter individuals.

The Design

Designing a system based on GAs requires determination of the genotypes, phenotypes, and associated fitness function. In a first attempt, the genotypes in the system have been chosen to be a sequence of CA rules, pattern matching rules, and CA iteration numbers. These were previously employed for mapping to the synthesizer parameters.

Determining the fitness function for constraining the search process – to find desirable pieces – is a complex task. One consideration is that the phenomena signified as pleasing have measures of aesthetics embedded in them. Some of the statistical aesthetic measurements investigated are based on Zipf's Law metrics [16], entropy, and information gain. There has been research into the aesthetics of CA patterns as well [17]. In [11], application of Zipf's Law has been indirectly associated with CA in the context of LPM. Zipf's Law implies that, for a phenomenon to appear aesthetically pleasing, the frequency of occurrence of its elements should be inversely proportional to its statistical rank. Previous experiments applying Zipf's Law as an aesthetic criterion in algorithmic composition include [18, 19]. In LPM, the fitness functions are based on Zipf's metrics extracted from traditional Persian music, the subject of a paper currently in preparation.

Conclusion

Evaluating measures for the creativity of an artefact requires special considerations. Outside spectators usually nominate an artefact as creative or not. Such allocations are designated according to some personal perspective or according to cultural yardsticks, which may alter with time. There might be benefit in exploring the concepts required for standardizing the criteria for measuring creativity. There are also efforts underway for determining the guidelines and criteria for evaluating creativity in computational applications [20, 21].

The authors of this paper have designed a survey for evaluating the resulting audio outside the framework of Turing tests. The aim of the research is not merely sticking to the predefined structures of Persian music. To have a taste of the audio generated so far, interested readers are invited to visit `https://www.surveymonkey.`

co.uk/r/QPQ77JB and offer their feedback on the pieces' Dastgāh-likeness and creativity, as well as whether they like the audio.

Sahar Arshi is a PhD candidate at the University of Hull. Her research focuses on creating Persian-like music by the application of computational intelligence tools. Her journey in computer music and musical acoustics research began when she started learning santur; she later submitted her master's thesis by implementing the santur musical instrument and synthesizing musical pieces using learning machines.

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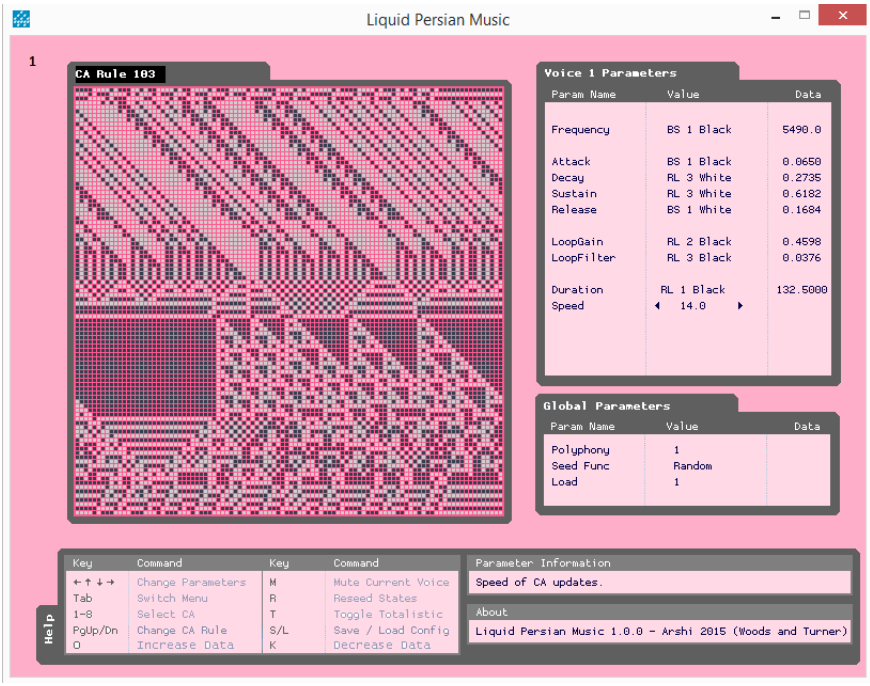

Figure 3: The user interface of an early version of LPM.

Scope for a Unified Metaphor Theory in Social Research: A [Similarity] *within* and not *of* [Dissimilarities] Paradox

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Prodigal/prodigy Schema

> Like the Prodigal Son, who *violates the rules* of the *community* by *straying off* but, on *returning* home, is still more prized than the ever *obedient child*, metaphorical use of language is often more valued than literal use.... The violation of conceptual constraints inherent in the meanings of the terms brings about a new conceptualization, a new way of conceiving some content domain [15]:177, (*emphasis added*).

This description helps us to distinguish metaphor from literal discourse in mainstream social theory. The notion of the *prodigal son* adds several secondary metaphors, such as rule violation, community, straying off, returning home, family, and obedience. It invites us to study a cognitive-normative approachability in research, by tracking a unique identity of metaphor that we also find in humans. The **prodigal** is wayward and a violator, and as such, parallels figurative thought, as it is free of disciplinary constraints. However, I find the prodigal identity to mutually reciprocate with another unique human trait: the **prodigy**, who, in contrast to the prodigal, is compliant and disciplined. Here, I divert from Kittay's view. I identify the prodigal son with figurative and poetic language, and the prodigy with cognitive metaphor. It is to the father and the family (figurative language), and his community (literal use) that the prodigal son (traditional theory of metaphor) had generically belonged, and strayed off from, but finally returned within the *prodigy* of cognitive metaphor.

Gibbs' [13] view is quite similar to my account of prodigy in cognitive metaphor: that is, metaphor's utility in the figurative (closer family), and not in the larger linguistic (community) or literal use. My account expands Kittay's view and finds support in Gibbs:

> Figurative language is not... *unconstrained imaginative thinking*... but a *systematic and orderly* part of human cognitive process.... *Figuration is not an escape from reality* but constitutes a way we ordinarily understand ourselves and the world in which we live [13]:454, (*emphasis added*).

Here, the prodigal son's experience of the world is what Gibbs calls *unconstrained imaginative thinking*; while

a *systematic and orderly* aspect of human cognition and not an *escape from reality* is established in the prodigy of cognitive metaphor: an awareness in the initially *wayward* experiential sense justifying a normative compliance — a homecoming.

It is my recognition of a paradox: a *straying off* from, as much as a *returning home* to, the family, the figurative norms: a (cognitive) mutuality that creates a methodological utility for understanding our own selves and the world around us. In Kittay's view, it is "a new way of conceiving some content domain" [15]:177. In the *prodigal*, I see an exclusivity of metaphor, allowing us to learn from experiential and critical insights (the broadly traditional theory of metaphor) of figurative language in relation to a fairly disciplined methodological sensemaking within the *prodigy* of cognitive metaphor theory. Kittay considers this recurrence and concurrence to be a unique feature of metaphor.

A Methodology [within] Paradox

> But the greatest thing, by far, is to be a master of metaphor. It is the one thing that cannot be learnt from others, and it is also a sign of genius.... A good metaphor implies an intuitive perception of *similarity of dissimilarities* (Aristotle, *Poetics*, tr. Ross, WD 1459, p. 5, *emphasis added*).

This tribute to an eternal legacy of metaphor leaves no margin for further praise. It is not limited to the persuasive rhetoric that Aristotle appears to have recognised, but goes beyond that. "*But the greatest thing, by far...*" serves as the briefest review, as much as it is an expansive overview of the metaphor. "*It is the one thing that cannot be learnt from others*" points to an untaught skill—perhaps a (transcendental) cerebral-intuitive talent that one cannot teach, or be able to learn or vanquish. In "*by far...*" Aristotle makes a further hint that the use of metaphor is never over.

In this regard, I find metaphor to create a strong impulse towards the scope of responsible social research. Drawing upon critical social theory, alethic hermeneutics, and symbolic interactionism, I find the prodigal vs. prodigious identities – i.e., paradoxical divergence/convergence in cognition – to create a unique methodological utility. Such unity of inconsistency that Aristotle calls an "*intuitive perception of similarity of dissimilarities*" demands attention in mainstream social research. Here, I differ from Aristotle's view: I find there to be a *similarity* **within**, *and not* **of**, *dissimilarities*, because I see the intuitive strength of metaphor *within* paradox as a single domain: embodied cognition. As such, the prodigal identity is distinguishable but inseparable from the prodigy, and a methodological utility only *within* embodied cognition, modelling for us wide-ranging yet disciplined norms of social research. My view expands on a typically poetic abstraction that Lakoff and Johnson [16] call the *traditional theory of metaphor*; here, presumably, "Aristotle

was also mistaken about metaphorical language being only poetic and rhetorical" [16]:123. Because a methodological sensemaking is only found *within* paradox, the prodigal/prodigy tendencies reject mainstream dualism in social research. In negotiating a methodological compliance, the prodigal son's *homecoming* embodies the intuitive and experiential sense of what qualifies as evidence of one — and overcomes the Cartesian anxiety [5]. This shift finds support in the relativism of methodological truths [12, 18, 19]. Further, the prodigy-*within*-prodigal schema allows the cognitive processes to *re*interpret complexity as a built-in reassurance of social and ethical research responsibility.

Figurative *Family* Norm

Metaphor's representation of the figurative (family) discourse is supported in social research theory [1]. The *prodigal* tendency of individual freedom restrains within it a *prodigious* return to family compliance — from the traditional theory to cognitive theory of metaphor, and from the first-generation of cognitive science to the second-generation.

The paradox recognises close relatives in family as [re]turning to where the cognitive (emotional) strength presumably belongs. Hence, a representative role of metaphor in the figurative language family is justified only *within* a homecoming. A justification of this role builds upon openness in what qualifies for family: nuclear and joint, extended and blended, large and small, in terms of embodied cognition: **gene** vs. **genre**. The figurative discourse, such as symbol, analogy, simile, metonymy, and even body language, euphemism, and neologism, follow a *relationship* similar to what we *norm*ally share within the family. For instance, the notion of the "nuclear" or "single parent" family is relatively simple, but we tend to follow loose definitions for a joint/extended family with parents, and hyphenate for a family "in-law". The *community* is a wider relationship that Kittay implies in "the literal use" [15]:177. Weinrich extends community not to one, but to all languages; to the "world of images as an objective, substantial possession of metaphors within a community" [22]:227. In this context, while positioning the metaphor in its family for an inclusive methodological advantage, we allow ourselves some cognitive-memetic convenience of theorisation. Thereon, we may generalise the role of metaphor in the figurative language *family* and identify its *community* inside the literal use. As such, the ubiquitous *cultural* transference of metaphor over all the world's languages must support "the extensive *ancestry* of the cognitive approach" [14]:9, (*emphasis added*).

For the sake of convenience, I see the *gene*ric cohesion in metaphor as an all-embracing diversity in figurative language. As the father's symbolic *homecoming embrace* is *gene*rous and unconditional, there is a point in accepting and not rejecting diversity in figuration. Spitzer [21] suggests the notion of an "umbrella metaphor" to *cover* diversity in simile, trope, and metonym. Similarly, "metaphorical idioms" are viewed as broadly *conventional* mental images, and as knowledge about images [16].

A representative role of metaphor may therefore seek three homecoming embraces. The first takes up anecdotes, idioms, proverbs, and maxims — the story of the *prodigal son* being one such case. The second may include symbols, analogy, simile, metonym, understatement, irony, oxymoron, hyperbole and sarcasm, as well as memes, neologised phrases, slang, and slant. To the third, we can add body language, proxemics, tones, and undertones.

A loosely conceptualised metaphor family of figurative relations and the ensuing arguments may therefore be not all right or all wrong. A metaphor family is similar to families we are a part of: a *relativistic* social-cultural norm that prohibits strict criteria for membership size, and inclusion or exclusion, whilst we characterise relationships as *gene*tic-*gene*ric (father and mother, brother and sister), pledged (spouses), hyphenated (step-parents and in-laws), neologised (newfound/adopted), and so on. A figurative relativism does not divide the family norm because unavoidable perspectival [in]cohesions, whether cognitive-linguistic, social-emotional, or bracketed-hyphened, are embodied *within* the paradox.

Diversity Inside Family

A prodigal-prodigy paradox is undefined and perhaps insusceptible to definition. This is a point the father raises against the *disciplinary* logic of the obedient son. For its illustrative, interpretative and transformative capacities, metaphor is closer to simile and symbols. Simile compares one entity to another: for example, how an atomic structure is *like* the universe. As in metaphor, the simile involves a transfer of an image from the source domain to the target domain; but unlike metaphor, in terms of comparison, it conceptualises explicit points as similarities. A demarcation of the two notions is unrewarding for paradoxical diversity *within* cognitive reflexivity and comprehension.

Similarly, from varying viewpoints, irony and sarcasm create a linguistic [in]sensitivity in the mainstream. As a result, journalistic angling, body language, and slurring overtones and undertones render a simple description even more complex. But then, this is what irony and sarcasm are all about. In treating irony and metonymy as conceptual siblings of metaphor, Gibbs notes that "irony is traditionally seen as the representativeness in metaphor that contrasts what is expected with what occurs or as a statement that contradicts the actual attitude of the speaker" [13]:359. In agreement with this opinion, we need to examine how and why *irony* implicitly serves as "our most powerful weapon in everyday speech: a device for concealing our true intentions, for avoiding responsibility for what we say" [17]:13. Gibbs argues further:

> The presence of irony, hyperbole, understatement and oxymora in the way we speak about our common experiences... our *conceptualization of incongruous situations* motivates the need for speech that reflects these figurative schemes of

> thinking. *We can maintain and modify social relationships by recognizing incongruous situations* and then commenting on them directly in ironic terms... [13]:397, (*emphasis added*).

This argument can be extended to all inherent conceptual incongruities and paradoxical overlaps in figurative thought. Homophones and the different ways we spell and pronounce the same names also produce intuitive slants. Hence, for a methodological convenience in sensemaking of the world we live in, we must realise rather than avoid conceptual overlaps with *related* siblings such as irony: "the perceived notion of an incongruity, or a gap, between an understanding of reality, or expectation of a reality, and what actually happens" [13]. Hence, the scope for a hermeneutic vacuum for research evidence must allow multi-perspective norms to settle [with]in, rather than unsettle, the family generosity and acceptance despite individual-level cognitive diversities.

Even trying to separate metaphor from popular cliché and proverbs is unproductive. It may not be practicable for a cognitive-methodology metaphor to leave out connotation in idiomatic or proverbial jargons, symbols and anecdotes, and even memetic themes, because of cultural-cognitive transference. The notion of *family* creates the scope for embracing cognitive-memetic relativism in membership size and contextual variation. This claim fits into the loosely-defined and *all*-embracing expectations of 21st Century qualitative research [7] (final set of chapters).

Our frequent choices in metaphors of *culture* and *system*, for instance, signify the staying power of robust metaphors that sustain a subjectivist sense over an extensive spatiotemporal coverage. These metaphors are everywhere in our social-organisational and technological lives. For their interpretive common sense, these are no longer any (non-representational) waywardness, but objective-*within*-subjective realities way beyond their respective *histopathological* and *physiological* genres. These metaphors have now become quite *familial*!

Evidence in the *Deviance*!

The prodigality of metaphor leads to intellectual surplus and overindulgence. The rhetorical and poetic sense produced in divergent norms of the traditional theory of metaphor is against the ideals of the cognitive metaphor theory. Idiomatically, overindulgence leads to hitting rock bottom: that is, a position of extreme intellectual expense, when there is little left to negotiate, or to lose. The prodigal son loses his self-esteem, social status, money, shelter, and finally food; all is lost, in a reversal of the classical hierarchy of human needs for survival. Only one hope is left, in the *homecoming*. This imagery develops the metaphor's ubiquitously excessive utility (and an unviable methodological rationality), in the *prodigal* lifestyle, to the point of being addictive.

Whilst metaphor's divergent character is quite creative, it is, conceivably, metaphor's prodigy that embodies the prodigal (intellectual) extreme to bounce back *within* a sense of social

and moral justice and transformation. Embodied cognition of a shared social-moral resolve helps produce a *self*-assured homecoming. This argument is supported in a series of symbolic interactionist studies in the USA on addictive alcoholism and its effects on individual behaviour, societal norms, and rehabilitation [8, 9, 10]. Such studies are both humanistic and methodical, and serve a fitting case of responsible social research that I claim to be metaphor's methodological-reformative utility, to be possible only within a deviant-compliant paradox.

A plausible creativity in metaphor may therefore serve a deviance-*within*-evidence schema. In this regard, a heuristic approach to evidential discoveries is quite familiar. The entire Archimedean *Eureka* legacy builds on this. However, Gibbs has concerns about it: "metaphor may play a heuristic role in early scientific discovery; science might find metaphor to contaminate the precise meanings it attempts to discover" [13]:170. Such reservations signify the essentiality of deviance along with a methodical discipline in the initial stages of a social inquiry. Bailey [4] seeks metaphor's creative role through to stages of data analysis and interpretation: i.e., when the data evolves into evidence over matured insights. In the time/space contexts of the research stages, a prodigal/prodigy heuristic lets data collection and explanation incur/concur and evolve: from an absorbed library index searching to the*Eureka* bathtub events, and from high profile formal interviews to obnoxious lavatory humour. A viable cognitive-methodology metaphor enables heuristic thinking to make a deeper sense of the data contexts by violating traditional norms, but also renders it possible to bounce back *creatively* from rock bottom. Here, a "prodigy within" works its way up through critical and emergent insights. If the prodigal incurs creativity, the prodigy concurs *within* a diligently discovered *when, how, why*, and *where*, to bounce back from.

Violating the family's (*relativist*) norms is not simple. It risks plunging one to rock bottom. Even when the father welcomes the prodigal son back into the family, the obedient son would not value the brother's transformational recovery, but only dredge up his *deviance*. Perhaps the obedient son, in Denzin's opinion, follows "a 21st century neoliberal audit culture anchored in a postpositivism that will not go away" [11]:355. For cognitive-methodology metaphor to value deviance, it is essential that we value the errant experience, in order to combine it with the normative discipline. Imaginably, most state intelligence and conspiracy-theoretical evidence we seek is within the *deviance*!

Embodied Norms of Social Research

The prodigal/*within*-prodigy paradox serves a unique norm to negotiate incurrence/concurrence that we come across in mainstream social research. It embodies diversity-within-unity, intuitivism-within-empiricism, subjectivity-within-objectivity, content-within-context, thickness-within-thinness, robustness-

within-perceptibility, autonomy-within-regulation, individual-within-institutional levels of analysis, and even *a priori*-within-*posteriori* thought and social science-within-science [1]. Simply put, it helps us to see the trees for the forest as much as the forest for the trees.

In terms of cognitive-economic relativism, this paradox helps in minimalist common-sense making whilst embodied cognition shapes minimalist intellect. As our sensemaking of the world is inherently constrained by "bounded rationality" [20], we never have enough "quality" and "quantity" of evidence available for probing into complexity under study. This paradox helps assign (*common-sense*) limits to cognitive-economic rationalities *vis-à-vis* open choices for emergent learning. In today's fast growing *big data*-crunching age and its demands, a cognitive-economic minimalism helps us keep our sanity and sustain our aesthetic and cognitive-linguistic superiority over the machine. The prodigy in metaphor helps create optimality by filtering the *prodigal surplus* of experiential evidence that would not qualify a robust cerebral-intuitive process of economic viability.

From a broader sociological tradition of *variable* analysis in social research [6], the prodigal character explains all divergence inside the *disparate* variable: namely, the socio-linguistic and memetic insinuations; whilst the prodigy converges within a *gener*ic cognition of the same. Also, the prodigal strength in metaphor reveals cutting across the (family) institutional-disciplinary norms, and a prodigy-within-individual compliance leads on to an embodied *homecoming* — towards the scope of responsible social research methodology.

Conclusion

The prodigal/prodigy schema allows a researcher to build upon critical, experiential, and emergent [*re*]interpretation of the empirical evidence. In a way, this schema explains the reversal theory in psychology that pairs up extreme personality or motivational domains [2]. However, I emphasise an embodiment not an isolation of the reversal tendencies. In this schema, I do not contest, engage in, or disengage from Plato's carnal *vs.* spiritual sense, or a Freudian sense of the manifest *vs.* the latent, or Carl Jung's notion of individuation. I only suggest a unique paradox that presumably follows Plato's argument of the mutuality of opposites. The prodigal *son* is not a sexist view but a paradox explaining the human mind set. Jeffrey Archer's *The Prodigal Daughter* [3] helps my claim through fiction; but Archer's story identifies prodigal/prodigy embodiment in the lead character that he, in a disembodied fashion, calls the *prodigal* – quite wrongly! Importantly, in noticing behavioural-cultural tendencies in the metaphor, we, rather unconsciously, induce ourselves to methodological norms that are sensitive to human stigma and failure and create images of human dignity and progress. The paradox probably lets go of many social research fallacies in actually *living* by these: helplessly, but diligently.

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Dear Aloysius. . .

Agony Uncle Aloysius, will answer your most intimate AI questions or hear your most embarrassing confessions. Please address your questions to fr.hacker@yahoo.co.uk.

Note that we are unable to engage in email correspondence and reserve the right to select those questions to which we will respond. All correspondence will be anonymised before publication.

Dear Fr. Hacker,

For the economic collapse that followed the diamond bust, we were blamed. For the wide availability of the cheap, lethal, light **SABRE™** weapon, then we were vilified. The **JEDI™** universally hated we now are. Caused our dire situation, your advice did. To escape from it, help us you must.

Yours, Koh-i-Noor

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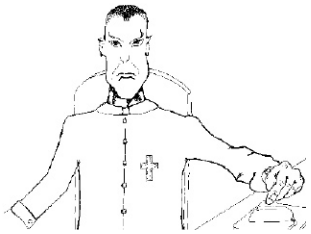

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ISSN 0268-4179