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‘...all the time, the buzzing:’ a gentle inquiry into dark matter in arts-based research

“ . . . start pouring it out . . . steady stream . . . mad stuff . . . half the vowels wrong . . . no one could follow . . . till she saw the stare she was getting . . . then die of shame . . . crawl back in . . . once or twice a year . . . always winter some strange reason . . . long hours of darkness . . . now this . . . this . . . quicker and quicker . . . the words . . . the brain . . . flickering away like mad . . . quick grab and on . . . nothing there . . . on somewhere else . . . try somewhere else . . . all the time something begging . . . something in her begging . . . begging it all to stop . . . unanswered . . . prayer unanswered . . . or unheard . . . too faint . . . so on . . . keep on . . . trying . . . not knowing what . . . what she was trying . . . what to try . . . whole body like gone . . . just the mouth . . . like maddened . . . so on . . . keep – . . . what? . . . the buzzing? . . . yes . . . all the time the buzzing...” (BECKETT, 1973: 1)

Introduction

We are bombarded with the possibilities of miracles from the cradle to the grave - of life eternal on one hand - and cosmic riddles of the universe on the other. Medicine it seems, can offer an endless range of interventions to extend our lives and when it ultimately fails, religion offers us eternal salvation from our bodily woes. In the heart of Europe, deep underground, the Large Hadron Collider offers us teasing glimpses of the hypotheses of our brightest scientific minds, made real, typified most poignantly by the ‘God Particle’. We are told that we are on the brink of new

revolutionary discoveries. And whilst the great whirling apparatus of science smashes sub atomic particles together at 13TeV (ANON, 2015: 2) in the hope of explaining the mysteries of dark matter and quantum gravity, a thousand miles away confused wars rage in the name of religion and greed. The poet Philip Larkin usefully reminds us of the fussing and sometimes impotent presence of science and religion in his poem, *Days*

What are days for?
Days are where we live.
They come, they wake us
Time and time over.
They are to be happy in:
Where can we live but days?
Ah, solving that question
Brings the priest and the doctor
In their long coats
Running over the fields. (Larkin 1967: 3)

We will see that artists explore and expose the essence of what it is to be human, this in its turn presents us with unique artist led research that we are perhaps not yet sophisticated enough to value in its own right because of our blinkered worship of science. This chapter will explore what is considered evidence, value and impact and what social psychologist Professor Tom Kitwood describes as ‘the subjective reality of lived experience.’ (KITWOOD 1997: 4)

Through an exploration of playwrights and filmmakers, artists and poets one can investigate the instrumental potential of the arts, alongside their intrinsic cultural value. From Florian Zeller's visceral portrayal of dementia in his play *The Father* (Zeller 2015: 5) to Peter Schaffer's questioning of the blunt tools of psychiatry in *Equus* (Schaffer 1973: 6) and Sarah Kane's visceral exploration of her own psyche in *4:48 Psychosis* (Kane 2000: 7) artists offer us time and space to question both subjective reality and the dominance of medical science. Whilst evidence of the impact of arts on health and wellbeing is growing, this essay will suggest that our understanding of cultural value might best not be understood through the lens of medicine, but through its own language.

Day-to-day extremis

There is a little theatre that buffers this experience of life, from the induced rapid suction into the flat-pack world of our birth, to the sometimes rather protracted, technophilic end days, drawn out, intubated and devoid of ritual and meaning. The intervening years may be peppered with the high camp of all that religion offers through its various ceremonies and barbarisms, but by and large, the theatre of the everyday is that of the television, the Internet and all the unmediated fears that they propagate. If we travel across the life-course from fictional newborn Baby A to the very real Patient Z, we may get a picture of how positive innovations in technology have something of a flip side and by proxy, begin to understand how the arts might offer some sophisticated and wholly humanistic counter blasts to our burgeoning technocracy.

Case Studies: Baby A and Patient Z

Baby A: The first anxieties

The neonatal incubator has undoubtedly played a profound part in saving the lives of countless infants born too early into the world, or else delivered into it with life-threatening disease. It may be a surprising to know that these gently purring greenhouses of the neonates produce an array of noises that have the potential to damage hearing permanently and influence physiological damage. These impacts include 'apnea; bradycardia; and abrupt fluctuations in heart rate, respiratory rate, blood pressure, and oxygen saturation.' (Philbin and Klass 2000: 8)

To understand the disturbing nature of sounds on a neonatal intensive care unit, we can look to data from the American Academy of Pediatrics, Committee on Environmental Health, who in the research report, *Noise: a hazard for the fetus and newborn* (Committee on Environmental Health 1997: 9) paint a disturbing picture of sound equivalents from the interior of incubators. If forty-five decibels (dB) is the acceptable level of ambient sound in the neonatal ward and the sound of a vacuum cleaner is seventy dB, the bubbling sound of air tubes provides the equivalent sound within an incubator. Taken further the simple tapping of fingers on the plastic lid of the incubator equates to the eighty dB of heavy traffic or a phone ringing. At its most extreme the closing of the plastic porthole is the same as a power mower at a one hundred dB's and simply dropping the head of the infant onto the mattress is the equivalent of a painful and distressing one hundred and twenty dB car stereo playing your very worst kind of music.

Patient Z: The final indignities

In May 2015 the independent Parliamentary and Health Service Ombudsman published its report, *Dying without Dignity*, an investigation into complaints about end of life care in the UK. The report cites the case of one patient who at the age of 74 was admitted to hospital for investigations after experiencing prolonged abdominal pain. Patient Z spent five days in hospital before he died. During this time he suffered 'ongoing abdominal pain, nausea and vomiting, build-up of fluid on his lungs, breathlessness, chest pain and excessive sweating.' (HMSO 2015: 10) When admitted, Patient Z had a CT scan that revealed abdominal cancer that had spread to his liver. Because the cancer was inoperable, palliative care was decided to be in the best interest of the patient and to relieve his symptoms and distress, subcutaneous medication was prescribed. Patient Z's drip accidentally came out and three junior doctors made fourteen failed attempts to reinsert it into his vein. Following these attempts the next step was to contact the on-call anaesthetist but he or she failed to respond until the next day, at which point Patient Z was close to death. It took the anaesthetist another 40 minutes to insert the drip. Patient Z died shortly afterwards.

The report concludes it was clear that all involved in his treatment knew that Patient Z was close to death and that a drip was not appropriate. Alternative means to provide medication should have been secured and by not doing so medical practitioners failed to provide treatment, to alleviate his stress, discomfort and fear. To quote from the report, 'the junior doctors and anaesthetist should have acted on the advice of the palliative care nurse and provided him with the necessary medication subcutaneously to make him more comfortable.' (HMSO 2015: 10) It was revealed in the report, hospital staff had tried to administer pain relief orally despite Patient Z not being able to swallow and that his pain levels had been recorded as not being

managed effectively. It is without question that Patient Z suffered unnecessarily at the end of his life and that witnessing this caused his family anguish 'on top of their inevitable distress at his diagnosis.' (Ibid: 11)

Research from A to Z: a gentle instrumentalism

Behavior change and good design on a neonatal unit could swiftly address the impact of noise - and as a counter-blast to this - adding positive sounds could have an impact on physiological outcomes. Through her interrogation of existing data around the impact of music on neonates, research nurse, Dr. Kimberley Allen suggests, premature infants with respiratory distress exposed to music during endotracheal intubation, ventilation and when receiving regular endotracheal suctioning, saw improvements when exposed to music, with statistically significant higher oxygen saturation during the thirty minute recovery period. (Allen 2014: 2)

Premature and inconsolable intubated infants who were exposed to music during a naturally occurring episode of crying or agitation, and observed for a further ten minutes following the music exposure, showed, '...that the previously agitated infant had statistically significantly improved oxygen saturation, heart rate, and returned to a drowsy or alert state after the music intervention. The introduction of music to intubated, premature infants who are agitated may improve the clinical status of the infant' (Ibid: 13)

Significantly, Allen points to a survey of neonatal nurses in Finland which showed a majority of nurses *believed* music could increase the feeling of security, improve sleep, decrease stress, and reduce pain in premature infants. This belief was supported in a further study, in which parents similarly thought that music would

decrease stress, improve sleep, and decrease crying in their child in paediatric intensive care.

With the potential of full lives stretching ahead of them, it is easy to justify rich collaborative research in neonatal intensive care; the plight of the older individual at the end of their life perhaps demands a different kind of thinking. Writing in *The British Medical Journal*, general practitioner and former president of the Royal College of General Practitioners, Dr Iona Heath provides us with some difficult food for thought around this conversation on ageing, illness and mortality. Heath suggests that as governments strive to reduce mortality, they are ultimately fighting a losing battle, as ‘the mortality rate for the population will always be 100%,’ and if ‘we continue to fight all causes of mortality, particularly in extreme old age, we have no hope of success, and we will consume an ever increasing proportion of healthcare resources for ever diminishing returns.’(Heath 2014: 4)

Heath suggests that despite all the evidence, preventative medicines like statins are prescribed to people over seventy, which successfully reduce deaths from cardiovascular disease, only to increase mortality rates through cancer and dementia. She cites a US study of care in people dying of advanced cancer or with dementia in acute hospitals, which found that ‘for 24% of both groups cardiopulmonary resuscitation was attempted and that 55% of those with dementia died with feeding tubes in place.’ (Ibid: 15) Her explicit question being is this ‘what we want for ourselves or those we love - or indeed for anyone?’(Ibid: 16)

Fear of our own mortality and the commodification of wellbeing is reflected in the way that, ‘more and more of life’s inevitable processes and difficulties—birth, sexuality, ageing, unhappiness, tiredness, and loneliness—are being medicalised’ as

Dr Richard Smith, one-time editor of *The British Medical Journal* argues. (Smith 2010: 17) For him, 'medicine alone cannot address these problems and ...common values and attitudes towards the management of death, whilst well known about in scientific circles, have yet to be acted upon because of lack of imagination.' (Ibid: 17)

Whilst the modern version of the Hippocratic Oath urges clinicians to avoid the 'twin traps of over treatment and therapeutic nihilism,'(Lasagne 1964: 18) it also stresses that 'there is art to medicine as well as science, and that warmth, sympathy, and understanding may outweigh the surgeon's knife or the chemist's drug.'(Ibid: 19) Smith's implicit message is that the arts might just be the vehicle to address these points.

Artists and arts therapists have established diverse roles within multi-disciplinary teams in end of life services, primarily within hospices and palliative care. Whilst it's generally accepted that the arts enable and aid difficult communication through metaphor, signs and symbols, the use of the arts to create the conditions for innovation in the workplace to enable cultural change, is perhaps a newer idea.

Research undertaken by Dr. Joan Yalden *et al* explores the possibility that arts-informed approaches can transform end of life care, through 'visible, shared meanings.'(Yalden et al 2013: 20) The development of a strategic and evidence-informed tool known as the 'palliative care chest of drawers' (PCCOD), is useful to explore when attempting to understand how we can humanise the heavily managed processes of our dying. A portable five-drawer cabinet, designed through a workshop process with multi-disciplinary team, contains personalized artifacts and materials to support physical, psychological, social and spiritual care - materials that are a mix of

the metaphorical and the practical, including personal mementos alongside care plans and advanced directives.

In terms of research, this gently instrumental aesthetic tool, has been created using the 'experimental knowledge' of all those involved in its design - as such - this innovation goes beyond physical care, and embodies the subjective reality of lived experience, echoing the nurses and patients in Finland who instinctively *believed* that music played a real part in reducing the stress of premature and seriously ill infants.

Cultural Value Beyond Technocratic Measurement

In March 2015, shortly before *Dying without Dignity* published its indictment of the unintentional small acts of day-to-day abuse meted out to Patient Z, an altogether different story of a 78 year old woman's dying days became a social-media sensation. When the Dutch volunteer organisation, *Stichting Ambulance Wens Nederland* (Anon 2015: 21)³ took three terminally ill people to see *The Late Rembrandt* exhibition at the Rijksmuseum in Amsterdam (featuring work that the artist produced during the final phase of his life) the gallery threw open its doors to the individuals who, in their very last weeks of life, expressed an interest in seeing the work.

Perhaps this moving image and the actions of those involved represent what Iona Heath describes as 'authentic health care for the old and frail, which has much more to do with helping to preserve their dignity, treating them with affection, and supporting their continued involvement in social activities, rather than the pursuit of ever-more elusive cures,' (Heath 2014: 22) and an embodiment of Kitwood's subjective reality of lived experience.

Surgeon and writer Dr Atul Gawande (2010: 23) consistently suggests that whilst the goal of medicine and surgery is to prolong life it runs the risk of sacrificing quality of life by pursuing every available intervention, however traumatic, for the possibility of extra time. It appears that Twenty First-century patients have bought into the consumer myth of invincibility wholesale, an indicator perhaps of selfish consumerism at its most blinkered.

The arts might enable deeper and more engaged conversations around a new philosophy of how we live our lives, and explicitly, end our days; a difficult conversation perhaps, but one that the arts are uniquely placed to address. This, however, will require a significant cultural shift.

Fifteenth-century priests offered advice on the protocols and procedures of a *good* Christian death, through an instructional Latin text on how to die well. Any contemporary *Ars Moriendi*— or Art of Dying, (Duclow year: 24) might not be focused on how you might avoid the five temptations in your final moments; of lack of faith, despair, impatience, spiritual pride and avarice, but instead offer more humanistic guidance to those nurses, doctors and technicians who inevitably surround the dying individual. What might a contemporary *Ars Moriendi* look like - designed to look past what the poet Philip Larkin described as, 'that vast moth-eaten brocade, created to pretend we never die,' (Larkin 1964: 25) particularly in the light of a secular and arguably science-obsessed society?

In the case of medicine this is often cast in the language of battle-lines and of a war on disease that is mediated by the complicit relationship between the pharmaceutical giants and profits driven research, but in truth, any notion of creativity and culture in acute care, seems irrelevant if measured against the scientific

instruments and well-funded field of medical research. Perhaps we are trying to understand the value of the arts in the wrong language and context. Whilst constantly aspiring to some gold standard of measurement, we may be ignoring the golden methods of understanding our own potency and reach.

Randomised controlled trials (RCT) are widely held up as the gold standard in testing clinical efficacy, how useful would an RCT be in a cultural context, or is the arts and health agenda more about vision, values and believing that things can be different? Dr. Nancy Cartwright speaking at the London School of Economics usefully suggests that ,...there is no gold standard; no universally best method. Gold methods however, are whatever methods will provide the information you need, reliably, from what you can do, and from what you can know on the occasion.’(Cartwright 2007: 26)

This raises a concern though: aren't we too fixated on understanding the impact of the arts on countering ill-health, when the arts surely have most value across the life course?

A wealth of studies illustrate the short-term benefits of arts engagement, but little consideration has been given to the ways in which our health may be affected through engaging in the arts over a longer period. In a bid to redress the balance, Arts for Health set up a six-month research programme, in which Dr. Rebecca Gordon-Nesbitt asked a simple question: Is there a relationship between engaging in the arts and long-term health benefits, and, if so, can we find evidence of it? (Gordon-Nesbitt 2015: 27)

This research isn't confined to symptoms of ill health, but looks across the broader social and physiological factors underlying health conditions and the ways in which arts engagement might mitigate these relationships. This research has

revealed fifteen highly relevant, key longitudinal Nordic research projects that interrogate population scale data from the last thirty years, and that taken together, demonstrate a positive association between engagement in high-quality arts activities and life expectancy, disease resistance and mental acuity.

In considering the effect upon physical and mental health of engaging in arts activities in non-clinical settings including galleries and museums, theatres, cinemas and concert halls, the research reveals arts engagement to have many second-order benefits in a variety of diseases and health concerns including dementia (Wang et al 2002:28), coronary heart disease (Sundquist et al 2004: 29 obesity (Lajunen et al 2009:30), (Kouvonen et al, 2012:31), (Cuyppers et al 2012:32) and cancers (Bygren et al 1996:33 and 2009 :34).

However, this narrative is not about ‘interventions’, in the medical sense, instead it is about opportunities for voluntary participation and the positive effects this participation might have on physical and mental health. The aggregated research explores who has access to the arts and critically, how the arts impact on health through a mix of cognition, psycho-neuroimmunology and epigenetics, as we will see.

Studies repeatedly demonstrate that the production of our stress hormone, cortisol, has wide reaching effects on the brain. Some of the core structures that regulate emotions and mood (hypothalamus, pituitary and adrenal glands (the HPA axis) become suppressed and less effective when the body or mind is under stress. This impairs our defense against depression. In contrast, the production of dopamine is positively associated with ‘flow’ that ‘psychological state of high but subjectively effortless attention, low self-awareness, sense of control and enjoyment that can occur during the performance of tasks that are challenging, but matched in difficulty

to the skill level of the person,' (Gordon-Nesbitt 2015: 35) a state which is frequently induced by creativity and is central to being absorbed by the arts.

Towards the end of the Twentieth- century it was posited that, rather than being autonomous, self-regulating entities, the nervous, immune and endocrine systems function in a reciprocal way in response to environmental and psychological stimuli. In a study of the impact of psychosocial and behavioural factors upon cancer, it was found that distress negatively influenced mechanisms central to carcinogenesis, including the ability of cells to repair damaged DNA. The significance of studies of this kind is that, in making a connection between stress, distress and chronic morbidity via psychoimmuno-neurological pathways, they pave the way for an exploration of arts engagement as a factor, which might reduce the negative side of this equation.

Perhaps one of the most revelatory hypotheses in this field, is around epigenetics and an exploration of the role environmental factors play in determining which genes are switched on or off in the body at any given time, potentially inducing physiological changes that result in disease or protection from disease. Short-term exposure to a range of external factors can cause long-term changes and as Swedish researcher, Prof Lars Olov Bygren (Bygren 2009: 36) suggests, exposure to enriched environments can have a positive epigenetic effect This suggests great potential for arts engagement in mitigating a range of acute morbidities. Cultural participation may yet prove to moderate the epigenetic transfer of disease susceptibility through the generations.

From a cultural perspective, population-level research of this kind potentially reduces pressure on arts organisations to constantly justify their value to the public

purpose. Added to this, the fact that the quality of arts projects is taken to be paramount in manifesting health effects may ultimately serve to focus attention away from quantitative measurements of cultural value. That notion of quality however, is subjective and loaded with bias and is something I will return to.

Ambiguity & Uncertainty

Whilst this is the ammunition we might crave to evidence our value in terms of medical science, my opening gambit was a suggestion that the arts and health field might be better off liberating its understanding of impact and value from the language and evaluation of medicine. I began this chapter with an extract from Samuel Beckett's *Not I*, a short, one-act play in which an illuminated mouth delivers a high-octane monologue of the fractured memories of one fragile and seemingly, very real woman. It was first performed in 1973 and undoubtedly would have been utterly incomprehensible to my mind-set as a young working class boy - but would it? Perhaps my family simply had a deficit of aspiration and was complicit in the divisive order, which dictates that contemporary art is the soul preserve of the educated elite, whilst the working classes could consume popular culture, predominantly through the television.

The artist Joseph Bueys (Adriani 1979: 37) declared we are all artists, but I'm not sure that this is right. We are all born with the potential to be creative but increasingly, the arts are marginalized in school curricula through target driven educational systems. As artists, as passive or active participants, or as free thinkers, we all inhabit a cultural spectrum of some sorts. It might be intentionally medicinal, or unintentionally impact on our long-term health and quality of life, or it may simply

have the power to shift our ways of thinking, and seeing the world and our shared place in it.

Seemingly a polar opposite to Beckett's *Not I*, the British playwright Sarah Kane (1971 - 99) charted her lived experience of clinical depression in the play *4:48 Psychosis*, which premiered following her suicide at the turn of the 21st century. Complex, harrowing and deeply affecting, her work reminds us of the often blunt tools of psychiatry that reduce, distill and pathologise the nuances in all our mental difference. And offering as Kane describes it: '...chemical cures for congenital anguish...' (Kane 2000: 38)

As an artist and as a human being affected by the extremes of mental ill health, Kane eloquently offers us a stinging critique of psychiatry and the technocratic fantasy that reinforces the dominance of a discipline which reduces the human psyche into neurons and synapses, dendrites and plaques. Often disregarding the personal narrative that leads to a mental health crisis, in *4.48 Psychosis*, Kane reminds of the subjective reality of lived experience in the face of diagnosis and treatment.

I am deadlocked by that smooth psychiatric voice of reason which tells me there is an objective reality in which my body and mind are one. {...} Dr This writes it down and Dr That attempts a sympathetic murmur. Watching me, judging me, smelling the crippling failure oozing from my skin, my desperation clawing and all-consuming panic drenching me as I gape in horror at the world and wonder why everyone is smiling and looking at me with secret knowledge

of my aching shame. Shame, shame, shame. Drown in your fucking
shame. (Kane 2000: 39)

This critique of psychiatry is not new to literature or theatre, and perhaps the fictional child-psychiatrist, Dr. Dysart (played by Richard Burton in the film of Peter Schaffer's *Equus*) best illustrates the god-like role imbued on clinicians. Attempting to 'cure' the pathological religious and sexual fascination with horses, that his young patient has, Dysart begins to question his own part in reducing child patients into compliant and unimaginative adults. Dysart dreams of worship and passion: the very characteristics that he is charged with suppressing in his patients, and yet, which he craves himself. The fundamental questions of why we are, who we are, have no place in the psychiatrists consulting room, he suggests, at least, not in the re-molding of passive and good little citizens, or in the excising of existential pain. To the chagrin of many clinicians in the field, Dysart closed his final defeatist monologue with the legend, that passion '...can be destroyed by a doctor, it cannot be created.' (Schaffer 1973: 40)

This is stinging and whilst I am not arguing that an arts and health agenda should divorce itself entirely from understanding its potency through the language of medicine, perhaps we might better share our understanding of cultural value with some of the conviction of a theoretical physicist.

The Large Hadron Collider took about a decade to construct, and cost around \$4.75 billion dollars and its total operational budget runs to about \$1 billion per year. Forbes estimate the total cost of finding the Higgs boson (God Particle) at about \$13.25 billion. (Knapp 2012: 41) Money is also invested in hypothetical explorations

into Dark Matter and Dark Energy; matter with properties that are inferred from gravitational effects on visible matter, and which can't be seen with telescopes, but which account for most of the matter in the universe. Theoretical physicists like Prof. Stephen Hawking have to learn to live with ambiguity and uncertainty in their mission to describe the universe using mathematics and critically, their imaginations.

Whilst the arts will never generate the research funding that CERN brings in, aren't we interested in some of those fundamental and difficult questions - questions that aren't easily counted out and measured by the crude efforts of trialists? In Larkin's poem *Days*, the poet addresses the realisation that humans and time, have an unequal relationship and whilst religion and science aim to understand the why and how of the universe, it is perhaps artists who are best placed to help us understand what it is to be human, to have finite life, to seek meaning of our fragility and impose order on the chaos of our existence.

French writer Florian Zeller's play, *The Father* (Zeller 2015: 42) perhaps helps us span that blurred and often disputed space between the instrumental and intrinsic, and in doing so, provides a useful motif in understanding narrative, value and the barriers that prevent a wider range of people experiencing the arts.

Ostensibly the play tells the story of one man's experience of dementia and that of his daughter who runs the gamut of emotions in making decisions about his care. A common human story, but one explored through unexpected theatrical devices that elevate the play beyond nanny-state instrumentalism. Critically, as Susannah Clapp in *the Guardian* notes, 'Zeller's play is not a study or a discussion of Alzheimer's. It is more profoundly theatrical. It plunges the audience into the experience of dementia. It throws the switches in your brain.' (Clapp 2015: 43)

Interestingly, in his introduction to the play, Zeller describes it not as a piece of work about dementia, but an attempt ‘...to understand, through theatre, the situation of an old man who has lost his bearings and arrived at that moment where his kingdom dissolves.’(Zeller 2015: 44)

In holding up ‘a mirror to its audience’, the playwright helps us recognise and understand ourselves more deeply. I would argue that he does this more effectively than any well-intentioned NHS information leaflet could offer, and perhaps gets closer to Kitwood’s notion of subjective reality of lived experience, than any other art form. By becoming lost in the protagonists fractured, subjective reality, we are temporarily immersed in a shared reality - a shared grief - that in very real terms, may prepare us for the fragilities of old age and our inevitable mortality.

The play offers no certainty or explanation and moreover, it contradicts its own narrative and yet is imbued with deep human warmth, which Holly Williams in *the Independent* usefully describes as, ‘one of those plays that makes your brain hum with the unique potential of theatre’ and ‘perfect [in] unity of form and content.’(Williams 2015: 45)

But who is the audience to this play? Karena Johnson writing in *the Guardian* reminds us of what we know all too well, that, ‘...working-class people and culture are an endangered group in our subsidised theatres, invisible in our auditoria and rarely seen on our stages.’(Johnston 2015: 46)

The expanding arts and health evidence base, as explicitly stated by Gordon-Nesbitt, illustrates two significant obstacles to attributing causality between arts engagement and health. She asserts the assumption that people with poor health tend to take a diminished part in cultural activities, thereby skewing research results,

similarly scrutiny of non-participation in surveys, has revealed low socio-economic status and disease to be the two main reasons for non-response.

If, through consciously chosen leisure activity, engagement in the arts is generally shown to have a positive impact upon the body's physiology, in turn improving health and quality of life, then it is equally clear that those who have fewer resources will continue to see culture and the arts as being the sole preserve of those with perceived wealth, education and resources. Contentiously, and from a cultural perspective, population-level research of the kind described by Gordon-Nesbitt, potentially exempts arts organisations from continually having to justify their value to the public purse. Added to this, the fact that the quality of arts projects is taken to be paramount in manifesting health effects may ultimately serve to focus attention away from quantitative measurements of cultural value.

Is there room for ambiguity and uncertainty in medicine and healthcare? Unquestionably the answer must be no, but like our theoretical physicists, artists thrive in the liminal space between human knowledge and imagination. From addressing behaviour change in neonatal units and end of life care, to bringing people up close and personal with artistic revelation, cultural engagement and participation offer a more ambiguous and nuanced conversation about what it is to be human. Scientific theories and hypotheses are not proven to be true or correct, but rather *supported* by test and experimentation.

The researcher, Lars Olov Bygren suggests, that the arts are a 'perishable commodity' (Bygren 2009: 47)- something that if we don't value and practice - may just negatively affect our lives. Conversely, our deeper engagement may indeed contribute to richer, fuller, longer lives.

This is an important hypothesis and as I've suggested, is grounded in serious research. I would like to add to this and propose that it is not simply a discussion about the arts as some instrumental 'high quality' cultural tool, meted out to the poor and uneducated and dispensed by a nanny-state, it suggests something far deeper. Arguably in an increasingly secular society, the challenging and difficult; the darker and sometimes avant garde work of artists that taxes us and makes us uncomfortable - in all its ambiguity and uncertainty - feeds a gaping need for something to nurture our very essence. More than ameliorating against disease, this may enable deeper understanding of the subjective realities and diverse lived experiences of others.

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