Editorial

Music and Medicine in the Age of Singularity and Intuitivity

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Artificial Intelligence has been gaining momentum, causing a significant stir in our expanding world of global technology. The accelerated rate of growth in the engineering of knowledge cannot be denied, and has resulted in division amongst scientists, bio-engineers and industry developers for a variety reasons. Aside from the most obvious utilitarian threat, of robots and AI's pull that potentially might risk the takeover of humans' jobs, some feel a more severe threat-one that impedes upon the development of civilization as we have known it.

Defined as 'singularity' [1]- the movement of machine takeover implies that the great human mind-machine is at risk. An infringement or a surpassing of the mechanisms of brain and thought risk under-involvement in the expanded development, and most distinctly arriving at eventual conditions where humans are not driving science, physiology nor function. This poses potential risks-and as Darwin once posited, where we do not 'use it', we 'lose it.'

There are great minds that are publically warning us how robots, even as they are programed by humans may be a great risk to humanity. The assertion is that if we are not careful and vigilant, to keep control of how and what we program, machine-learning may lead to acquisition of careless automation. This might develop to the point where 'programing' and the mechanisms involved in encoding and sequencing might lead toward divisive, in-humane means of destruction. Ultimately the most important question may be, if AI develops the capacity to self-program, and at some point becomes sentient, the locus of control might shift to a critical juncture where machines take on an elemental auto-efficacy or 'piloted' assumption of making critical decisions, even on negotiable priorities that involve survival and/or extinction. What code of ethics will be implemented, managed or maintained without such distinctly human elements involving, for example, consciousness, empathy, and transparency. How will conditional or situational decision-trees follow justifiable outcomes? What if a controlling AI were able to provide or retain resources for humans based on its own codes of criteria, and ones that were static and non-negotiable?

Convenience and safety in robotic developments are most often illustrated to the general public as a result of easeful developing technologies-serving the betterment of humankind. We watch cars on television commercials that can stop automatically when faced with threatened obstruction. We are beginning to witness a simple command to a 'Siri' or 'Alexa' residing in the pocket of our coats, who can conveniently research for us in an instant- and then recite facts, directions or even find a favorite piece of music in seconds, quenching our moment-to-moment needs which save us the hassle of having to move, find, and /or store information. Where will control by humans end and be taken over "in our best interests" by AI, and to what end will we ourselves become less and less vital to core processes?

Perhaps what most people do not envision, or arguably understand are the real threats of a computer-based robot. We might contemplate, and consider concretely what the most critical aspects of risk are-what is darker side of what 'machine-intuitive' communities will look like as we inevitably embark upon a growing reliance on technological function? Does 'robot programming' truly threaten our society ? The staggering power of self-programing/learning computers, and the dangers of how our technological advancement era may be leading toward gradual loss of human control of mind and being, has not, as of yet, been convincingly exposed as a fatal risk. And yet, some of our ingenious tech developers themselves, those involved in the current world of growing machinery are pleading with us, to slow down, and take heed on the way we are developing.

One of the great minds of our day has posed some concerns related to AI. Elon Musk says our current growth in AI poses "a fundamental risk to the existence of human

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civilization" (National Governors Association). This takes fear to a heightened level-vastly beyond intrusions such as internet spying posed to benefit consumer drawn consumption. The bottom line may be that human beings feel safest when they feel they have control of their actions, including how their choices are made, and the way in which they can assert themselves in their activities of daily living.

Like most issues that concern human safety, there are a growing number of groups seeking to monitor the ethics and emotion-related fields of how AI groups are developing information. Although this is largely it seems at a grass-roots level of development, companies like Microsoft and Apple and Google, who recently purchased the 'DeepMind Ethics & Society Research group (originally based in London).

How does the AI controversy cross into our thinking about applications of potential 'singularity' in music and medicine. The relationship of scientific advancement and knowledge has uniformly been linked to health and healing for as long as humans have sought to survive. As new technological advances impact our capacity to combat disease and enhance quality of life, our quest to stay human and inherently well has provided stimulating evidence of biomarkers, which are inclusive of neurologic function. The neural pathways may be most explicitly conditioned by the elements of memory and meaningful lived experiences - whereby mechanisms of pathways become stimulated by music. The music itself is often shared and situational, representing our capacity to store but also retrieve a musical motif or thought that has its basis within a distinct moment in time, and one that is reliant on the emotions and meanings associated with music.

Our literature base has increasingly reflected that entrainment is most profoundly experienced when music is offered under live conditions. True, we can set a cardiac pace maker to a pre-determined rhythm and this has developed to a point of pure rhythmic technology. However, when seeking to enhance respiratory function, or build mechanisms related to incentive, resilience or mood, we know that best practice relies strongly on the humanized elements of collaborative function: motivation, spontaneity and felt experience.

This issue starts with an article authored by Hans-Joachim Trappe and Irina Breker describing a prospective controlled study about "Differential Effects of Bach´s Orchestral Suite No.3 on Blood Pressure and Heart Rate" as compared to control without music intervention, following same standardized study protocol. Results are distinctly showing influence of Bach upon cardiovascular parameters. However, the intervention described here needs to be transferred to a patient group in a clinical setting for further evaluation of clinical significance. This article provides a nice groundwork.

Another kind of intervention is described by Amee D. Baird, Romane Abell, William Forde Thompson, Nicolas J. Bullot, Maggie Haertsch, and Kerry Chalmers in their contribution "Group Singing Enhances Positive Affect in People With Parkinson´s Disease." Singing promotes health and social contact in many situations, and especially we see that singing in hospital movements are growing globally. The number of people suffering from Parkinson´s Disease is also steadily growing in our aging societies. Thus, we congratulate these authors on demonstrating specific effects enhancing positive mood after singing in groups. There seems to be general consensus that singing is helpful to us, but professional support from music therapists will likely enhance such effects. Conducting follow-up studies covering additional ailments and deficits in elderly people would be interesting.

Quite another aspect of music and medicine, musician´s health is discussed in "Bodywork: Tuning the Instrument of the Soul" authored by Karina Gordon. She describes how musicians suffering from overuse syndromes can benefit from a multimodal therapeutic approach targeting various parts of the body involved in making music. Not only overused muscles, hardened soft tissue and obstructed circulation have to be treated, but at the same time relaxation techniques prove to be very effective. Such ailments are common among all professions where repetitive muscle strain, static forced postures and high emotional stress cannot completely be avoided. This holds true for professional musicians (inclusive of music therapists) as well as high performance athletes and blue collar workers at construction lines, just to name some examples.

Brian Schreck shades light on a situation of maximum emotional stress for caregivers, such as families and/or parents awaiting treatment outcomes, or for example, awaiting a new infant, while learning from medical staff that their child will most probably not survive birthing or may a life-limiting illness. As an offer to help with this disastrous situation he creates kind of musical legacy work, including heart beat recordings of the hospice, imminently dying or unborn or newborn combined with individually composed music. In, "Heartbeat Recording and Composing in Perinatal Palliative Care and Hospice Music Therapy" Schreck sees his unique approach as a means to enable caregivers, and parents to celebrate and process their shared experience, finally offering a chance to cope with their loss.

Another kind of music psychotherapy as trauma therapy, includes Heidi Ahonen elaborate article "Music Medicine´s Influence on Music Psychotherapy Practice with Traumatized Individuals". In her double role as clinician and researcher, she focusses upon neurophysiological foundations of music psychotherapy as comprised in a neurological rationale for 3 premises she identifies. The power of music should stem from its multisensory impact, emotional communication, and the effects on hormone levels as well as neurotransmitter release. So far, only pieces of that puzzle have been identified and described. So readers will be excited to read more about ongoing research in that area-this work is a start.

Due to increasing numbers of people suffering, PTSD is an entity of rising interest in health care and research as well. Jonathan Davidson in his contribution "When the Composer Has PTSD: Examining the Life of George Lloyd (1919-1998)" describes the life of a well-known composer suffering from PTSD endangering his ability to compose and work with music. Making use of certain aspects of composing music, in combination with his supporting environment, Lloyd succeeded to overcome his ailment and regain his capacities to compose. The idea of therapeutic composing as one aspect here should be further researched.

IAMM´s next international congress will take place in Barcelona, Spain this Summer. So the topic of Nuria Escude Matamoros and Fabrizio Acanfora´s article about "Music and Medicine in Spain: History and New Developments of Growing Discipline" is welcomed as a kind of preparation for our upcoming meeting. History and present status of Music Therapy in Spain, especially in Catalonia sheds light on the amount of personal dedication having been necessary and still being necessary to secure the position of Music Therapy in Spain it deserves. Common standards in research, education and professional work, joining forces between organizations and developing academic reputation should lead to professional acknowledgement by public and politics as well. The Board of Editors of this journal extend their sincere invitation to join us in Barcelona for IAMM congress 2018.

Closing up this issue, Darlene Brooks offers her review of Donna Polen, Carol Shultis, and Barbara Wheelers Book "Clinical Training Guide for the Student Music Therapist: 2nd Edition".

May we invite you to foster the development of our common goal through submitting your research to Music and Medicine? We are excited to receive your submissions!

References

1. Singularity hypotheses: A Scientific and Philosophical Assessment. Dordrecht: Springer. 2012. pp. 1–2. ISBN 9783642325601.