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Touring the Bio-Conservative Horizon

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Preface

I began preparing for this book in 2019, further to experiencing some alarm at trans-humanism and AI; these phenomena portended advancements which are for all intents and purposes discontinuous – seemed to threaten a discontinuity of human experience which is effectively extinction-making. A keen observer in the present could reasonably identify the progress as continuous, draw a straight (or curved) line between the outsourcing of working memory to pen-and-paper and neural implants, say; still, in prospect as in retrospect, the circumstance of a Rubicon being crossed matters more than precisely where.

My philosophy has changed in the years since first collecting my thoughts on these matters, as life relentlessly calls my bluff in ways I would not have asked for. I feel blessed for being party to the experiment which asks more from me than I would have voluntarily given.

A small part of my conservatism is contrarian, enough anyway that I wouldn't suffer what is written here to be taken wholly out of context.

Introduction

In chapter one, I introduce some themes which are relevant to bio-conservatism. One is infinite regress, the paradox of being the thing which we act upon, the phenomenon of pulling ourselves up by the bootstraps; another is material agency and the defence of thick, as opposed to thin, claims. There are too the limitations of probabilistic logic to consider.

In chapter two, I offer some explanation for the enthusiasm generated by the modern form of eugenics, transhumanism; proposing that the aspiration to improve the species so adroitly derives in part from the reflexive favour shown to dysgenics in recent decades. I offer a defence of disability and call out as inconsistent the promotion of disability rights, as the prospective, incremental supersession of non-enhanced being implies more profound disregard for disability.

In chapter three, I explore sources of disagreement between humanity and post-humanity. I explain why the absence of a red line between remediation and enhancement is not proof positive of these phenomena not occupying distinct domains. By the same token, I refer to a discontinuity of human experience which at some point is better characterised as extinction. As a bulwark against often-inadvertent mission creeping, I advocate for irrational realism, which entails a brief appraisal of IQ as a "measure of man". In order to fairly represent the scale of the challenge, I consider co-ordination problems at the level of laws and institutions as well as the impossibility of legislating for technological advances before the event.

In chapter four, I address some practical difficulties attending the biological route to post-humanity. I address the precariousness of complex trait manipulation, particularly when factoring the non-shared environment. Appendices A and B are a segue into more detailed information on trait heritability and on epigenetics. I then attempt to temper expectations of fidelity where the transposition of consciousness to machine is concerned; I adduce the fact of the most highly-evolved characteristics being the most inimitable. I then warn that expressions of regret capable of moderating post-human ambitions might be censored on grounds of delicacy; as costs are sunk in post-human modification, we might be as little ready to speak critically after the event as we are with gender re-assignment surgery.

In chapter five, I examine the mind-body paradigm in an attempt to present further evidence of the fragility of life – the inaccessibility of life functions and the life force to manipulation, while the body-mind symbiosis is incompletely understood. In Appendix C I address the knowledge of the mind-body paradigm encapsulated in English idiomatic expressions. In the remainder of chapter five I outline the bargain whereby the patient unwittingly consents to his objectification in the way of receiving a more customised experience. The concept of self-reinvention is addressed with reference to John Rawls' Veil of Ignorance.

In chapter six, I defend trained instinct, intelligent design and accommodationism. I assert that to deny religious reasoning is to deprive a culture of the virtues cultivated while faith is incubated,

for all the faults and cultural atavisms sustained therein. I recognise the contribution of complexity science, and provide some basic information about quantum mechanics in Appendix D. I then propose how, with imaginative inferences, off-world simulations might be achieved in lieu of off-world travel.

In chapter seven, I offer suggestions for collectively and individually alleviating existential malaise; in doing so, people might be more incline to take on the civilisational concern. I consider the meaning and purpose of senescence and death, why it would be imprudent to characterise death as an absolute evil which must be vanquished by all means necessary; I explain why not having lived longer is not the greatest cause for regret.

In chapter eight, I turn to chemical inducements to trans-humanism in the form of psychedelic drugs, employing the concepts of the experiencing self, the remembering self and the peak end rule to justify the conclusion that intoxication is ill-advised. I also hypothesise that the psychedelic experience is a forerunner of death, and that to experience this prematurely is to borrow something from the future; in the interim, the experience is scarcely legible so one cannot act upon it so as to enrich later life.

In chapter nine, I continue discussing legacy issues by addressing euthanasia, then abortion, specifically in terms of embryos' rights. I describe and explain the importance of measuring an organism's rights by the developmental tendency which is low but increasing, and the continuity value which is high and remains high. I reconcile these measures of integrity with body autonomy and offer a brief maternity leave policy prescription.

In chapter ten, I segue to some explanations for low fertility rates, specifically culturally-mediated developmental disorders and the asynchrony between mental and physical development pursuant to dietary changes and exposure to specific chemicals. Indeed, indifference at the disjuncture between generations and within a single lifespan might contribute to indifference towards species disjuncture. I conclude the section by ruing humanity's exaptation burden and by drawing attention to how the current generation is ill-equipped to steward the advanced technology set in motion by previous generations.

In chapter eleven, I explain why it is counter-productive for authorities to reflexively neutralise people at variance with high normativity, indeed why authorities must avail themselves of the insight of marginalised persons if the society is going to flourish. I criticise the policy of making serotonin widely available and warn against oxytocin being regarded as something like a panacea.

In chapter twelve, I examine the moral and practical difficulties attending the apprehension of persons deemed insane or morally defective, as well as the dystopian ramifications of modern psychopathology, beginning with the popularisation of psychiatric shorthand. I advocate for humanitarian principles to be better served, and discretion better applied, by way of speculating on how aberrant behaviour could be environmentally contingent, and possibly remediated.

In chapter thirteen, I write about the problem of uselessness, with reference to recent instances of misguided activism. More worrying still is the weak bargaining position of redundant workers – the implications for the social contract of power being centralised with governments, an oligarchy, or both. I warn of expanding surveillance apparatus and sentiment analysis – ambient psychoanalysis. I end by stressing the importance of continuing to act as if we have free will, since to do otherwise would tend to the exercise of immoderate prejudice; the objection to this is practical as well as moral – we cannot immaculately trace behaviour to an antecedent.

Chapter One – Relevant Principles

I. Material Agency

Quantum physics appears to give lie to a deterministic account of reality, while religious adherents generally maintain that insofar as mundane events are pre-ordained, they are not arranged in such a way as to be fully discernible to the human intellect.

In bioethics there are "thick" and "thin" claims about the impact of new technology. Thin claims have as their foundation canonical humanist values, whereas thick claims are typically based on "intrinsic concerns", defined by Andrew Lustig as "moral issues raised about current and prospective developments that resist specification according to the quantifiable factors in risk-benefit analysis that characterise most policy deliberations".[1] Thick claims are more discursively sourced, even esoteric, referring to religious doctrine and folk wisdom, and are derived from the experience of pre-industrial man. Consisting thus of "prophetic discourse" they are vulnerable to the criticism of unverifiability, and do not conveniently lend themselves to codification for policy-making purposes.

Andrew Pickering comments that "the goals of scientific practice are imaginatively transformed versions of its present".[2] As such, when unforeseen circumstances arise, the progenitors of scientific projects, scientist-architects, may find their own agency exhausted; given the narrowness of scientific disciplines, the resistance against the scientific endeavour offered by material agency may be so difficult to rationalise that accommodation of it is, within the scientific schema, precluded.[3] Scientists are dispersed in diverse silos but are united by an interest in the promulgation of scientific reasoning, collective scientific agency. Scientists then, inured to never telling small lies, might be disposed to set their collective face against material agency. Scientific agency, encountering insurmountable resistance in the pursuit of simulating human intelligence or human-aligned AI, for example, might plough on heedless of or in spite of the consequences.

II. Comfortable With Uncertainty

Bayesian reasoning and the updating of priors with new information is synonymous with epistemic humility – one is never certain in his predictions and prognostications, only less wrong.[4] Still, while a scientist who answers 'I don't know' is modest, one who insists 'it cannot be known' might do better to wait or defer to a different line of enquiry.

An average person tends to over-estimate his ability,[5] but this is not a repudiation of uninstructed self-awareness; the veracity of self-estimation varies between individuals. The same generalisation

is often made with regard to trait heritability; it is supposed that if the heritability of a trait is 70%, one can look to a person's heritage for 70% of the explanation, when for one person it is 90% of the explanation, for another person it is 50% (see chapter four – II). But this is still unsatisfactory; it matters whether the trait is in juxtaposition or synergistic relation to the other traits among which it is constellated; it is not judged in isolation.

Many people are more amenable to scientific proofs about human nature, and deference to scientific proofs might arise from suspicions about the licentiousness of intuition which are to some degree well-grounded.

However, it is not practicable to defer to this preference invariably and indefinitely, to always delay moral decisions until scientific verification is available.

III. Infinite Regress

> "It would be impossible to prove that our definition of science is correct, because our standards of proof will be built into any proof we would offer. What evidence could prove that we should value evidence? What logic could demonstrate the importance of logic?"
>
> —Sam Harris, *The Moral Landscape*.

An instinctive organism is one whose behavioral adaptations emerge through natural selection. An adaptive organism is one which has been endowed with the ability to modify its behaviour, to devise novel evolutionary strategies within a single lifetime. Adaptive organisms appropriate from evolution itself the adaptive imperative.

In human beings this is a mixed blessing because concurrent with our intra-generational adaptive faculty is the ability to exploit the environment; as the environment is modified, and human beings thrive in the modified environment, human beings are increasingly selected by a propensity to thrive in the modified environment, which results in further modifications of the organism and of the environment, and so on. There is divergence from the ancestral wellspring, a branching out, with empirically unknowable consequences.

From proteins to organelles, from organelles up to cell types, and then to organs, organisms, species, and ecologies – competition between subsystems to serve as the foundation for the next level of complexity takes longer to resolve the further up the hierarchy, and yet even with this additional time, only a small range of possibilities is explored.

Clearly some mutations are unviable and the reasons for some holes in taxonomic space are easy to understand. Richard Lewontin suggests for example that "the problem of enervating and

supplying nutrients to an axially rotating macroscopic structure" accounts for the absence of organisms which move by wheels.[6] But might not the taxonomic space be excessively sparse when a country or world region transitions from an agrarian society to a high-tech superpower in a few decades, or indeed when evolution is staged in a laboratory?

The disregarded possibilities, the opportunity cost, is great when the evolution is expedited, or the branch is mistaken for the trunk: "(recombinations) produce specialisations that emphasise one function, usually at the cost of the other".[7] Before a realistic whole-life simulation can be run for each recombination alongside a control, many more may already be locked-in. Many more exemplars, be they economic models or paragons of human merit, would be reduced to phantoms inhabiting vacant taxonomic space.

IV. Intrinsic and Instrumental Value

Transhumanists see science as transcendence. Transcendence is a lofty prize, and a utilitarian would warrant much exploitation in its pursuit. Indeed, few would agree with a time-traveller who believed that the extirpation of his evolutionary heritage was an acceptable cost for preserving the inherent value of a bacteria threatened with instrumentalisation by evolution. By the same token, synthetic biology might buy for our species, by the resources newly at our disposal, much time, space and flourishing that we are as far from appreciating in our present incarnation as a bacterium is from appreciating his assimilation into the human organism.

And yet I believe it is necessary to extend the concept of nature's intrinsic value from the value "thought to inhere in nature independent of any human desires or interests" to incorporate man's enjoyment of nature through observation and contemplation.[8]

A strict definition of nature's intrinsic value combined with commitment to its de-instrumentalisation would have environmental ethics demand the accommodation of dire wolves, mammoths and beavers in wild spaces. Man's capacity to steward the natural world depends on recognising his exalted station.

Organ harvesting is a practice which questions of intrinsic and instrumental value bear upon.

Michael Tooley proposes bringing beings into existence with human form but for an absent upper brain, defending the practice on the basis that the organism in question is incapable of acknowledging the divestiture of its body parts.[9] Still as a woman undergoes physical and psychological changes in giving birth, she is compelled to orientate her nurturing instincts to the monstrous entity. It might be said that in a liberal democracy the choice of whether to participate devolves to her and to her alone; yet in certain cases we do prohibit behaviour which is considered harmful, like the consumption of hard drugs, as well as behaviour which is victimless but demoralising to behold or to take cognisance of, like copulation with animals. Both criteria are satisfied here: the mother's equanimity is imperilled and so is that of the wider society.

To a lesser extent, the harvesting of organs from a cadaver is demoralising. To maintain organs in a proper condition for harvesting, corporeal viability is maintained after the mental life of the patient has ceased: where circulation is maintained beyond brain death, the still living body is entirely sequestered from the brain. In superintending the procedure, the clinician's esteem for human integrity is challenged.

Debra Satz draws attention to the practice of moneylenders in India who view kidneys as collateral as well as to the indebted men who come to regard women in their control as "vehicles for debt collateral".[10] The devolution of kidney donation to the free market has resulted in live organs standing as collateral, in a re-imagining of chattel slavery where affected women play the role of living organ banks. This is the *direct* consequence of Western demand for organs. The indirect consequence is that anyone seeking a loan while unwilling to make this grizzly pledge is at a disadvantage to a neighbour who is not.

Debra Satz describes the problem of weak agency, imperfect knowledge where this particular transaction is concerned:

"Whereas ideal markets involve fully informed participants, we have seen … that many markets do not, and in fact cannot, function on that basis. This is sometimes because market transactions involve consequences that can be known only in the future. Kidney transplants involve surgical operations and, like all surgical operations, entail risks. In a careful study of India's kidney sellers, 86 percent of the participants in the study reported a marked deterioration in their health following their nephrectomy".[11]

Free-market kidney selling operates by a principle which is contrary to that of military enlistment. The risk of death for military recruits is accepted the more stoically for the steady discipline trainees are inculcated with over the course of training, while remuneration is phased during and even after active service. Moreover, the risk of death, in the West at least, is relatively low. When voluntarily foregoing a kidney for pecuniary gain, though, the rewards are instant while realisation of the self-sacrificial nature of the transaction is deferred, the patient being anaesthetised for the procedure. The pain of the procedure, were it to be felt, would offer the same kind of clue as to the repercussions as combat training does to military recruits, but it is not. Some sensory analogue to the excision would serve as an awakening to the consequences of the procedure which are not provided by counsellors; counselling is likely focused on managing the consequences post hoc rather than forecasting them ex ante.

Confronted with the fact of about 86% of participants reporting a deterioration in their health status after nephrectomy,[12] responsible policy-makers would doubtless advocate for the implementation of safeguards against weak agency and low information in the form of education and pre-excision counselling. Still a corporation is unlikely to voluntarily recruit counsellors and ethicists who are sceptical about organ harvesting. As such it is more likely that checks and balances would arrive in the form of after-care which might involve access to replacement kidneys in the event of the remaining kidney's failure. Purveyors would remain competitive then by

expanding into newly-accessible and low-income nations, whose citizens are not only more desperate but worse informed.

The practice of organ harvesting affronts common decency, but resistance may be poorly articulated. And it is indeed problematic to consign the would-be donor to poverty, this being the immediate counterfactual to the transaction. Objections on the grounds of taste alone are luxurious, arising neither from the exigence of living with a malfunctioning organ nor the exigence of struggling to survive without functioning organ's cash value.

Chapter Two – Eugenics and Dysgenics

I. Forerunners of Transhumanism

Genetic engineering might imperceptibly succeed self-commodification, the prevalence of which is implied by the popularity of plastic surgery. As with aesthetics, so with achievement – people increasingly wish to embody something which isn't ordinarily in their gift; the gift without is prized so highly as to be deemed worthy of the authentic self's sacrifice. This phenomenon is partly explicable by globalisation – in the past, the parochial exercise of a talent and the possibility of individuation through its exercise was heartening enough because it was the proximate community and not the global one that was dwelt in predominantly.

Interconnectedness has resulted in increased exposure to the talents, successes and consumption habits of others – both those of celebrities and of friends, families and neighbours on social media. While there might always be someone who can do it better, never has talent felt so ubiquitous, and oppressive for all that; if talent can neither be escaped nor enacted, an ambitious nature will seek to emulate it, or contrive a narrative of usefulness and court ridicule, who knows for whose amusement.

The United Kingdom as a post-empire nation state offers up insight about the potential for maladjustment among a cohort threatened with obscurity. The case is especially poignant because the empire which the UK is in thrall to is no less than a land over which the UK once ruled. Mental gymnastics are employed for the reconciliation of inveterate, collective self-esteem with geopolitical reality.

Meanwhile, body dysmorphia remains a minority concern, a "tail risk" of the exaptation burden society labours under; still this malaise could portend the existential malaise which encroaches on unalloyed humankind as the advantages which humanity enjoys are more becoming to post-humanity than to post-humanity's forerunners.

With AGI and ASI in the offing in the next few years, according to the three major Western AI CEOs,[1,2,3,4] we are left imagining a transformation greater than gender re-assignment surgery or the transition from seat of the world's greatest empire to what Great Britain is now. If in a few years we are put to embracing human obsolescence, full-blown psychosis is more likely to be the issue than officiousness, or the premising of sophisticated decision-making on axioms of obscure provenance.

And the exaptation burden in offing is the more onerous for it affecting both culture and politics – purposeless is compounded by the panic accompanying a rapid centralisation of political power. Whether it is trans-nationally across governmental structures, or across oligarchic loci, matters less than the fact of rapid centralisation. The order within which large technology companies have

risen to prominence is post-capitalistic:[5] techno-utopia is too far removed now from Marxist utopias of the past for the lessons from that time to remain especially pertinent.

II. Dysgenics then Eugenics

With the comfort and convenience scientific progress brings, there has come the leisure to entertain grander ambitions for humanity; however the pain and strife by which grand ambitions are traditionally realised are incompatible with the comfort and convenience which give rise to the ambitions. We don't allow infants to die, so we look to realise our ambitions on humanity's behalf at the germline. We characterise natural selection as cruel, but this judgement is itself traceable to a preference for clemency which is evolutionarily-mediated or at least attributable to the Baldwin effect.[6]

"After the atrocities in Nazi Germany, environmentalism emerged to declare that all people, irrespective of class, race or gender were genetically equal with respect to intelligence".[7]

Some events in history were so atrocious that any implicated ideology is sullied by association. Eugenics is one such ideology, from whose exercise the wrong lessons have been learned. An evil in prospect is not prevented by the specific measures which might have averted evils in a different age, and of a different form. In other words, the stable door is locked after the horse has bolted.

Though practitioners of eugenics have been condemned by history for their preoccupation with race among native characteristics, no form of eugenics practiced in the twentieth century up to and including state-mandated mating programs was as adroit as the form in prospect – the reduction of desirable traits to genetic configurations, and the promulgation of these in a laboratory. Following disillusionment with dysgenics, germ-line implantation might gain social acceptance.

The relative prolificness of people occupying the lower socio-economic strata is an instance of dysgenics, though the un-coupling of prolificness from socio-economic status is only dysgenic insofar as economic class is correlated with the possession of objectively desirable traits. Naturally this is a highly sensitive matter. And if human beings fail to prize, via natural mate selection, the traits which genetic engineers tend to consider progressive, genetic engineering would appear undemocratic. Further, unless genetic engineers manifest the behaviour associated with the traits they honour, they are vulnerable to the accusation of hypocrisy.

Dysgenics is exactly the kind of issue people want to punt to AI, and probably its being there to punt to explains a large part of AI's appeal, at least among social scientists. Carte blanche to AI on social science however *is* the dreaded pendulum swing, the swift dispatch of taboo. Punting heedlessly to AI is the banality of evil.

If there are only so many moments which merit the tribute of human nativity, then an increasing birth rate will eventually secure for the civilisational concern inadequate consent. And yet, the revocation of dysgenics may be no less ugly than its perpetuation, and the same goes for the anointing of a priestly caste vis-à-vis democracy's continuation. Recent forays into unaccountable elite rule are illustrative.

Often discontents are cast as ingrates because the pedestal they stand on is the shoulder of the very giants they malign. A person accustomed to central heating etc. would have to be someone else entirely, a person with whom he may not sympathise, for his stoic prescriptions to be empirically valid – to have been verified experientially. A similar criticism might be levelled at one advocating for prohibitions on a future society that he neither knows nor understands, though he cannot be called a hypocrite. The question is how important his ignorance of the future world is, relative to his torch-bearing for ancestral man – fealty to his heritage.

"The past is a foreign country; they do things differently there".[8] But the future is more different still. So we hold a flame for the past, take the present as it comes and admix our ambitions with hope and caution. The forbearance attending sacrifice is just as important as anything it yields.

III. Disabled Contentment

> "Antidisability discrimination laws such as the Americans with Disabilities Act, might only cover people with a particular disability until a medical or technological cure for that disability is found. They might not be seen as having a disability if medical or technological "fixes" are available that might rob them of any legal protection and also possibly force them into using the "cure", even if they don't want to do so. These individuals might be forced into the medical understanding of their characteristics".
>
> —Gregor Wolbring, *Disability Rights Approach toward Bioethics?*

It is useful to conceptualise a spectrum, characterised on one extreme by morphological liberals who seek to progress their consumer rights as far as prosthetic enhancements, and on the other by those who refuse transformation even where the body part or system in question might embroil associated systems in sub-normal functionality.

In 'In Defense of Posthuman Dignity', Bostrom, a morphological liberal, attempts to rally the support of morphological conservatives who are disabled.[9]

But where obstinacy as well as inadequacy is attributed to individuals who remain with their natural endowment, the reputation of disabled people who hold out can be even more vulnerable.

Contentment among people who are either born disabled or have been disabled for some time is no lower than for the general population. The corollary of which is scepticism at the claim that individuals altered at the germ-line, or able-bodied persons transpiring from selected embryos, must experience superior welfare.

The contentment which disabled people find in spite of their limitation, especially those who have memories of being able-bodied, should be a source of inspiration to ordinary people in facing the impending loss of physical and mental faculties. Perhaps the contentment of disabled people can buoy the hopes of regular people as they confront challenges like ageing.

Many disabled people will be born to parents who have either different disabilities or no disabilities at all.* 90% of deaf children will have hearing parents; these parents who have no first-hand experience of the disability their child carries are liable to have limited appreciation of the coping mechanisms disabled people are availed of, because ordinarily empathic people tend to abide by the Golden Rule, to evaluate another person's experience by how they the same experience would affect them. Disabled people unite the very proclivities which are adaptive in the future envisioned by transhumanists, namely contentment and inaction, so it is ironic that disabilities find no place there:[10]

Chapter Three – Human-Posthuman Disagreement

I. Remediation and Enhancement

The externalities of trait selection, threats to decency and social cohesion, are hidden like the information about a supply chain is to a supermarket shopper. The raising of expectations, pursuant to the transposition of consumer principles to the realm of procreation, may be subject to some degree of centralised oversight, but central government once involved would possibly not moderate the ambition of genetic engineers so much as legitimise it, would perhaps warrant a ratchet clause on the progress.

With the normalisation of increasingly aggressive genetic enhancement, likely proceeding from casuistic reasoning which pays little heed to the scale and context of the intervention, the augmentation of sub-optimal traits (positive engineering) comes to be viewed in the same way that remediation (negative engineering) would have been viewed relatively recently. Even with the intercession of central government – with arbitration between private enhancement preferences which are socially acceptable and those which are not, protection for private enhancement preferences might be successfully lobbied for.

In an interview Professor Michael H. Shapiro argues that the species "baseline" for a trait is not something people should be forced to content themselves with.[1]

Further, it is said that to distinguish between enhancement and remediation is unscientific because the partition drawn between clinical and sub-clinical abnormality is to some extent arbitrary, in view of there being little to separate people falling a little either side of the line, in respect of a given trait.

Advocates for genetically modified agricultural produce adduce selective breeding as a precedent for disregarding the distinction between remediation and enhancement, while advocates for liberal-eugenical germ-line trait manipulation adduce the modification of attitudes in the ordinary course of socialisation.

The fact that a large minority of people opt to have breast enlargement surgery does not make this a therapy any more than arguing against the legalisation of MDMA as a coffee drinker makes a person a hypocrite.

Although the difficulty of demarcating remediation and enhancement is real, it is less important than not drawing a line in the sand; the fact of a Rubicon being imperceptibly crossed somewhere in the locality is more important than identifying its precise location.

I contend that we maintain the distinction between *disability*, the opportunity cost of whose remediation is profound unviability, and *disadvantage*, where a person's capacities lie outside the normal opportunity range.

II. Disjointed Qualia

> "Someone who performs treatment on an embryo approaches the quasi-subjective nature of this embryo in the same perspective as he would approach objective nature. This perspective suggests that acting on the composition of a human genome does not essentially differ from acting on the environment of a person growing up: her own nature is ascribed to this person as constituting an "inner environment". But isn't there a collision between this ascription, which is carried out from the perspective of the intervening person, and the self-perception of the person concerned?"
>
> —Jürgen Habermas, *The Future of Human Nature*.

"Enhancement" is a problematic term, implying as it does "the same but better". Although it may be expedient for elements of mind to be considered as epistemologically distinct from the embodied self, perfect meta-cognition is unattainable; the requisite objectivity to have oneself as the canvas is elusive.

Should the life narrative be disjointed subsequent to pharmacological or genetic enhancement, the subject's subsequent incarnation is complicated by the memories of his former personhood, now estranged.

The self-conscious superiority of the genetically enhanced person might be similar to that of an aristocrat, yet so might their humility. Classically, the humility of an aristocrat consists of his self-objectification – supposing himself to be a conduit for a tradition which is greater than himself; in the service of this ideal he might even forego a love match.

Self-estrangement in the case of the artificially enhanced could be greater still. The likeness between parent and child, effaced in the case of genetic alteration, is preserved for the aristocrat, qualifying the parent, insofar as shared genes produce shared phenotypes, to partake of the travails and joys of the child. Moreover, if the programming does instantiate superior traits, the child, gifted and yet artless, can scarcely conceal contempt for parents with qualities of an inferior order, while the parents naturally perceive ungratefulness on the child's part, and can scarcely resist feeling resentment, the more so as the parent sees so little of himself in his own child.

A child brought into the world by traditional means can, upon reaching adulthood, reconcile himself to the inexorable elements of self more easily on seeing the transpiration of his genetic likeness in the form of viable parents: he rationalises those influences he cannot subvert, seeing in

himself the enduring embodiment of the conjugal union. A child born of genetic implantation doesn't have the same recourse to self-negotiation.

Meanwhile the other parent, the absent genetic programmer, or more accurately the institution to which he belongs, would be as a third parent; someone instrumentalising the child without fulfilling the basic duties of parenthood.

It has been said that consent can be attributed to the subject of genetic alteration retroactively, on account of the objective desirability of the new traits he is endowed with. Even granting the objectivity of this desirability though, the original traits would tend to sit awkwardly with those which are grafted on. The new part of the person, and the rights accruing to him, tend to militate against the original. Therefore what the hypothetical unborn person is consenting to is his self-effacement, as at the hands of an autositic twin.

The child is unlikely to wish he never existed, still he cannot help but recognise the differences between himself and his parents and wish he had received proper nourishment, either under the stewardship of the absent guardian, the medical institution, or as the true child of his parents.

III. Irrational Realism

In childhood the external world prompts a response which comports with childish perception. But when a likeness of the stimulus appears in later life, the same response awaits actualisation, irrespective of the peculiarities of the novel context, which the rational faculty steps in and apprises us of.

A stressful experience is committed to memory and thereafter re-visited. As the attending emotion dissipates, retrospection waxes rational and many of the lessons which can be learned are.

It is the symbiosis of subjective and objective reasoning that enables a sound appreciation of reality. In helping to foster the symbiosis, highly stressful life episodes might be a pre-cursor to a life destined for enrichment by emotional intelligence or moral sense.

In a static utopia where environmental stimuli are carefully regulated, where trait hyper-normality is perpetuated with considerable fidelity by embryo selection and germ-line implantation, heightened emotional states could be disincentivised, tending as they do to enrich but inconsistently.

Irrationality is usefully instrumental in life choices where a wholly rational outlook is evocative of cynicism or despair, for example. A more rational being would arrive at her ambitions unhindered but in doing so would have her ambitions go unchastened. Being myopic, believing the summit to be just around the corner is what forestalls discouragement, and courage remains a cardinal virtue.

Personhood might be better realised when rationality is admixed with irrationality. The Bible doesn't explicitly forbid blood transfusion, but to override a Jehovah's Witness's avowed preference in light of this fact is to fail to comprehend the true appeal of the tenet. It must be understood in the context of an ideology whose coherence rests on the meaning its proponents derive from it. The religious error can no more be excised without derangement to the person's integrity than a gene for aggression or colour-blindness can be. The senseless rules encountered in the musty halls of bureaucracy redound to culture *finding a way*, in spite even of efficiency. On entering the workforce, I personally did not fully understand that people will find a way to squander and sabotage efficiency gains, if the prevailing culture doesn't brook any manifestation of deep, shared proclivities. Jevons paradox is often just what happens on fighting against the dying of the light.

IV. Completeness

If we must offer up humanity in crystallised form to a non-human successor species or entity, we would do better to have the salience of human characteristics weighted equitably and not for the aggrandisement of any particularity or special interest, by contrived meme or by handshake. I don't think it is even possible in the long run to occult a large part of human essence, which is what such a special arrangement would entail, on account of the principle of instrumental convergence as applied to the artificial pursuit of general intelligence; the attractor of general intelligence would likely be harder to resist for an AI with objectives, than any circumscriptions which would have the pursuit of general intelligence follow human-defined pathways. It is only that much harm could be done before the special arrangements course is corrected.

Samo Burja's "completeness hypothesis" is a helpful illustration of limits to standard measures of intelligence. Burja explains that just as a full complement of car parts will improve the car's performance to a degree disproportionate to the number or mass of the final parts, wherever "good feedback mechanisms, extreme motivation, the right equipment, and sufficient time" are united in a single person,[2] that person is many times more effective than if a single one of these components is wanting. Competences are synergistic.

There is low variance between competences measured in an IQ test, but it is not self-evident that this makes the competences domains in their own right which, once consolidated, constitute "G" (general intelligence factor), and not mere sub-divisions of IQ competence.

Researchers have hypothesised that physics as a scientific discipline is difficult for schoolchildren to learn because it presents such a disparate account of physical phenomena from those which children have oriented their senses around, and which form part of their intuition about the nature of reality.[3,4]

Using a technique called Transcranial Magnetic Stimulation, it was demonstrated that when certain brain regions are temporarily disabled, ordinary people can exhibit savant-like skills.[5] This research suggests that exceptional systemising competence or empathising competence is evidence of a "cognitive style", an orientation and not a capacity, which problematises G as a measure of man.

Object permanence refers to knowledge that objects endure independently of the beholder's ability to perceive them and was researched by the developmental psychologist Jean Piaget. A negative correlation between precociousness in comprehending object permanence (common-sense physics) and academic physics would lend further support for the cognitive style hypothesis, assuming that the difficulty of un-learning intuitions is relatively constant.

A grasp of object permanence implies a non-self locus of observation – an engagement with the non-self perspective which reaches fruition in old age. The systemising which scientists engage in also demands impartiality which inhibits self-absorption. Indeed, scientists might conflate subjectivity with solipsism. It is ironic then that mathematical ability is highly correlated with autism which predisposes the bearer to felt solipsism. I speak of autism with the caveat that an autistic outlook and behaviour is highly circumstantial and the relevance of the diagnosis to the person's self-identification is not wholly accurate.

V. Individual IQ

Passion is at the root of aspiration and, when tempered by the intellect and moral rectitude, is the basis of human achievement. With unilateral enhancement of the logical faculty, the impediments to consummation might be beheld with enhanced objectivity and, in being so, overcome with greater facility; yet all the events peripheral to the pursuit, events which adorn our memories in later times, and which give us wisdom as distinct from knowledge – the life lived while making other plans – would be lost. The opportunity cost of disappointment is high indeed.

Proponents are typically careful not to say explicitly that IQ is a good approximation of a person's worth, but do believe that IQ is a good predictor not only of professional standing but of "all that is good",[6] though the supporting evidence is usually presented without comment or at least without fanfare. The Flynn effect shows that IQ is to some degree a social construct, and to the extent it is, the promotion of IQ as a measure of man is self-fulfilling.

In recognising the importance of the test, we teach to it. In other words, IQ tests are (in part) described by Goodhart's Law: when a measure is used as a target, it loses its value as a reliable indicator.

While it is certainly an exaggeration to say that IQ tests only measure skill at IQ tests, people are not lining up to defend the hypothesis that the 20th century's 30-point average IQ increase is attributable to advances in nutrition alone.

It might be that privilege is meted directly to high IQ persons for the harnessing of their economic value, or for the patronising of one's likeness, or a combination thereof. It can of course happen unintentionally, when society values the kind of competence which IQ measures.

With regard to other, non-intellectual, advantages correlated with IQ, these are if anything easier to contrive, according to their relatively low heritability. If IQ confers social status it confers immunity from the kind of struggles which, though ultimately conducive to the development of character, probably do little for the person's reputation, or at least the ability to "ace", in good conscience, questions beginning with "have you ever?" or "has anyone ever told you?", the kind of questions which are indeed more useful for assessing a person's disposition to behave in a desirable way, than personality tests based on value statements which are easy to exploit.

In a complex civilisation there is a tendency to reach for the broad brush, to present as a virtue, in this case, epistemic humility, what is the necessity – perceived or real – of socially engineering by "best predictors"; the reasoning is to some degree circular – the best predictor of many things remains a person capable of reasoning. It is bad form, evidence of audacity, it is said, to speculate, so we follow the data, however incomplete the picture delineated. And yet, following the data is no less an action in the world, and no less audacious; it being exclusionary.

Being told to hold your peace and respect your betters adds insult to the unconscious injury which society visits by meting favour by rubber stamping. This dead hand, I suggest, contributes significantly to the despair which Angus Deaton & Anne Case document.[7] This is not only a question of disrespect and lost opportunities. If IQ is "all things good", there is a predicate for IQ selection at the germline or even justification for eugenics. Or if it takes x number of FLOPS to complete a gold standard intelligence test, we might even simulate a brain on this basis and chalk the remaining FLOS up to noise.

VI. Collective IQ

Charles Murray caveats his controversial conclusions about the racial basis to IQ difference with flourishes about the same seed faring differently in Iowa and in the desert, and emphasises the importance of social policy.[8] I don't think Murray is setting out to make a trojan horse of racial IQ differences, but like the inventor of stratospheric aerosol injection for the curtailment of global warming, the research of the researcher is more enduring than his well-intended footnotes. There is no escaping that the assignation of high intelligence to thinking which rarely co-exists with religiosity, so-called magical thinking, is essentially exclusionary, since magical thinking is in large part irrevocable.

On the other hand, the practical wisdom of peasant farmers in pre-industrial societies inspires awe and even today people are enraptured by living hunter-gatherers. And so the advantages of

sacrificing primitive skills for prosperity of which primitive agency has no part are underwhelming.

Hans Eysenck defines overlearning. An individual possessed of an exceptional capacity to solve any given problem can harness automation and strategy development, as well as chunking, which means that "elements which are at first used in isolation become joined into complex chunks which now constitute the units".[9] The absence of indoor culture frees time for the generation of sophisticated storytelling, in which the wisdom of ages is crystallised. Or the building of pyramids without modern learning or tools.

The allure of LEDCs notwithstanding, a nation is ultimately embarrassed by the non-participation of its citizens in activities on which citizens depend for subsistence. There is no guarantee after all of the ongoing support, of the increasing dependence not being leveraged to deleterious effect.

There is an optimal degree of industrial development to be determined for less economically developed societies.

VII. Legal Recourse

In support of the argument that harmonious relations between differently abled species is a likely state of affairs, Nick Bostrom observes that "even today, the segment containing the tallest ninety percent of the population could, in principle, get together and kill or enslave the shorter decile".[10]

In a civilisation such as ours, where people make recourse to means other than physical violence to realise their objectives or to assert dominance, where positions of power are not typically dispensed according to the physical prowess of the claimants, how could such a pact come about, even if the requisite solidarity among taller citizens were there?

Post-humans on the other hand would, almost by definition, unite attributes which qualify them for accession to positions of power and responsibility.

In support of the argument that posthuman and unenhanced elements of society would co-exist harmoniously Nick Bostrom adduces the presence of mechanisms to counteract the tendency of one group to behave unjustly towards another.

Perhaps an ethical code can be devised, even by several nations in concert, to protect persons opting not to be altered at the germline. The code of ethics might even be devised by several nations in concert, so that research agencies are held to ethical standards without being competitively disadvantaged. However international protocol where the gains or danger to be averted is not obvious tend not to be persuasive, much less compelling. Compare the success of the CFC moratorium to the Paris Agreement, for instance. And consider the waning influence of supra-national organisations like the UN and the ICC: already member states disregard

resolutions or renege on commitments. It's easy to imagine a utilitarian calculation in which the perspective of the agency who enshrined protections into law is dismissed as a piece of unenlightened reasoning, and more weight is given to the allegedly objective undesirability of extending rights and resources to unenlightened persons, as in the case of Great Britain's withdrawal from the European Union vis-à-vis its mooted reversal.

With access to privilege comes the temptation to test the integrity of laws and institutions, laws and institutions which safeguard disadvantaged persons against exploitation.

We might regulate bioweapons, but even a bioengineered human being would be perceived as something weapon-like by an ordinary person feeling himself newly under-endowed. He must seek assurances that a post-human population would take the pains to avoid violent confrontation, when the latter is, like an ASI, assured of winning, but human enough to necessarily place value in the winning. Doubtless, *even* human beings have a great capacity for selflessness towards people of diminished means or capacities, a fact to which the success of private charities attests. Yet government spending suggests we prioritise lethality above beneficence – consider that in the UK for instance, the foreign aid budget is projected to be 0.3% of GDP, while military spending is set to reach about 2.5%.

Certainly, people have arranged themselves into cosmopolitanism societies, yet even a positive outcome to unequal encounters between human populations is not a reliable precedent for encounters between humanity and post-humanity: empirically, the weaker *species* is despatched more expeditiously than the weaker *race*.

Given the disparity in endowment between the two parties and the poor outcome for the less well-endowed party this portends, the existence of a society with posthuman elements is itself likely evidence against the viability of the aforementioned safeguards.

Laws and regulations must be strict indeed, necessarily totalitarian, to curtail the tendency of post-humans to arrive at dominance over regular people, to prevent control and resources flowing to them as by osmosis.

One supposes the cleanest way to prevent that coming to pass is to prevent their emergence. It would be difficult to enforce incursions in practice because a post-human individual would reasonably consider the exercise of prowess his birthright. He might be prevented by scruples, but then again he might not. As a matter of course, scruples or not, the human specimen is susceptible to the claims of the party with superior powers of persuasion, and necessarily different interests.

In this scenario, opting out appears untenable – the likely tax on existence is transubstantiation, the forerunner of which the developing world is familiar with, as ancient ways of life disappear.

VIII. Unknowability

While to some extent the future is determined by the organisms and AI entities scientists engineer; that future which we envisage ex ante, into which we would situate the engineered organisms or entities, is itself altered by the emergent properties of such entities' culture, which we cannot descry, by definition, since we cannot anticipate the precise manner in which they will exceed us in sophistication, and how they will use their endowment. There is temporal parallax, where a successor to AlphaFold in a few years might determine a configuration of genes which has the hallmarks of a superior organism, but our conception of a superior being is by definition naïve – evolution, in this case artificial, casts "judgements" about desirable traits which we would likely not anticipate. These unforeseeable emergent properties of the organism result in emergent properties for the world which are more unforeseeable still. There is a combinatorial explosion of unknowability, from the entity to its milieu, to the entity again and back to its milieu, and so on.

There is a culpable lack of imagination in trying to legislate for this circumstance ex ante. Governments and corporations are buoyed by their partial successes in frustrating the ambition of potential rivals and experience reassurance when burgeoning AGI is prevented from making too many waves at Microsoft, say, or the American Medical Association. There is then even less window for social and economic preparedness, than what the rapid pace of technological development permits. The solution which is touted is merely a stop-gap, and the effect is all the more overwhelming for the flimsiness of the stop-gap, and the fact of it having been touted as the solution.

IX. Crux of Disagreement

Though as human beings we have created safe arenas for our competitive instincts, still they haven't been wholly despatched to the realm of play, to the detriment of our altruism. If an enhanced moral sense is an element of a posthuman mode of being, and if it is expressed, the enlightened state of being would likely disagree profoundly with the founding principle of self-preservation and the atavistic morals this is couched in, if the post-human is afforded the objectivity to do so. The posthuman might feel the residual human part as a drag and would likely seek to advocate, perhaps without meaningful resistance, for its supersession.

Enhancements of "general central capacity" would render environmental influences close to null – preclude social mobility and render the striving of non-enhanced beings futile. The exercise of enhanced moral nature would either instill contempt for non-enhanced persons, in recognition of objective superiority; or the recognition of privilege attending the enhanced moral sense would entail a desire to efface the advantage, efface oneself in recognition that the advancement has been brought about at the cost of the non-enhanced person. Just as how the affluence generated by capitalism has supplied its subjects, through the advantages of mass education, with the means to articulately criticise and deconstruct the same system, so might "posthumans", from the vantage afforded by their progenitors, find fault with the latter's intentions.

Chapter Four – Posthuman Accession: Complications

> "It is not clear that it is any less ethical to allow parents to pick the eye color of their child or to try to create a fetus with a propensity for mathematics than it is to permit them to teach their children the values of a particular religion or require them to play the piano".
>
> —Arthur Caplan, Glenn McGee, and David Magnus, *What is immoral about eugenics?*
>
> "Here the intersubjective nature of the parent-child relationship is conflated with the one-way imposition of a chancy, irreversible genetic alteration during the earliest stages of embryonic development".
>
> —Ruth Hubbard and Stuart Newman, *Yuppie Eugenics*
>
> "Technologically mastered nature now again includes man who (up to now) had, in technology, set himself against it as his master".
>
> —Hans Jonas, "Lasst uns einen Menschen klonieren".

Scientists will continue to successfully identify alleles whose presence confers a higher likelihood of specific pathologies. The general public meanwhile, in attempting to reconcile the predictive power of genome mapping with their perceptual understanding of human characteristics may oversimplify the role of genes in human pathology. This tendency is compounded by the commodification of health.

I. The Omnigenic Model of Complex Traits – Introduction

The value of candidate gene studies is illustrated by research conducted by a Japanese biologist in 1999.[1]

The NDMA receptor is composed of subunits, the chief of which is specified by the NR1 gene. A "knockout" of this gene was found in one experiment to result in reduced memory for the mouse test subject. In another experiment, the researcher injected fragments of the NR2B gene, attached to a promoter, into fertilised mouse eggs, resulting in superior learning skills. This research implies outsized effects pertaining to particular genes, to highly localised excision and insertion.

Whereas pleiotropy, where a single gene or genetic variant influences multiple phenotypic traits, is abundant, candidate genes like NR1 and NRB2 are relatively few. The important role of rare variants in disease aetiology attests to the omnigenic model of complex traits.

In 2002, the first genome-wide association survey (GWAS) was undertaken. The importance of GWAS arose out of recognition that candidate genes do not substantially explain more complex traits, that complexes are attributable to a large number of common variants of small effect. Relying on candidate genes, scientists were confounded by what appeared to be a problem of missing heritability.

To re-iterate, whereas a candidate gene approach is more appropriate for Mendelian disease where the genetic underpinning is a small number of variants with high penetrance, GWAS are useful where phenotypes derive from common variants with small effect sizes.

The polygenic score system was pioneered by Robert Plomin and refers to the GWA catalogue to establish associations between specific SNPs and phenotypic traits, assigning a degree of statistical significance to each. The number of relevant alleles is counted, and a value is assigned to each relevant allele which is equal to its correlation to the trait in question.

The expression of a trait, the phenotype, is measured and the heritability factor describes the extent of the trait's genetic underpinning, across the population. In a Manhattan plot for a specific phenotype, the genomic location (x) is set against the preponderance (y) of single-nucleotide polymorphisms (SNPs).

The finding that traits are affected by a large number of variants has implications for the selfish gene theory.

If there are 10^5 variants which increase height by 0.15mm each, and tall people only manifest a <1% increase in alleles implicated in height, it makes little sense to envisage selection at the level of the individual gene.[2] Since the heuristic of a self-replicating interest can devolve only to an organically embedded constellation of genes, character appraisal for the purpose of mate selection remains more effectively undertaken by the perceptual apparatus than by genomic analysis. Trait entanglement problematises trait optimisation.

By mapping common variants with an effect size of zero on height against variants with a non-zero effect, it was found that 62% of all common SNPs are associated with a non-zero effect on height.[3] Quantitative traits and diseases have been found to be similarly polygenic by origin. The notion of genetic content being discursively appropriated for traits is suggested by the distribution of causal variants both at the level of the chromosome and at smaller chromosome segments – research has shown that each chromosome's contribution to heredity is closely proportional to its length,[4,5] further that signifying factors for schizophrenia are found at 71 – 100% of million-base pair segments.[6]

In the case of schizophrenia, for example, studies have shown that rare variants contribute more to its expression than the types of genes detected through GWAS.[7] As part of one study on height it

was found that 697 genome-wide significant loci for this variable only explained 16% of the phenotypic variance.[8]

The diverse provenance of genes for a given trait is called non-additivity. GWAS research hints at non-additivity correlating with the human-ness of the trait in question, the extent to which higher intellectual functions are implicated, let's say. Hence corporeal phenomena – rheumatoid arthritis, celiac disease, coronary artery disease, type II diseases are associated with around 2,000 trait-associated markers, whereas schizophrenia comes in at around 8,000.

The complex provenance of personality traits casts doubts on the ability of psychiatry or personality science to encapsulate such phenomena with natural language, not least when the condition is more or less exclusively accorded negative valence.

The non-additivity of sophisticated traits finds resonance in the late maturation of the frontal cortex and the relatively limited suffusion of genetic factors on thinking governed by this organ.

Appendix A offers some pointers for further study.

II. Converging Environmental Factors

The presence of a trait might be strongly indicated by an analysis of the subject's genome, only for its transpiration to be scuppered by features of the non-shared environment. The combinatorial explosion as genes interact with this non-shared environment is a practical difficulty for a eugenicist wishing to eradicate or optimise a particular trait, even though some factors in the non-shared environment have predictable effects, and could perhaps be standardised by a totalitarian regime, in this way increasing the contribution of heredity for many traits. There remain for now unsystematic factors of the non-shared environment, what Steve Stewart-Williams describes as "unsystematic, idiosyncratic, or serendipitous events".[9]

Given the incongruence between our ontological, necessarily anthropocentric understanding of human traits, and the syntax of the human genome, desirable traits cannot be immaculately instantiated, especially once changes to the engineered being's eventual milieu are factored, one generation distant.

To re-iterate, even if technocratic government does marshal with good intentions and adroitly the genetic interventions available to it, there is more than genetic syntax to contend with. The consequences of genetic alteration are less foreseeable the more the milieu – the non-shared environment – changes, though of course attempts might be made to strictly control this.

Furthermore, it is not only that the phenotypic tendency of genes is confounded upon interaction with the environment. It is also that the confoundedness of genes as they transpire as phenotypes varies by person.

The eugenicist might argue that there is a power-law, or something approximating that, with regard to resources spent on fine-gauzing the net cast across a generation, such that diminishing returns accrue to efforts at rendering immaculate the inter-generational transmission of excellence. But there is also a power-law, or something approximating it, governing the evolutionary significance accruing to individuals, such that the social cost of inadvertently "engineering" a person out of the gene pool or the mainstream might be under-estimated because the embryo's influence in its eventual human incarnation can be outsized, without this high salience being apparent at the level of the germ-line.

A life more-than-ordinarily moulded by the "noise" of the non-shared environment's unsystematic factors is perhaps more avant-garde – analogous to a genome subject to the "noise" of mutation, exposure to which all evolutionary progress is beholden. If a person whose traits are less heritable is more *interesting*, then more consideration should be given to the non-shared environment in assessing overall heritability – the non-shared environment should be meted salience according to the principle that noise and mutations are significant in the grander scheme.

The fragility of a trait once subjected to inter-generational transmission was empirically understood long before GWAS, and is the basis of Eysenck's recognition that parentage predicts competence far more reliably than it predicts genius.[10] There is an inter-generational regression to the mean, and deficient heritability is supplied by happenstance.

The final problem for the would-be eugenicist is the difficulty of arriving at a meta-polygenic score, what could one day determine an "accession-to-life threshold". The combinatorial explosion here is more impressive still, as the scheme comes up not only against the multifarious genetic predicates of a single complex trait and their partially-environmental provenance, but in the formation of character writ large. In other words, if we could reproduce a celebrated person in another time or place, the transposition would likely be staged to underwhelming effect. One wrong turn, one weak link and the spell is broken.

Culturally-mediated phenotypic change is inevitable but is more empirically sound where the cultural change and the consequent alterations to phenotypic traits is incremental. A culture in which cognitive-enhancing pharmaceuticals, for example, are found expedient for the reformation of human nature entails the alteration of *entrenched* if not *foundational* traits – traits without which cultural and phenotypical progression is still more unforeseeable.

III. GWAS on Race

Genomic changes following migration may be explained by genetic drift – change in the frequency of a gene variant according to random chance – or the environmentally contingent advantage of standing genetic variation – alternative forms of a gene variant at a given locus.

Genome-wide association studies have more bearing on genotype-phenotype associations at the population level than on causal explanations of phenotypes.

Therefore so-called just-so stories about the history of a species remain illustrative – it is no less true that light skin pigmentation and high pheomelanin levels are adaptive in regions where sunlight is sparse, for it being intuitively true. The evolution of sophisticated culture was necessary for settlers seeking to live comfortably and enjoy recreational pursuits in inhospitable conditions. And creating an indoor culture required ingenuity for which there would have been less demand in warmer climes. Yet it appears the races are being subjected to a kind of homeostasis – though certain races are responsible for the culture considered synonymous with advanced civilisation, in promulgating the civilisation, a kind of friction is generated. The culture forged in adversity apparently no longer conduces to childbirth and long-term survival, when that prefiguring adversity subsides.

The capacity to defer gratification was integral to man's transition from hunter-gatherers to agriculturalist. The advantages he enjoyed issued from the setting aside of seeds for the next season, from exercising self-restraint.[11] The irony is that in vouchsafing comfort for ourselves we debar ourselves from many of the chastening experiences that we have evolved to acquire wisdom from.

Selection is increasingly operant in "expanding spheres of sympathy" as the global cognoscenti sets itself apart from the ambient "wild type", quite literally in the case of billionaire preppers for example. Most people agree that while memetic selection has succeeded in keeping the sceptre of eugenics interred, the disfavour shown to procreation is an unfortunate side effect. The ratio of people alive in the nineteenth-century who bore descendants alive today to the number of nineteenth authors who are still read, etc, implies that it is memes more than genes which tend to go the way of the dinosaur.

IV. Epigenetics

As discussed, GWAS do not account for the contribution of rare mutations and offer little by way of narrative explanation for complex traits. For explanations of complex traits, people are turning to epigenetic factors, and at minimum these take their place among the inherently probabilistic phenomena instrumental in guiding human development, as "artefacts" of the non-shared environment.

It is widely understood that an organism's co-ordinated development is mediated by the molecular epigenetic mechanisms which modify chromatin structure. Epigenetic modifications are largely responsible for the differential behaviour of grasshoppers and locusts, for example; organisms with identical DNA structures. The same is true of workers bees and queen bees.

Identical DNA notwithstanding, the queen grows to be larger and is singled out as the colony's reproductive unit.[12]

However, it is disputed to what extent intergenerational epigenetic inheritance troubles the paradigm of genetic inheritability. See appendix B for a more detailed discussion of epigenetic transmission.

V. Dissolution, Dissipation

> "While wholes can be traced back to their simpler antecedent parts, there is no simple predictive model that allows us to move from the parts to the emergent behaviors of the wholes. Being nonlinear, they may be extremely sensitive to small differences in starting conditions and thus may appear chaotic even when their behavior is completely deterministic".
>
> —Francis Fukuyama, *Our Posthuman Future*.

Is 'Superintelligence' Nick Bostrom estimates the number of operations required to re-capitulate evolution on Earth to the present day at between 10^{31} and 10^{44}.[13] A rational atheist might take this number as the bar for the evolutionarily-ordained checks-and-balances that find us as conscious beings with matters arranged neatly for us. While we might hope to aspire to rather more with rather less, us being, unlike the proverbial Blind Watchmaker, possessed of intelligence, still we are the thing we endeavour to act upon and must expect to be confounded by infinite regress (see chapter one – III). As such we might need that full complement of operations to vouchsafe a human-compatible future. Perhaps Voltaire was wrong and ours is the best of all possible worlds.[14] Perhaps it is under the auspices of transhumanism, or any dis- or scarcely-continuous technological progress, like the advent of AI's recursive self improvement, that we commit ourselves to one of all possible worlds, though the vast majority might terminate in darkness.

As energy is transferred from one trophic level to the next, a small percentage of the organic matter is assimilated – many carnivorous humans are responsible for the deaths of hundreds or thousands of animals (see also chapter one – III). Some people would not feel comfortable equating the life of a human being to any number of chickens, pigs, sheep or cows, but utilitarians calculating thus would presumably not mark the moment when the neurons aggregated in the consumed livestock exceeded the human consumer's own endowment. Correspondingly, the parts of the mind which are distinctly human are the most vulnerable, as von economo neurons, a uniquely human type of neuron, are in the case of frontal-temporal dementia. People should be wary of seemingly slight curtailments of consciousness or indeed culture, a semblance of a collective mind. In Uploading, Ralph Merkle writes "I don't die even if tens of thousands of neurons do. In fact, I usually don't even notice the loss".[15] But people would

notice the effects of anti-psychotic medication, because the dopaminergic neurotransmission this medication attenuates impacts higher brain activity. These drugs are prescribed for depression, obsessive-compulsive disorder (OCD), post-traumatic stress disorder, personality disorders, Tourette's syndrome, autism, and agitation in dementia.[16]

In general, with richer stimulus, baseline satisfaction is diminished, basic joie de vivre is dulled. The unalloyed yet hyper-indulged person is anhedonic – can no more thrive in the niche evolved to accommodate him than a thirteenth-century person could in the novel milieu of the exapted modern person. Common heritage notwithstanding, the one knows little enough of the other to prescribe for him the conditions of his life. Yet, prescribe is what we do with respect to the eventual post-humans whose nature emerges no less as a consequence of our forays into exaptation, for those forays being conceived in ignorance of the destination state of the post-human.

The technology to upload consciousness to a digital substrate is far enough away that in the interim, in view of intervening technologies, the aforementioned exaptation renders us ever more insouciant of the "lossiness" of the transformation, insouciance which warrants further lossiness. And the insouciance is not limited to our heritage – dazzled by ephemeral happiness, we risk failing to anticipate the encounter between the persons which ultimately transpire from our exaptation and the milieu they inhabit, as well as the objective value of the consciousness which emerges from the interaction: with an augmented satisfaction threshold, there is not only the problem of insatiability, but hyper-sensitivity to normal stressors, which is repugnant when not accompanied by superior sense. Even though the objective degeneration would be noticed more keenly by someone otherwise situated, self-recognition of debasement might be far enough underway that post-humanity is ceded to without much fightback.

VI. Untenable Regret

With pre-implantation genetic diagnosis and the option to discard embryos which, though viable, would have transpired in persons with disability, the opinion that a disabled life is not worth living may gain acceptance. It is an affront to the self-esteem of a disabled individual which is equal and opposite to the affront to the enhanced individual, when condemning, post-hoc, the genetic manipulation his life is beholden to. If we aren't going to refrain from affronting people whose existence wouldn't have been effectuated had their existence been contingent on deliberation in a post-screening world, then neither should we legislate against the abolition of genetic manipulation out of concern for the feelings of prospective, genetically enhanced persons.

Bostrom draws an analogy to IVF with respect to the oppression felt by a posthuman being on gaining understanding of his or her artificial origins, "Similarly ominous forecasts were made in the seventies about the severe psychological damage that children conceived through in vitro fertilisation would suffer upon learning that they originated from a test tube – a prediction that

turned out to be entirely false".[17] However, when considering the self-conception of persons born of IVF, we must acknowledge the role played by the wider society, the sensitivity it extends. Without advocating for the revocation of IVF therapy, a consensus on its revocation is implausible precisely because it would be inconsistent with maintaining equivalence between the self-conception of living persons born of IVF and those not born of IVF.

Taboos around discussing the desirability of medical procedures are appropriate when the impact of the procedure is mostly limited to the direct recipient, the more so when it is a fait accompli: relevant examples include gender re-assignment for adults or in vitro fertilisation. But discourse must be allowed, and allowed to transpire in censure, where the repercussions of the practices and behaviour in question are not substantially limited to the individual. It is a matter of some urgency because the cultivation of intuitions around proto-transhuman interventions could be followed in short order by the progression of interventions from proto- to fully-transhuman.

After the event, the subject of post-human enhancement may be loathe to recognise, much less report, the outcome as unfavourable, in view of it being likely irreversible. Moreover, as the irrevocably altered person is no longer the same person, he is not especially interested either in the integrity of his former self, or the integrity of a prospective enhance-e, with whom he doesn't even share memories. It is not the case that "each step of the transformation process is freely and competently chosen by the subject".[18]

In the absence of adequate controls, sympathy for the *made* contingent's autonomy intrudes on the lives of the *grown*: a normative duty of care towards the made individual would likely consist of de-differentiation between the made and grown in legal terms, entailing the de-legitimisation of remedial measures for better representation of the interests of the grown in a competitive milieu which inevitably favours those engineered in calibration to it.

In emulating the reasoning of evolutionary biologists, Dupré summarises the argument of some evolutionary biologists thus, "those men without the resources to purchase women will fall back on the alternative strategy of raping women. Rapists, therefore, will turn out to be unsuccessful, marginalized men".[19] If mere socio-economic disadvantage renders a person the object of this order of suspicion, a made cohort, more fundamentally disadvantaged, might expect to attract graver censure still, by their resistance, cast as intransigence.

VII. Disjointed Generational Succession

From disjointedness within a lifespan, let us briefly treat disjointedness between generations.

Evolution has determined that plasticity during the intra-uterine phase of development is beneficial, since barring monumental environmental changes within a single generation, the environment which determines intra-uterine conditions and produces epigenetic effects in the offspring is sufficiently similar to the environment which the transpired embryo, the fully-grown

person, is going to inhabit. However, nature's steady-state hypothesis is being challenged as the conditions of successive generations resemble foregoing generations less and less. In a certain sense, the milieu of the next generation is the crystallisation of scientific endeavour, but for this reason the lessons of the parents are inaccessible to the children, conceived as the parents were in an antiquated circumstance. The children must, to some extent, learn on the fly, refer to whatever wisdom their own self-guided existential forays, which are necessarily limited, yield. Owing to the mismatch between the environment of the child's gestation and its adulthood, there is also a mismatch between the epigenetically-mediated traits which would have conferred fitness in the steady-state counterfactual and those which transpire in sooth. A clinician might reason that it devolves to science to resolve the mismatch which our fast-changing world produces between the traits a child is endowed with and a world in which these traits are redundant in favour of the world, to place the burden of adaptation at the individual's door, though the zeitgeist demands of her contortions. The alternative is to gainsay the zeitgeist somehow; to restore, to some degree, the tradition of lineal trait succession.

The maxim that the sins of the father are inherited by the sons should not be read as an injunction. It is rather that the earthly impunity visited upon the father makes the perpetuation of his likeness, the transmission of his character, more probable than it would be had justice been visited. As such, even before the age when responsibility can be assumed by the child, he courts misfortune by repeating the familiar pattern. It is as if the child has inherited sin in a literal sense, though in knowing disappointment, his character might be improved.

A high degree of disinterestedness is demanded of parental love when the child's merits not only find no resonance in the nature of the parent but are forged in spite of him. This is likely more demanding than resisting whatever inducements to sin on the father's part resulted in the forced divergence of the child. As such, the issue is likely to be further self-deception.

Chapter Five – Mind-Body Paradigm

I. Constitutional Psychology

The trouble a myopic person might be put to as a hunter-gatherer is sometimes adduced in favour of modern conveniences, of which eyeglasses are one.

In earlier civilisations myopic individuals with good short-sight might have been set to close work – bushcraft tasks requiring precision, say. Perhaps short-sightedness often forms part of a constellation of traits among which is a susceptibility to over-stimulation, such that billboards and eye contact with passing women, say, is more deranging than for their long-sighted counterparts. Who knows but that it's better to sometimes leave glasses off, if only to avoid disappointment.

Suddenly becoming much taller might occasion disturbance too, because the height enhanced person retains the mental characteristics which comport with the perspective of a person who has always been short. Perhaps a smaller heart, in absolute terms and / or relative to the size of the brain, accounts for the more pragmatic disposition observed in smaller people; I propose that this pragmatic disposition has a place alongside inferiority complex and adaptive strategy,[1,2] as an explanation for the negative correlation between height / height satisfaction and dark triad traits in a recent study.[3]

I propose that as the body serves the mind as the physical manifestation of the mind's predilections, the body determines the cast of mind.

Although morphology is mutable, mutability is not potentiality in the sense imagined by a morphological liberal and other social constructionists. Genes are expressed psychosomatically, are involved at once in the phenotypic expression of physical and mental attributes.

To speak of "one's right to one's body, not just self-ownership but also the right to modify oneself according to one's desires" implies a seat of identity remote from the physical self,[4] as if the design concepts to be applied are in no way determined by the physical constitution of the person, though our physical arousal and the strength of our feelings determines the nature of our thoughts, as well as our conditioned responses.

Appendix C considers the impression left by the mind-body correspondence and physiognomy on the popular imagination, as captured by English idiomatic expressions.

II. Veil of Ignorance

In 'A Theory of Justice', John Rawls questions how a society would be structured if its founders didn't know what their place was to be within it.[5] It is implied that all possible attributes and traits exist independently of a pre-existing core personhood, and that it is this core personhood which is consulted during the exercise.

Proponents of the Rational Contractor theory and utilitarian philosophers might take Providence into their own hands by investing hundreds of billions of dollars in life-sustaining treatment, reasoning that more is achieved for humanity in this way than by the enhancement of mere convenience and other kinds of utility higher on Maslow's hierarchy of needs. One must recognise however that disease states often ensue from a chronically diminished vitality, which limits the potential for remediation; if remediation is effected, it might be effected by altering the life somewhat beyond recognition, constituting a discontinuity of a greater violence perhaps than the disease course.

A doctor confronted by a patient stricken with a serious illness may yet not – unless the illness is directly attributable to precipitating behaviours, such as smoking or indulgence in excessive drinking – view morbidity as something other than a chance visitation, something other than a misfortune befalling the patient which could just as easily have befallen someone else, even himself. But like the participant in John Rawls' Veil of Ignorance, the doctor acts on insufficient information.

The visitation theory of disease as a polite fiction may prevent the patient from fortifying himself in the proper manner, to assist in her recovery. If a behaviour is implicated in the disease then it is remiss to ascribe irrevocability to it presumptively.

That is not to say we should not with-hold of sympathy from smokers with lung disease any more than we should offer compensation to disabled people for their disability.

It is popularly supposed that alcoholics are not as deserving of a liver transplant as other sufferers of liver failure, and this supposition does appeal to intuition because the volition of an alcoholic is evidently implicated if liver disease emerges. However, there potentially remain other precipitating factors which are retrospectively attributable to behavioural change, with adequate knowledge of disease pathways. Many genes have pleiotropic effects, so there are often behavioural correlates to disease phenotypes, such that proximate causes of disease might be interchangeable in the event of an underlying weakness or affliction being indicated.

Moreover, even when the disparity between the liver and the other organs is stark, and the proximate cause is indubitably self-inflicted harm, still the relative vigour of the alcoholic's other organs is a better match for a new liver than organs attesting to the more indiscriminate ravages of time, those found in aged persons. For all the alcoholic's supposed promiscuity, he can reasonably expect to live longer than one for whom more complete organ failure is not a distant prospect.

People might be prone to exercising kindness rather too instinctively, granting far less solicitude to alcoholics than to cancer-stricken children, when the two are rather in the same boat.

III. Wealth and Healthcare Provisions

Most people do not begrudge individuals with certain skills and proclivities the privileges they enjoy, even though consumer utility below a certain level does constitute deprivation.[6] It is notable therefore that even in the USA 57% of people support government-underwritten universal healthcare;[7] it's notable that inequality of outcome arising from variable marketable skill is considered equitable whereas differential health outcomes are vigorously resisted.

The inconsistency is perhaps partly attributable to an under-appreciation of the relationship between relative poverty and health outcomes, and partly to a complacent intuition that the absence of marketable skill, resulting in relative poverty, always concurs with insensibility or a disinclination to contribute to society.

With governments feeling duty-bound to instantiate equality of outcome in health terms, thereby arrogating to themselves the power of arbitration in matters of vitality, perhaps there is at present little more than squeamishness preventing the adoption of policies such as John Harris's "survival lottery" where the murder of healthy members of society is justified by the many lives their organs could save, in the event of them being disbursed en masse.[8]

IV. Modern Medical Doctors

Beginning in the early twentieth century the emergence of evidence-based medicine heralded a shift in the locus of authority from the doctor to the laboratory, as "direct observations from clinical experiments (became the) explicit basis for clinical decision making".[9]

Traditionally a doctor is an expert whose authority rests on the integration of a theoretical understanding of physical processes with intuitions about how clinical symptoms might be interpreted – intuition derived from clinical experience. In recent decades, much of a medical doctor's work has already been outsourced to research laboratories and the autonomy of a medical doctor is limited. While her hands are tied and her job waxes monotonous, the patient senses himself being reduced to "impersonal datasets" as he recognises that the author of his treatment modality is not someone to whom he will ever be personally known.[10]

The detection of a biomarker enables clinicians to infer the incidence of a particular disease among sub-populations. However, knowledge of the biomarker does not enhance understanding of the disease process, does not provide "information on the likely course of a disease in an untreated individual";[11] therefore the deterministic attitude which knowledge of the biomarker demands of the patient is perhaps unseemly. There is something like an uncanny valley where the

individual is presented with a kind of verdict without having gained knowledge which can bear upon her health outcomes.

Though personalised in a sense then, EBM is experienced as insufficiently person-centred and patients with less critical conditions increasingly opt for naturopathic therapy. What is lacking here in the way of evidence base is made up for by clinician talking time. Moreover, naturopathic treatment, however arbitrarily it is meted, is at least devised by the person the patient confides in. The bias in orthodox medicine for cure over prevention is reasonable if the patient's overall health is so compromised that the negation of peripatetic symptoms is the only possible therapeutic input. This is rightfully the concern of the general practitioner, whose professional remit at present is highly circumscribed.

Evidence-based medicine offers the industry up to AI because human intelligence per se no more than the holistic paradigm lends itself to the reckoning of a patient's situation by a limited number of metrics. Medical doctors too play to their weakness.

V. Placebos of Uncertainty and Self-Efficacy

The disintegration of rationality at the point of physical death is a corollary of the body producing fever and delirium in its struggle against a pathogen; at such time as survival ceases to be conceivable, survival ceases to be an object. Rationality, insofar as it is engaged with self-preservation, becomes a liability when there is imminently no self to preserve. For rationality to impart the wealth of conscious experience to the settling of legacy, it must not have been fixed on the self. In any case, the wholly rational perspective of a clinician, even a sanguine one, is jarring, the more so if there is no genuine solicitude for the individual's soul.

Advocates of patient autonomy may suppose that withholding a patient's medical prognosis is unethical – hearkens back to medical paternalism. In his 1927 essay, 'Should Doctors Tell the Truth,' Joseph Collins tells the story of patients who, having demanded a candid representation of their prognosis, consequently underwent rapid deterioration.[12] These cases proved to him the expediency of lying against his instinct for veracity. While positively misrepresenting the truth is probably unconscionable and certainly unfeasible in a modern clinical setting, there is an intersection of veracity and artfulness which a clinician must locate in recognition that fear is, as Collins puts it, the "medium in which disease waxes strong". It is after all emancipatory to have choices and beneficial to live without fear.[13]

The difference between telling the whole truth and refraining from telling a lie is subtle, and doing the latter while refraining from the former is neither taught nor selected for. It is perhaps for this reason, among others, that the usurpation of medical professionals by artificial intelligence occasions us less disquiet than former generations might have supposed it would, they whose medical doctors were encouraged to garner and exercise clinical intuition.

The success of placebo-based treatments attests to the importance of uncertainty in health outcomes, in the sense that wherever a poor prognosis is not born out, this is likely attributable in some measure to hope. While optimism to the point of ignorance is not life-affirming, the de-subjectification of the patient and the couching of his destiny in biochemical terms – as the subject of the disease process whose course is probabilistically bound – invites material demoralisation – clinically, the *nocebo* effect. This effect is enhanced still further if the gravity of the illness is exaggerated to better ensure compliance.

The nocebo effect is powerful. It probably accounts for the curse of the pharaohs whereby the thought of how an ancient person would feel about one who desecrates the object of the ancient person's reverence plays heavy on the mind of the archaeologist.

Shlomo Cohen "[underscores] the significant moral liability of the caregiver when creating a nocebo effect in the patient and the gravity of the moral responsibility to prevent it".[14]

The way statistics are framed bears greatly on risk perception, and while purveyors of media employ techniques to sensationalise risk and exploit the power of suggestion, in a clinical setting controls can be introduced to contextualise risks and mitigate their suggestive power, which might be enhanced if the patient's conceptual grasp of statistics is weak. The nocebo effect of "educating for informed consent" can be attenuated.

VI. Visitation of Disease

As discussed in chapter one – III, if human beings and bacteria were distinct magisteria, it would be unreasonable to refrain from manipulating bacteria out of concern for bacterial integrity: we do not cavil at having disregarded their autonomy in the way of assimilating them. But we owe our exalted station to the co-option of certain lower life forms nonetheless. And the symbiosis persists, as intestinal and other microbiomes attest.

The two competing theories of pathogenesis in the nineteenth century were germ theory and terrain theory. Germ theory was expounded by Louis Pasteur who posited that exposure to a pathogen is the primary determinant of pathology. According to the "terrain" theory of infection expounded by Claude Bernard however, pathogens require fertile ground to take hold. Public health measures implemented across the world in response to the recent pandemic express favour for avoidance over resistance, for Pasteur's theory over Bernard's.

In seeking to transcend lower nature, but merely suppressing it, we risk debasing higher nature. As ecosystems consisting of symbiotic parts are subverted and synthetic organisms are introduced in their stead – organisms which share no heritage with the organisms they reside among – we are cast adrift from our evolutionary heritage; we feel less aversion to, and so less urgency to moderate, artificially intelligence life forms.

And so, in deciding malaria is an unalloyed evil for example, the evils attending the counterfactual must be reckoned with. If the alternative to malaria is starvation for example, and starvation portends more privation than malaria, then dying from malaria feels like mercy, as pneumonia is said to for very old people.[15,16] A utilitarian must factor the peril attending neglect of the second-order effects of the mosquito's eradication. In order to more effectively address the mosquito problem, we must satisfactorily address more essential problems like the repugnant conclusion / mere addition paradox vis-à-vis lebensraum. To successfully arbitrate between competing perspectives demands the humility to entertain diverse even irrational perspectives in the first place, so that some success might be enjoyed in the arraying and prioritising of variform species of good.

VII. Organising Principles

Of course it is out of respect for the sophistication of the human organism's governing principles that the evidentiary threshold is high for a therapeutic intervention. The role of testosterone in increasing the pervasiveness of prostate cancer is settled science, while the hypothesis that psychological traits or emotional states can bear upon the emergence of disease remains controversial. The more microscopic the examination of physical processes in the human body, the more difficult it is to imagine the organism being subject to organising principles that are evident at the level of unadulterated perception, but are nonetheless operant for all that.

It is a tragedy of probabilistic-realist prognostication that patients who take the risk seriously enough to take drastic prophylactic action may be those who are most inclined to commit to prophylaxis by other means, like behavioural modification; to thereby render the drastic action less necessary. For example, it might be just the kind of person who would submit to a double mastectomy in response to the discovery of a mutation on her BRCA1 gene who could forego cigarettes and aluminium deodorant. Or perhaps the kind of person who would forego these things is less likely to have this kind of mutation. In any case, by under-weighting behaviour modification and pursuing the more certain, but more drastic form of prophylaxis, risk of mortality from other causes might increase subsequent to the drastic intervention, in which case the risk posed by the errant allele, say, is merely displaced, to some degree. Perhaps the altered self-image consequent to a double mastectomy precipitates depression, with depression's attendant hazards, for example. A universal probabilistic estimate which accounts for an incomplete range of morbidity dispositors is unreliable: "probability doesn't exist outside us at all".[17] It is incumbent on specialists to caveat their forecasts with an acknowledgement that uncertainty is always second best.

VIII. Within and Across lifetimes

Intuitively the presence of pain indicates disease. While in some conditions like pancreatic cancer, pain isn't felt until the illness has progressed to an advanced stage, there are in all cases health signs which are to some degree intuitively available – debility or discomfort is experienced in related parts or systems.

The discipline of psychoneuroimmunology / psychoneuroimmunoendocrinology is advancing the mind-body paradigm. There is some evidence that people who repress emotions are disproportionately predisposed to cancer;[18] the correlation is attributed to chronic stress which, in producing a heightened and persistent state of physical arousal, results in the dysregulation of the immune system via, among other paths, a reduction of NK and T cells and lower secretions of corticotropin-releasing hormone, which reduces inflammation.[19]

The cells of rats subjected to low maternal LG (licking and grooming) behaviour produce more cortisol-releasing hormone than peers subjected to high LG in response to adrenaline following identification of a stressor. And rats with lower LG are slower to revert to a baseline level of stress. CRH and adrenaline are engaged in a positive feedback cycle: fearful behaviour induces the release of CRH which in turn signals to the adrenal glands to release adrenaline; this suppresses the immune system while increasing access to energy. The extent to which the hypothalamus slows its production of CRH depends on the production of another glucocorticoid which is produced in the hippocampus when a glucocorticoid receptor, having bound to ambient adrenaline, moves to the nucleus and functions as a transcription factor, ultimately causing the hypothalamus to produce less CRH, which dampens the stress response.[20]

The early experience of stress can result in a chronic state of heightened arousal in which the person experiences emotion which is appropriate in response to danger, but when danger is objectively absent. This response can be mediated by epigenetic modification of the glucocorticoid receptor gene, as in the case survivors of the Rwandan genocide.[21]

There is evidence too that the heightened stress response characteristic of PTSD can endure trans-generationally.[22]

Indiscriminate reactivity sees the threat persist like a siren call to arms; that is not to say that the perceived threat elicits the same kind of excitement that commensurate threat perception would to a non-traumatised subject. There is perhaps a chilling, automatic quality to the chronic reactivity, inherent expertise productive of callous disregard for the less naturally suspicious person, for the fear responses exhibited by psychologically normal people.

An especially pragmatic orientation might develop out of early childhood difficulties, as neglect gives rise to resourcefulness. Likewise arrested development might be the issue of the premature assumption of adult responsibilities, being the older sibling in a single-parent family for instance. Sometimes forced rhubarb is sweet rhubarb, sometimes precocious wisdom flourishes. However, it

is important to not set up a person or people for failure in whose constitution a groundwork is firmly laid for cruelty, self-conceit and / or cynical pragmatism.

The forcing principle is operative with the role of anger in the temporary restoration of acuity in dementia patients. To appreciate the role of anger in logic, one need only recall the incisiveness of an argument or indeed insult conceived in anger. Presumably the beneficial effects of testosterone administration for patients of dementia are attributable to the detention of the patient in a martial state of mind,[23] this being productive of lucid moments, though also possibly testosterone-driven diseases like prostate cancer. It is reminiscent of some contemporary longevity drugs, whose mechanism boils down to chemical starvation: the organism profits in some way from the withholding of satiety as the senile adult does from the with-holding of serenity and the child does from the with-holding of care; though satiety, serenity and care are clamoured for.

IX. Illness and Martyrdom

In his book, 'When the Body Says No,'[24] Gabor Maté, a former medical doctor, reflects on and reproduces testimony of patients afflicted with serious and often rare conditions, who were relatively young at the time of diagnosis. He makes a case that understanding the provenance of the illness entails taking account of the existential self-denial practiced by the patients. This unorthodox disease aetiology is formalised in the emerging discipline of psychoneuroimmunology / psychoneuroimmunoendocrinology.

On the basis of death being the "wages of sin", many Christian theologians upheld that misfortune should be understood as the visitation of divine retribution for the purpose of chastening the sinner, that she might be returned to the path of righteous deeds and thoughts.

By Eysenck's nomenclature,[25] Type C persons are supposed to be cancer-prone and are characterised: "1) by a tendency to suppress emotions like anxiety and anger and 2) by a difficulty in coping with stress and the development of feelings of hopelessness, helplessness, and depression".

To Gabor Maté though, the type C person is a martyr, suffering the burden which would otherwise appertain to people around the patient.[26] The burden becomes too much to bear, and is manifest as disease. "Rude health" is not enjoyed by the kind person, or so it goes: the fact of un-ease preceding dis-ease is supposed to justify the adoption of victimhood.

Though neither the heaping of glory nor censure is quite just, both mount a fair challenge to the contemporary medical approach to patient care, which as discussed in chapter five – part two, employs reasoning of the kind which underpins John Rawls' Veil of Ignorance (see chapter five – II).

Since civic duty as defined by prevailing authorities may not be classically altruistic, non-compliance does not always imply exorbitant selfishness: the civilisation has not advanced so far that the best efforts of its citizens are realised reliably enough for that judgement to hold. Indeed the variability of deprivation experienced is high; some people will experience the civilisation as another might a pathogen. It can be counted as a blessing then that psychic exhaustion cannot be endured indefinitely without the manifestation of physical disease. The suicidal person may be well-advised to wait on his physical condition aligning itself to the condition of his psyche, to wait on the merciful attenuation of his desires, desires which are otherwise frustrated. It can also happen that sympathy is forthcoming in respect of his despair being self-evident, though sympathy might be a poor substitute for the participation which remains withheld by society.

In this case, we might counsel the suicidal person to persevere, but as with the person whose life is prolonged beyond what would otherwise be its scope, we cannot invariably insist on the natural course, due to the natural course having already been subverted.

X. Salutary Suffering

A person receives patronage, even kindness, from his government in times of ill health, but to some extent her cure is recompense for having been forced to live in a manner which is incongruous with her personality, by the type of work and the tenor of correspondence, etc. To live in such a way as to optimally forestall illness would likely have been incompatible with the exercise of her proximate duties.

At the same we hope others are inspired by whatever courage and candour we can summon, and we take care to cast the bitterness out of our hearts, to pledge a future to our children and grand-children where they are accepted for who they are, and where what they are is a boon to family, community and society.

Even following a cure, it is better to learn the lesson of the illness, to change one's life so as to accommodate the symptoms, the signs of maladjustment; to find an environment you are adjusted to. In other words to live, as far as possible, how you would have needed to to not have required treatment, treatment which is to some degree a messy form of recompense. It is when we fall prey to misfortune that the weakness of our intuitions is laid bare; any activity which holds us in awe facilitates the destruction of pernicious habits, effects our re-generation.

It is better not to be too indebted to the scientist who changed the course of several million lives in one fell swoop, since he could hardly have arrived at his prescription with his own particular circumstances in mind. "Moderation in all things" of course extends to stoicism and other inducements to inordinate pride.

XI. Evidence-Based Medicine

It is difficult to appreciate the higher-level effects of nanotechnology in medicine because the higher-level effects are remote from the realm which is explored and exploited. Uncertainty about the quantum principles which bear upon matter at the nanoscale, compounds the problem of reliable prognostication.

For example, arrays of nanoscale sensors capable of sensing volatile vapours can detect biomarkers from a breath sample, yet this data unaccompanied by customised morbidity thresholds could do more harm than good.

To transpose principles from one realm to the other is like projecting the incidence of societally-relevant behaviour from the state of measurable impulses – impulses are subject to modification as the individual negotiates not only with extraneous circumstances but with higher-level motivations. The fact that these motivations are difficult to measure does not prevent them from being a confounding variable.

The greater the accuracy of the prognostication, based on the presence of certain symptoms or a certain assortment of alleles, the less the patient's own autonomy is considered instrumental in health outcomes, and the more the patient views his organism and thus personhood through the lens of the artificial intelligence which scrutinises him.

Structure-based drug design with AlphaFold, combined with advanced diagnostics could move us out of an "uncanny valley" of knowledge is unmatched by agency.

Chapter Six – In Defence of Magical Thinking

> "It is a shame that this word, myth, which originally signified nothing more than stories of the supernatural, has come to be regarded as synonymous with falsehood, when in fact myths are always true. By their very nature myths inhere both legitimacy and credibility. Whatever truths they convey have little to do with historical fact. To ask whether Moses actually parted the Red Sea, or whether Jesus truly raised Lazarus from the dead, or whether the word of God indeed poured through the lips of Muhammad, is to ask totally irrelevant questions. The only question that matters with regard to a religion and its mythology is "What do these stories mean?""
>
> —Reza Aslan, *No God but God: The Origins, Evolution, and Future of Islam*.

I. Old and New Worlds

Clearly the pain and boredom thresholds of people looking forward to lives as tenant farmers in the thirteenth century, not to mention their hopes and values, are different from the denizens of indoor spaces and the internet who populate modern-day Europe and America.

Being so differently constituted from our pre-scientific cousins in respect of our social conditioning, it is difficult to attain objectivity with respect to the virtue of the conditioning. Given the hazard of such a judgement, it is problematic then to prescribe benevolent reform for people in the world whose environment more closely resembles the environment of the pre-scientific era.

Although it remains polite to disavow racial difference, the lie is given to equity while comparative advantage determines global allocation of industry. A nation exercising first-mover advantage establishes dominance in perpetuity on behalf of its whole citizenry. Few would maintain all of these citizens are entirely ill-suited to less-skilled labour, maintain that privileged countries have little real "working class", yet that is what the theory of comparative advantage implies, to the detriment of that working class in wealthy countries as much as the "middle class" in poorer ones. This theory in practice causes the overlap in skill potential between world regions to be disregarded. Wealthy nations are privileged in the short term but are eventually vulnerable without command of their supplies, given an always-changing and often-volatile geopolitical situation.

'Why not bring Muhammed to the mountain?' it is said – resolve by immigration the differential between the sophistication of a country's economy and the calibre of its citizenry, in terms of their monetisable skill; like the Nazis "re-patriating" people with Aryan characteristics from non-Aryan countries. It is certainly easier to achieve, logistically, than de-globalising the economy; than

“re-patriating” supply chains. But it is not easy politically, and that is because the sympathetic bond between compatriots is not purely a function of differential monetisable skill.

The moral degradations which impress an observer with the importance of defining morality at the same time militate against the cultural forerunners to moral action from being established. It is difficult to reckon with the fact of the culture which is partaken of being just ephemera; and it is a more difficult problem still on account of the prevailing culture impressing its participants with a sense of their own moral and intellectual inviolability.

Beholding art and literature which pre-dates the revelations of modern science and yet is unsurpassed, we submit to a pre-enlightenment understanding of natural laws and human nature. And in recognition of these works having been inspired by a pre-scientific understanding of reality, we conclude that supernatural belief continues to contribute to our understanding of the cosmos.

Lacking contrivances other than religion to drive out harsher realities, pre-scientific homo sapiens accommodated the other with the establishment of and adherence to belief systems which tended to the emotional life of man, which offered recompense for the ever-present prospect of death whose approach was charted all the better for the preceding lucidity which, it is painful to say, the absence of opiates may better realise.

In a civilisation where progress is modest, it is at least steady. By conditioning individuals to regard their lives as units on a grand continuum, the past and the future were as a vista across which generations would take their place serenely if not peaceably.

II. Atheism and Overthinking

The rhetoric atheists employ when engaging religious adherents presumably feels proportionate given that their religious counterparts are perceived to be epistemically undisciplined. After all, their own claims are purged of nonsense by the scrutiny of jealous peers. However, this peer-enforced epistemic humility comes with permission to deal with outsiders offhandedly. As such it is reckless to take the repudiations offered by atheists at face value.

It is said that if people, differently circumstanced, can clearly define conditions which are invariably productive of well-being or despair, here is the beginning of an ineffable, universal value system.[1] The premise that human volition is instrumental neither in good nor evil itself has ramifications: given some suffering is inevitable, the manner in which suffering is borne is paramount.

For people who live more by instinct, the strong emotions which attend extremities of experience, including experiences which could be classed as painful, refine intuition.

In adulthood, it is generally by the accompaniment of extreme emotions that events and new behaviours are committed to memory and habit. This is fortuitous because the waxing hideboundedness which tends to come with advancing years entails an attachment to life, and the continuation of life demands rejuvenation. And as long as differential experience has subjective value, according to the hard problem of consciousness, experience unmediated by expertise complements instruction which is impersonal.

The inclination to suspend disbelief and seek the paths of Providence tends to be weaker the more highly developed the reasoning faculty. Like a drug user seeking to dampen vitality of which there is an excess, the intellectual atheist needs more courage to suspend his reason than an ordinary person.

Among atheists, there are many who believe that faith is not only baseless but pernicious; these are anti-missionaries who seek to dispel religious ideology. Then there are moderate yet still politicised atheists who, though not avowedly accommodationist, tolerate faith to tide over the world's poor until the latter can be persuaded by materialist accounts of reality. Both schools look upon religion as a social construct but differ in the value they accord to it.

Religious susceptibility is inversely correlated with IQ and IQ is underpinned by genetic factors, of which ethnicity is one. To proselytise about rational thought to the world's religious poor requires either suspending belief in the inverse correlation between religious susceptibility and IQ, or in the genetic provenance of IQ. For the world's religious poor, a life without magical thinking is a life without sophisticated thought.

In 'The Biology of Ultimate Concern', Theodosius Dobzhansky defines self-awareness as self-transcendence, with man coming to see himself as an object among others;[2] Crane Brinton holds that but for exceptions, men cannot abstain from metaphysics; that to attempt it is for the higher intellectual faculty to be diverted into unprofitable channels.[3]

For the better systematisation of mundane affairs, a person risks estranging himself from his perceptive faculty. A person plays God but in doing so is as a lover deprived of the society of his beloved; he assimilates the subject of his affection into himself. And while the person for whom scientific enquiry is itself culture is – by his engagement with scientific enquiry – sufficiently occupied as to be heedless of the anxiety which a universe without volition, or the illusion thereof, engenders, one for whom science is, at most, a facilitator of culture, can be, by the leisure scientific progress engenders, abandoned to existential forays which are abortive, tending as they do, not to God, but to the prevailing culture within which he is at pains to participate, according to his strangeness – as far as the authors of the culture are concerned: by his disinclination to exercise, or incapacity to partake of, scientific reasoning, he is unable to partake of a meaningful existence.

III. Instinct

It is likely that a person whose reasoning faculty has presided over life choices would consider the abolition of suffering as a policy without drawback. Yet, given that everyone suffers, even those inclined to understand life primarily by logic, everyone can remember an inconvenience being instructive, and then "scale up" the significance of this episode to enter into the world view of a person differently constituted, who is not necessarily inferior for it.

Modern science tells us that bats are likely to be vectors of zoonotic diseases because they have a similar immune system to ours, moreover that zoonotic disease is rendered more transmissible by the circumstance of bats flying.

But myth delivers us up to a corresponding intuition about bats according to their strangeness – the juxtaposition of a mammalian body and an impressive pair of wings.

The circumstance of dwindling wild creatures being cornered and forced into novel co-habitation offers terrain for the evolution of viruses, and was the circumstance which the fabrication of viruses like SARS-CoV-19 was supposed to guard against. The poetic justice is possibly not lost on environmentalists interested in harmony between future persons and the natural world.

Without being subjected in some measure to the limits nature imposes on animals, it is difficult to have true sympathy with the natural world and to speak on its behalf, since these limits to a large extent define animal experience.

IV. Accommodationism

Many humanists believe that God can be abstracted from religion – that religious precepts abstracted from divine law lose little of importance, and that the post-modern construction of humanism retrofitted to the arguably hollow edifice of monotheistic religion is cohesive.

Humanism is not so far from the Catholic Church which is supposed to intercede on behalf of God. The Church's success in crystallising wisdom owes much to the fact that the core around which the establishment was built – the life and teachings of Jesus of Nazareth – is amorphous.

Just as religious people yearn for communion with God, so might scientists seek to re-capitulate the beginning of time as we know it; initiate a second singularity. Epistemic humility notwithstanding, the collective ego of the scientific edifice can be indulged and generality imputed to the engineer-harbingers.

Perhaps physics will one day extend an olive branch to man, having recruited man's higher intellectual activity only to effect his marginalisation – first by the Copernican revolution which made the Earth peripheral in the cosmic scheme, and then by Darwinism which blurred the distinction between man and animal.

The sense of duty which doubtlessly actuated pioneers of modern medicine in their service of their fellow man would perhaps have resembled or even been inspired by religious feeling. I propose that had the trajectory of medicine been determined even more by religious feeling, the succour offered by medicine would align more with the consolation offered by faith.

The order revealed (to scientists) is a good auspice but perhaps one without indefinite sway, if investigations into the nature of reality are conducted without regard for the diverse ontologies by which God is manifest. The giants on whose shoulders the far-sighted scientist stands are the institutions which are beholden to the outgrowth of Judeo-Christian religious thought.

V. Believers

In the past, to be divested of the primitive motivations intrinsically bound to corporeal existence, a person might have prayed and practiced abstinence; today, transcendence is likely to be mediated by powerful hallucinogens.

Early Christians believed that for positive deeds to be aligned with the will of the divine, the will of the individual must be chastened by acts of self-abnegation. Early Christianity thus stands in direct contrast with modern spiritual traditions, factoring as they tend to, little which doesn't immediate appeal to a utilitarian sensibility.

Meanwhile, extant anorexia, exercise and hydrotherapy regimes abound but encounter the opposite problem – while their practitioners succeed in self-mortification, no transcendent schema is propounded to co-opt the newly-chastened will. Thus contemporary quasi-religions typically nurture pride. What is demanded of the neophyte is transcendent sense that religion is at pains to elicit in the absence of co-devotees or a constituency – the proving ground for the neophyte's burgeoning philanthropy.

In addition, the conditions he lives in militate against the religious impulse and humility: for one thing, the actions which are the foundation for his increasingly materially-contingent existence are hidden from view and taken for granted. For another, it is not a simple matter for a person to surrender his command of material agency while primary energy consumption per capita in the West is hundreds of times greater than the energy required to sustain the human organism.[4,5] The difficulty of securing the moral mandate for a de novo religious tradition is compounded by the complacency which attends the modern man's circumstance.

VI. Intelligent Design

Memes are the replicating units of intellectual life which propagate (through) human culture. An ancient meme is intelligent design, and paradoxically, though the articles of Darwin's theory do

not accommodate intelligent design, belief in intelligent design is, by its prevalence, vindicated by Darwinian thought.

The organism depends for its integrity on these constituent parts, still the basic units of replication, whether physical or cultural, are not autonomous; they adhere to organising principles of more distant provenance. In conversation in 2009, J. Craig Venter and George Church discussed the importance of "ribosome archaeology";[6] the ribosome, with its minimum of fifty-three proteins and three polynucleotides, presents an obstacle to "backward extrapolation".

It is in conscious agents that the principles governing replicators and organisms find their highest expression. If God created man in his own image we, as higher organisms, resemble the organising principles which guide life – the metaphor of organisms as vehicles for basic units of evolution is insufficient. These units "act" in concert to produce recognisable variance and determine evolutionary advantages, but I propose that the organisational principle to which human beings are subject is not calibrated on lower forms of life.

We live for God because the agency which animates human life is destined to be inscrutable to us, as its incarnation. In each organism we find a reflection of the world without, where the simple genetic units which rarely recombine are as the geological features of our landscape beholding the passing of epochs.

One who objects to deism on the basis that it derives from narcissistic core beliefs would have us adopt the type of self-regard which persuades a man of being sufficiently far-removed from the human condition to disparage it with objectivity, over the self-regard which entails obeisance to a higher being.

VII. Entelechy

> "The evolution of dinosaurs or starfish or palm trees represents the manifestation of pre-existing non-material archetypes... These archetypes themselves cannot evolve; they are beyond time and space. Either they are ideas in the mind of God, or, if we dispense with God, they have an independent mathematical existence inexplicable in terms of anything else".
>
> —Rupert Sheldrake, *The Presence of the Past: Morphic Resonance and the Habits of Nature*

C.S Peirce's observes that "matter is merely mind deadened by the development of habit to the point where the breaking up of these habits is very difficult".[7] It is worthwhile to re-consider social sciences in light of the understanding that only habits which are entrenched – repeated over the course of history – "matter"; only these habits are sufficiently context-independent and appear often enough to be measurable. Perhaps the failure of social sciences is the failure of society to

present us with conditions which are constant enough for the formulation of laws concerning its nature.

Creativity and progress are in essence the defiance of habit, and is built at a cost. Sheldrake posits that *chreodes* – development pathways – create the forms we suppose to constitute reality, and through chemical concentration gradients. The notion of chreodes has intuitive appeal: "going against the grain" is an "uphill struggle" and "old habits die hard". To "strike out", to "plough a lonely furrow", is to be divested of the ancestral subsistence.

The struggle between habit and creation is evident when an organism is with time threatened by assimilation into the realm of habit by ill health, which demands rest and indulgence.

In support of the elusiveness of organising principles is the circumstance of co-ordination between the most fundamental particles being telepathic, in the absence of autonomy; whereas among more individuated entities there is less proclivity of this kind, unless by the grace of God. In 'Morphic Resonance', Rupert Sheldrake attributes telepathic communication to evolved and immanent fields which are supposed to govern the biological development and behaviour of organisms. He adduces the impressive phenomenon of birds which appear to respond to stimuli within their flocks much faster than they respond to sudden stimuli in a laboratory.[8] It is yet more fantastic that termites, with their modest endowment of proprietary neurons, co-ordinate with other termites to build such elaborate structures over several generations, and that the symmetry of these structures is maintained even when a steel plate is driven through one.[9]

VIII. Universal Constant

> "Theories of evolution which, in accordance with the philosophies inspiring them, consider the mind as emerging from the forces of living nature, or as a mere epiphenomenon of this matter, are incompatible with the truth about man".
>
> —John Paul II, "Message to the Pontifical Academy of Sciences," October 22, 1996.

The emergence of something from nothing remains the fundamental truth and the ultimate paradox, and we behold the perceptible features of the universe as the dynamic properties of an eternal and ineffable constant. The difference between the most complex organism alive and a fundamental particle remains infinitely less than the difference between a fundamental particle and nothing at all. Faced with this mystery, we temper the expectation of apprehending the totality of human experience.

If the consciousness instantiated in a being increases non-linearly with its sophistication, is governed by a Power Law or similar, evolution didn't take millions of years, because from a mundane perspective there was only primitive consciousness to witness it – the "happenings" of

this prior aeon do not amount to the happenings of an aeon projected forward from the present, assuming the end of the world is not imminent. The prior happenings are the proverbial tree falling in the forest unheard. With the appearance of humanity, and as populations swelled, embodied consciousness expanded. I stress *embodied*, because the sum of consciousness I take to be God and unchanging. In a similar vein it is not instructive for our purposes to think of the universe as being however many light years across if the space is not animated, as far as we know, by conscious life.

IX. Complexity Science

The radioactive decay of atoms reveals that the behaviour of sub-atomic particles is indeterminate. Still the indeterminacy is immaterial because, although the particles which constitute perceptible objects are determined by probabilities, the perceptible object represents an aggregation of these probabilities. Our DNA may have arisen by mutations which were random, like the radioactive decay of uranium atoms, yet on the level of our perception overarching principles are operant: eyes for instance, appear as part of organisms living in isolation from each other.

"It is vanishingly improbable that the same evolutionary pathway should ever be followed twice. And it would seem similarly improbable, for the same statistical reasons, that two lines of evolution should converge on the same endpoint from different starting points. It is all the more striking … that numerous examples can be found in real nature, in which independent lines of evolution appear to have converged, from very different starting points, on what looks very much like the same endpoint".[10]

Any bottom-up theory of everything which fails to anticipate every force, however minute, exerted on the system (in an interconnected world, the sum total of terrestrial activity) fails on its own terms.

Complexity science arose for the purpose of applying a "macroscope" to interactions between systems. While systems might be calibrated in isolation, they interact with other systems in ways which cannot be predicted by a study of the system in isolation. If it is concluded that the mysterious transformational algorithms which link "gene to neural system, neural system to individual behavior, and individual behavior to social organization" are not for human minds to apprehend,[11] as other scientific theories are apprehended, logically the price of their explicit tabulation is humanity's supersession. This is a perverse outcome, where the supposed beneficiary of the scientific endeavour is the eventual victim.

Perhaps a materialist is no less impressed by mystery than his religious counterpart, it is only that he takes wonderment in the interim to be a placeholder which eventually gives way to scientific enquiry; he believes that one who would resist this scientific unveiling does so disinterestedly, does so on account of his own intellectual limitations denying him participation.

We go full circle, and a religious understanding of the world is at least expedient if either the universe is found not to be deterministic, or the pre-cursors of contemporary events – the circumstances of pre-history – remain obscure.

Perhaps the "strange attractor" which Polkinghorne describes as refining a chaotic system, stands in for Providence, as seemingly or erstwhile disconnected phenomena are consolidated into a scheme in which humans somehow partake.

Theodosius Dobzhansky coined the phrase "God of (the) gaps" to encapsulate the confusion of religious proponents whose religiosity is contingent on the veracity of scripture in a literal rather than an allegoric sense.[12] Among such people a tendency is found to transpose religious lore to wherever scientific accounts are wanting. Yet while fundamentalists might invite ridicule by confabulating in defence of scripture, still, since the discovery of quantum mechanics, the fissures into which a religious explanation can be transposed appear to have proliferated.

If man is created in God's image, the divine spark is not extinguished, only restored. This is true with respect to the degradations of time or derangement and restitution – the spark of the divine is dis- embodied yet "entangled"; it "haunts" where the emissary would have been.

If the order residing in us as survives our physical extinction, with our decline we celebrate restitution. Many people caring for a person for dementia will have witnessed uncanny knowledge, of consciousness outsourced.

It is rather through transcending than being transcendent that God's grace is revealed. In as far as living consists of becoming, the fall from grace is a holy grail is laid down for us: at the same time, by inferring from whatever transcendence reveals itself in our waking lives the purpose to which the transcendence tends, consciousness of our debased condition enables us to bear misfortune philosophically.

See appendix D for a very basic introduction to quantum theory

X. Alternative Off-World Travel

> "Any organism is a model of the world in which it lives."
>
> —Richard Dawkins, *The Evolved Imagination: Animals as models of their world*

An alien species with vastly superior reasoning abilities could infer from a limited knowledge of local conditions the nature of the organisms inhabiting a distant planet, to the point that the world could be simulated without need of travel.

The spectrum of cognition spanning scientific and religious reasoning corresponds to the knowledge pertaining to a classical and a quantum appreciation of the universe.

Therefore a paradox of AI development is that if scientists are to avail themselves of consciousness which is as yet unembodied, they must yield to mystery. No-one fully understands how anaesthetic works, but most people are content for expediency to prevail over comprehension in this instance. Likewise with personality disorders and their diagnosis, or the ageing process vis-à-vis its curtailment.

Chapter Seven – Passing On

I. Question of Worthy Successors

A common motif among transhumanists is dis-satisfaction with humanity's present lot, accompanied by confidence that the future will bear the same relation to the present as the present does to the past – that our horror on beholding past suffering will find its likeness in the horror felt by our progeny at the suffering we tolerate. This is every bit as presumptuous as the prognostication of Thomas Malthus, derived from a conception of the future as a function of contemporary trends.

Taking stock is part of laying plans, and doing so thoroughly demands recognising that more creative intelligence inheres in us than in any other species, and that this is cause for celebration and self-respect.

It is said there is no sense in letting such seemingly random phenomena as the action of cosmic rays on eggs shape conscious experience.[1] A universal mind is posited, is the premise of the discussion even, but it is implied in the discussion that the cosmic rays somehow at once form a portion of this mind and stand outside of it, are amenable to the manipulation of a me-like object, which is somehow prior to the rays, and also survives transposition here and there in space-time. It is a re-iteration of John Rawls' error in the Veil of Ignorance thought experiment (see chapter five – II).

If we aspire to identify more completely with a universal self, see in this identification our transcendence, it is untenable to impugn competition and suffering because if we seek transcendence we would want whoever is squatting on whatever corner of the universal self to be justifying his tenure. It is certainly contradictory to advocate for the eradication of such unpleasantries as suffering and competition on behalf of oneself and other people alive today at the same time as promoting identification with the non-self so far as to assent to the destruction of the human race in the interest of a "worthy successor". To say at once that the suffering is bad and unworthy of denizens of a future Earth, but that self-sacrifice is necessary in bringing about these denizens, is contradictory. Born under the auspices of violence, albeit self-violence, the existence of worthy successors attests to the merit of the violence which our self-sacrifice was supposed to achieve, transcendence of violence. But we can try to moderate the violence.

II. Holistic Decline

I advocate for better synchronicity between the spiritual or intellectual life and the life of the body. With or without a prohibition on active euthanasia, the incursions made by dementia on a person's legacy should be a spur to achieving this alignment or re-alignment, achieving for general spiritual and intellectual wellbeing what medical science, sanitary reform, mass agriculture and indoor living have for our physical organisms.

Many people take little interest beyond in identifying relatively weak or afflicted faculties and arriving at a reckoning with these; often people err in the hope or expectation of rescue, and court the failure of specific faculties which embroil the whole organism in dysfunctionality.

If one stands in need, prospectively or immediately, of sustenance which is superordinate, there is harmony in periodically, temporarily or indefinitely foregoing sustenance or stimulation which others take for granted. And efficacy too – pre-diabetic patients undertake intermittent fasting, cancer patients adopt a vegan diet, etc.

And if, according to the mind-body paradigm there is a moral analogue to the physical constitution, therapeutic prophylaxis can prompt moral flourishing beginning at the time of life of physical vitality. The therapy is concurrent with alignment to something larger than oneself: a righteous institution, a family or other organisation. The incentivised conceptualisation of a righteous institution with which to identify sets a pattern of behaviour which can continue until vitality is elusive, when assimilation to the ultimate institution is seemly; this is the more dear a prospect the more the ultimate institution is prefigured by the worldly one which is aligned or contributed to.

Not all questions can be answered in the course of a human lifetime, but a culture which accommodates the wisdom accruing to a lifetime is one into which a person can merge seamlessness at the point of dissolution, one which conduces to a life lived with minimal regret. Sometimes there is no institution deserving of the person's alignment and one needs to be formed.

III. Longevity Treatment

By outsourcing the means of one's self-perpetuation to medical science, the material which sustains the individual is not subordinate to his will in the way traditional sustenance is, this requiring only a relatively modest infrastructure for its procurement.

In the essay 'Immortalist Fictions and Strategies', evolutionary biologist Michael R. Rose refers to the numerous impairments which afflicted the "Methuselah" mice, mice genetically engineered to have a greatly extended lifespan.[2] These include reduced reproduction, competitive ability, reduced size, and an inability to independently maintain temperature equilibrium. These traits would prevent the longevity of these mice from being replicated in their natural environment,

and a human being with traits as debilitating as these would be hard pressed to enjoy the compensation of extended lifespan.

If a limited number of organs or organ systems fail an otherwise healthy organism, the person is dragged into a protracted stage of dependency whereas if faculties fail more or less at once, the decline, being precipitous, entails less discomfort measured in terms of sick days or years. It also entails less in terms of magnitude; the attendant malaise, being more general, is more comprehensively narcotic.

NMN, metformin and resveratrol show promise as longevity treatments in animal studies; however there is no evidence that death thereafter arrives after the manner of spontaneous combustion.

Aubrey de Grey laments that scientists necessarily prioritise disease signs appertaining to their specialism and merely treat the symptoms of old age. He advocates for interventions to be staged across the "entire spectrum":[3] "cell loss, cancerous cells, mitochondrial mutations, death-resistant cells, extracellular matrix stiffening, extracellular aggregates, and intracellular aggregates".[4] Such a holistic apprehension of old age's ravages would, he argues, eliminate all the disease processes which could yet swarm into the space vacated by the single processes, when these are addressed one by one.

But let's imagine there is a choice between longevity treatment which is impressive but has not yet gained a decisive advantage over ageing on all fronts, and nature running its course. A patient opting for the imperfect form of anti-ageing treatment would find herself in a similar predicament to one whose death is precipitated by a lone organ or organ system.

As such, although healthcare costs do not accrue to the cohort in receipt of longevity treatment at the time when they otherwise would have, there nevertheless probably are still end-of-life healthcare costs, though they are realised at an indeterminate time.

Moreover, absent meaningful efforts to envisage a world outside the self, peaceful senescence is hard to come by. If deferred artificially, it must be all the more dreadful for death to be acceded to – for the habit of living, for all its late tenacity, to be overcome. To put an end to a tenure of several hundred years, humans may plomb depths of psychological suffering unknown thus far.

IV. Merciful Decline

In The Ethical Brain, Michael Gazzaniga writes, "the best aging research is motivated by the desire that people lead a healthy mental and physical life until death occurs. It is not motivated by the naked desire simply to prolong physical life".[5] It is true that physical decline has been easier to frustrate than mental decline, but while this would seem to be a curse, it is also true that advances in medical science have been accompanied and even necessitated by a more materialistic outlook.

As such the diminished cognisance of impending death can be considered a mercy. Cognitive (and physical) decline, with diminished self-awareness, is a catalyst for reconciliation with death. By merely staving off decline until demise is imminent, longevity treatments make no inroads into death anxiety. So although it is unfortunate for heaven to be held up to the light of day, for death to intrude on life so, the living death of the demented would appear preferable to the torment of the lucid and disconsolate moribund.

Positively, with dementia comes renewed wonderment, wonderment which effaces the glare of reality as those diverting pursuits of the past once did, but of which old age deprives a person. Just as discerning material agency demands some degree of relaxation (see chapter one – I), so the universe makes itself known in novel ways as human agency attenuates, becomes one with the elements.[6] Divine agency makes itself felt through the ailing faculty. Moreover, the demented person's behaviour causes us to examine what our ambitions tend to; his short-term thinking and unguarded self-representation exists as a satire of the life choices made by the erstwhile more rational actor.

Perhaps the degradation of the hippocampus is not as unfortunate as gerontologists maintain; as people age, life's vicissitudes crystallise into a scheme which in brooking less dynamic flux, demands less in the way of comprehension. Hippocampal decline can be characterised as "natural" insofar as the diminution of the capacity to commit short-term memories to long-term memory is not a cause for lamentation so much as the imposition of the faculty to commit short-term memories to long-term memory would be, on a mind "made up".

Another compensatory effect produced by an ageing mind is the preference which older persons exhibit for recalling information with a positive emotional valence. This development, entailing indifference to long-term risk, would not behove a younger mind.

V. Advances That Tantalise

The greater relief attending the cessation of childbirth pangs, where less or no anaesthetic is administered does, in accompanying the first sight of the newborn, potentially strengthen the maternal bond. But we offer anaesthetic anyway. What is in prospect is something more than anaesthetic for childbirth.

Of a piece with acclimation to increasing stimulus (see chapter four – V) is acclimation to the prospect of life extension. Once an elixir of eternal life is no longer quite so fantastical, the lodestar of eventual extinction in whose sight all decisions are taken, all values formed, loses its power and the prospect of death becomes all the more horrific for death being (by turns) uncertain. Haste is made under the sway of death anxiety, as much as the profit motive.

Agreement about the purposelessness of death is the ideological underpinning to a positive consensus on life extension. But the consensus is not fully actionable, so the lost consolation pursuant to the aforementioned agreement is material.

VI. Avoidable Death Fallacy

> "Death may come to be seen not as a natural and inevitable aspect of life, but a preventable evil like polio or the measles. If so, then accepting death will appear to be a foolish choice, not something to be faced with dignity or nobility. Will people still be willing to sacrifice their lives for others, when their lives could potentially stretch out ahead of them indefinitely, or condone the sacrifice of the lives of others?"
>
> —Francis Fukuyama, *Our Posthuman Future*.

According to the precautionary principle, the burden of proof is on the purveyor of a new technology: it is incumbent on the innovator to demonstrate the technology's safety, not on regulators to demonstrate its danger. Proponents of the proactionary principle meanwhile consider the retardation occasioned by beyond-reasonable-doubt safety provisioning as material. Pro-actionists might with respect to longevity treatment assert that deaths by old age while a longevity treatment is being approved are avoidable, might put these at the door of precautionary conservatives.

Whether the deaths are rightly characterised as avoidable depends on the extent to which deaths in the intervening time, the "approval" period, run contrary to expectation – though expectations can be deliberately fostered (as described in chapter seven – IV) – and the extent to which the reversal of the default outcome is itself accompanied by hazard, whether easy or difficult to quantify.

VII. Discontinuous Life Narrative

Mental disquietude has been shown to concur with, even to pre-figure, physical disease (see chapter five – VIII, IX) Therefore if physical symptoms are addressed but the mental manifestation of disease is not, the mental health of the individual is likely to deteriorate to a greater extent the longer the succour which pre-figures death is forestalled.

Posthuman engineers might respond by altering the person's mental constitution, but to do so is to impose discontinuity on the life narrative, to divorce the patient from his memories, which

thence impose themselves on his notice as if by external agency. Meanwhile for friends and family, the foibles and frailties which once endeared the person to them would no longer quite be there.

Where there is cognitive enhancement, and not merely rehabilitation, perhaps the utopia which arrives concurrently provides stimulation for more active minds that the world currently lacks. However, to the extent that people in the same IQ cohort are similarly disposited, a discontinuity is introduced to the life narrative by the enhancement – the pre-existing predilections of the transformed person scarcely comport with their enhanced cognitive ability, in the event of these predilections being sustained through the enhancement.

People are generally less distinguished among peers as infants and as elderly people, in character as in appearance. We hew to the nature of our generation and to the generic aspect of old age: in extreme old age, the patient may bear more resemblance to any given contemporary than to his former self. The rate of ageing varies little enough for there to be waxing solidarity between members of a generation as they age and pass on: with solidarity, and with the passing of peers, death is felt to be a homecoming, like a remembrance day celebration. With a variegated uptake of life extension therapies, beneficiaries are, by virtue of their lower biological age, affianced to a novel cohort; the intra-generational solidarity is effaced as beneficiaries reliably outlast, in healthspan and lifespan, their erstwhile peers, potentially by several decades. These pioneers live out the last phase of their lives excluded from participation in a cultural memory.

VIII. Opportunity Costs

Absent the arrival of a utopia put to the service of enhanced persons, transcending the ennui which already besets intelligent people becomes increasingly difficult, in a society where the median age is above the current retirement age.

Schwarz explains that beyond a certain point, a preponderance of choice is deranging.[7] With new affordances come new opportunity costs, which we attempt to rescind with new affordances, an important one of which is additional years of life, which engender opportunity costs no less.

To take more time would only by default defer the remorse to a later period; the remorse productive of a fear of death or judgement, at which time it is necessarily intensified since the individual, in the disinterested pre-death moment accommodates the interests not only of the ever-proliferating opportunity costs in terms of his own wellbeing, but the opportunity costs to others of him having devalued the moment for tomorrow's youth, of having worked against the seizure of the moment by tomorrow's youth.

Longevity treatment is founded on reverence for youthfulness, the fondness and preparedness for adventure; however reality determines that adventure is dulled by repetition. The most effective longevity interventions so far involve the induction of chemical starvation, requiring the patient to go against the grain of his desires, a move which is hardly becoming for a person in want of

youthful enthusiasm: participants are of necessity young at heart – as such, determined even before the intervention to be long-lived. And were the treatment made available even in spite of a pre-existing world-weariness on the part of the patient, then the treatment being what it by definition is, at least currently, the open vista ahead might feel like someone replacing your hard-earned mattress with hard ground.

IX. Ennui

There is a concept in psychology called reactive inhibition, defined by Clark L. Hull thus:

"Whenever any reaction is evoked in an organism there is left a condition or state which acts as a primary negative motivation in that it has an innate capacity to produce a cessation of the activity which produced the state".[8]

In other words the rest response which succeeds the commission of work is anticipated with greater lucidity on repetition, thenceforth diverting focus from the incomplete task to the circumstances attending its conclusion: creativity is inhibited or disrupted by hideboundedness.

It is not loss of dexterity which causes rock musicians to produce their best work before the age of thirty. Nor is it organic dementia which sees office managers filling their days with meetings. Many people in their middle years will recognise this convergence to inertia, whether it manifests as assimilation into family life or submission to a creative routine which as a routine tends to militate against creativeness. Convergence to habit might follow physical decline but it is not attributable to it.

All else being equal in a rapidly-changing society the feeling of being "left behind" comes sooner. Unless we herald the end of history, stop the world from changing, life extension would more often offer us more time to feel "left behind" than occasion to catch up. Resetting the life trajectory is not a matter of time alone. At some point, the redemptive power of helping another person learn from one's own mistakes is greater than the redemptive power of fixating on the loss or restoration of one's own personal narrative.

A bulwark against expedited irrelevance are "enriched environments". Experiments on mice have shown that enriched environments not only improve motor performance and the formation of new memories,[9] but even help mice to recover long-forgotten memories.[10] In the 1980s, eight men in their seventies were left in a converted monastery for five days with music from the 1950s playing on a vintage radio, black-and-white programs on the TV showing archived videos of old programs, as well as books on the shelves and scattered magazines lying around from the same period.[11] At the end of the experiment, the "men's dexterity, grip strength, flexibility, hearing and vision, memory, and cognition, all testable biomarkers of age, were assessed". "The experimental group was more supple, possessed greater manual dexterity, and sat taller. Most unexpectedly, their sight improved and independent judges acknowledged that they looked younger".[12] Langer

remarked that the men had "put their mind in an earlier time," and their bodies went along for the ride.[13]

If hitting one's stride in middle-age while continuing to enjoy youthful pursuits is the road to nowhere, perhaps the proven benefits to health and happiness of enriched environments at least offer some respite.

Complementary modalities to achieve rejuvenation are those which enrich the *internal* environment. These include incomplete satiation, vigorous activity, occasional moderate hypoxia, subjection to cold temperature. As mentioned in chapter seven – VIII, there is a paradox where enthusiasm is not only the desired outcome, but to some extent a qualifying criterion for participation. Here the homeostatic principle is operant – death is forestalled by savouring its foretaste.

X. Best They Can Be (Providence)

> "Now one can argue that a mentally intact 90-year-old is in a better position to judge how their life would be affected by living for another year than she was when she was 20, or 40. If most healthy and mentally intact 90-year-olds prefer to live for another year (at least if they could be guaranteed that this extra year would be one of full health and vigor), this would be evidence against the claim that it would be better for these people that their lives end at 90."
>
> —Bostrom, *Why I Want to be a Posthuman When I Grow Up*.

The claim is not that "it would be better for these people that their lives end at 90". The avowed preference of a "healthy and mentally intact 90-year-old" to continue living does not run contrary to the baseline expectation – the life expectancy of most 90-year-old is longer than one year.

The absence of decline in life-satisfaction from the twenties to the eighties in age implies that contentment survives the loss of youthful vigour, even up to the age when death approaches for many people, implying no marked death aversion.[14] If the approach of death was the occasion for great lamentation, this would be reflected in lesser satisfaction among older cohorts.

In another study a negative association was discovered between age and negative affect in a cohort of people aged 70 – 103, though functional health constraints were controlled for.[15]

One would expect long-lived people to be happier by disposition because freedom from disease is correlated to happiness and because most long-lived people are beset by illness for a smaller portion of their lives: "centenarians are more likely to experience a rapid terminal decline in later

life, meaning that for most of their adulthood, and even older adult years, they are relatively healthy in comparison to many other older adults".[16]

The premise of a long, healthy life is genetic, which brings us back to the arguments in chapters two to five.

XI. Routines Broken for Us

As the ravages of time impress us with our mortality, our routines though comfortable, carve for us a vista bland enough to afford a view of our demise, from which we recoil. Therefore we are prevented from being fully assimilated to our routines, from taking our place among the elements, while we are yet alive. The living death of dementia is a metaphor for, if not the result of, precisely this assimilation. Yet the symptoms ageing present to our attention mount a challenge in spite of the comforts of later life; while we can yet attend, matter colludes with spirit and comes to our aid. By turns, and by dint of will, the vista assumes a richer texture and its end point, though shrouded in mystery, ceases to be foreboding. Religion instructs us to cultivate habits in view of a time when it is beyond our power to overhaul them.

To the extent that consciousness persists and a capacity for reverence remains, the organism at the moment of death, in losing its material form, sees the ground fall from under it, but with nowhere to fall. For that moment of bliss, the burden of feeding and procreation that animals know scant respite from falls away.

God deigns that bliss is purest in the absence of matter, that we had better glimpse it in the alternate dimension of sleeping life than when admixed with matter, as with a palpable miracle. The experience of God is like a dream. It cannot be substantiated. To more fully transcend matter in conscious life, to occupy a vantage over our human spaces, is to be attenuated as a physical being, which is seasonable only in dreams and at the threshold of death.

Our pleasing and short routines wax repetitive. Little is pledged to future reminiscence under their influence because the exposure to changing reality is limited by the mastery attempted over the moment. For one who has the good life to a tee, time is felt to pass more quickly, because the retrospective view is without aspect. To recognise ageing is to admit the moment, to feel alive.

As people grow older, each day forms a growing portion of remaining time, and the accompanying sense of urgency counterbalances waxing complacency. Life extension threatens the disappearance of this counterpoise and the tyranny of routine; life in retrospect is as an unending sprawl, and the self-judgement which accompanies the prospect of death is increasingly elusive.

In the past and in some backwaters still, the present and the immediate future is or was replete with exigencies. There is little leisure for reflection, and what leisure there is affords little

knowledge of one's remaining days. Doubtless there remains convergence to habit, but it is a different matter when the prospect is unclear; it offers no charted expanse to be glided over.

XII. Regret

A survey of well-being would be incomplete without a contribution from the dying who in beholding all their actions in retrospect scour their conscience for solace.

Hindsight matters because for more venial mistakes there is again and again, the semblance of a next time. Failure is best thought of as presaging a challenge of a like and more serious nature. It is a blessing, in recognition that no-one would want to not have acted on the lessons offered by hindsight by the time there is no further semblance of a next time – when action fully gives way to reflection.

Yet regret is instructive even when the circumstances which occasion it are not directly receptive to our concerns. Even if recipients of regretted actions themselves are not amenable to remedial efforts, others might yet learn from our mistakes.

Through life, God tethers us but slightly that His own nature might be cast in a different light by the divine experiment of human life.

XIII. Optimism

While to an outside observer there is nothing to death at all, beauty is in the eye of the beholder; a moribund person is furnished with a different appreciation of the numinous to someone in the prime of life. If we take pains to live in the moment, we can glorify the foreshortened purview attending physical decline.

A rational contractor who recoils from the thought of his organism outlasting his mental competence is perhaps being presumptuous. A person in full possession of his faculties is liable to imagine the transposition of his current values and predilections to the future circumstance of dementia, when in the event intellectual degeneration entails the degeneration of the values and predilections which behold the future circumstance of dementia with horror.

The person fearing affliction by Alzheimer's disease might determine that whatever life satisfaction is enjoyed as an Alzheimer's patient is bought at an unacceptable cost. A corollary to the value placed on the coherence of this life narrative is concern for career trajectory; it is *the integrity view of autonomy*.

Perhaps loss of physical independence and a waning appreciation of former pursuits gives an elderly person pause to envisage the hereafter more keenly than a youthful observer, who cannot help but be alarmed on the ageing person's behalf.

Colin Feltham laments that we did not "(abide) by our larval condition, dispensed with evolution, remained incomplete, delighting in the elemental siesta and calmly consuming ourselves in embryonic ecstasy".[17] We can however derive all the more enjoyment from personal degeneration, from the return to that "elemental siesta", for having diverged from that degenerate condition phylogenetically; once, that is, we cease to project on our future selves the cognisance of others' disgust.

XIV. Solace in Observation

In a more steady-state equilibrium, there can be consolation even in defeat because the vanquished party has more affinity with the phenotypes which flourish in his place than those which would flourish in his place in an environment subject to great flux, an environment which in his lifetime has greatly progressed.

In that time of life when reflection overshadows action and past actions are held up to that wan light, it would be crushing to feel as though the time and space allotted to me could have been better spent. If the life looked back on is replete with regrettable instances of selfishness and lost opportunities, salvation comes on identification with the non-self adversary, assuagement by knowledge that one's own reign is over. That our will may no longer be impeded in its pursuit of altruism is the comfort we take as our grip on life loosens.

In times of pain, hardship and depressed spirits there are still happy moments, and these are rendered conspicuous and so memorable by the gloom in which they are ensconced. Knowledge that the pre-eminence of these memories is predicated on contemporary discomfort teaches us the role of fortitude as we are furnished with rich memories which buoy us when new experiences are no longer so forthcoming. We remain conscious of having experienced hardship, but as time elapses the impression is effaced. The prompt to suffer comes with a call to honour, when honour is aligned with virtue. When death could come at any time, and discomfort attended vitality, comfort at death was prized.

XV. Old-Young, Conflict or Harmony

Left to its own devices, youthful adventure can be tragic, yet the crystallising tendency of old age can be a foil to the ardour of youthful adventure. A conscientious person recognises that one might set out to moderate the vicissitudes of youth and end by neutralising them.

In a society where youth is no longer the preserve of the young, youthful adventures might be beheld with cynicism. Imagine acceding to adulthood and finding oneself in the company or under the control of individuals whose wisdom derives not from the travails set by Father Time, but from thrill-seeking, pure and simple. A young youth is prey to the youthful veteran – through habit tenacious and by experience masterful, he is a seasoned pleasure seeker not subject to the time constraints which tend to compel a course correction. It is not that concern for progeny requires an individual to renounce self-interest, rather that the self-interest which is most becoming to a person losing his faculties, is sublime.

Long experience confers recognition of patterns and an underlying order – an appreciation, that is, of the limits to that individual agency which young people set store by, but which the elderly behold with scepticism admixed with indulgence.

It is often said that youth is wasted on the young; a common complaint being that a discontinuity of experience arises where the youth in her naivety fails to hatch a project worthy of being taken up by her future self, with her superior discernment. But progeny is a salve to regret in as far as the counsel is wise and the progeny is receptive to it.

There are sometimes good reasons not to have children, or to have one child, but declining fertility rates in the developed world imply that perspective and other advantages which accrue to age are being retained and sometimes squandered, rather than disbursed.

Just as Egyptians performed rituals to help the sun hold to its diurnal rhythm, salient people must sacrifice to society though worthy objects of sacrifice are not in plain view. In the absence of a near object, sacrifice is performed for the preparation of groundwork; that salient people, exemplars of a kind, in another place or time perhaps, continue to flourish in perpetuity.

XVI. Lessons from COVID

COVID restrictions and the accompanying solidarity made the atmosphere dense as in a dream, conducing to nonchalance among elderly cohorts as to the nearness of demise. It would enable an elderly person threatened with Coronavirus to recognise that it is a poor return on the sacrifices of their forbears to always prioritise their own continuation over the prospects of future generations.

This perspective of an elderly person is recounted by Nicolas Christakis in 'Apollo's Arrow':

"As the pandemic was beginning to reach Texas in late March 2020, and before it crushed the state in July, Lieutenant Governor Dan Patrick, with an almost stereotypical Texas swagger, suggested that elderly people would be willing to risk death to help their community avoid economic hardship:

"No one reached out to me and said, 'As a senior citizen, are you willing to take a chance on your survival in exchange for keeping the America that all America loves for your children and grandchildren?' And if that's the exchange, I'm all in," he said. "And that doesn't make me noble or brave or anything like that.

"I just think there are lots of grandparents out there in this country like me…that what we all care about and what we all love more than anything are those children," he added. "And I want to, you know, live smart and see through this, but I don't want to see the whole country to be sacrificed, and that's what I see".[18]

Chapter Eight – Psychedelia

I. The Memory and Experience of Intoxication

Studies have shown that heavy lifetime use of cannabis is associated with smaller hippocampal volume and lower brain activation during a working memory task. Intuitively it makes sense that with chronic usage the momentary short-term memory loss which is a hallmark of the intoxicated experience endures.[1,2] Like a much older person, the erstwhile user finds it difficult to create new memories; yet unlike a real older person he finds his existing memories impoverished. The mind of the former user is as a nerve cell with a high depolarisation threshold. But spirit finds a way.

Let us consider how cannabis taking appears in retrospect, and why the retrospective view is important for policy-making purposes. Enough memory of the event is retained for cannabis users to realise that consumption is not proof against negative emotions; as with non-intoxication, the intoxicated condition consists of vacillation between emotional states of positive and negative valence. The difference however is that the variable emotional valence of the intoxicated condition is set on a different plane; it consists of sequestered moments which, like dreams, are essentially illegible – have little or no bearing on the attitudes of the un-intoxicated person. These moments are *richer* than those of ordinary waking experience: the feelings experienced, though negatively-valenced at times, are more *valuable*. However, the memory is *impoverished* because the experience isn't invested with any mundane species of variety.

The other-worldly nature of the experience precludes assimilation of the experience into memory. It appears at first glance impossible to ascertain whether the enriched experience or the impoverished memory has primacy.

The intoxicated experience is not meaningfully available in retrospect, to the self which remembers; moreover, the discontinuity in qualia which is effected interrupts the life narrative, making prior life events inaccessible to later efforts at consolidation of past events. With discontinuation of the drug, the later present is the once-neglected future.

To live in the everyday world, to be impressed with the here and now, the experiences of the erstwhile user must be novel indeed, demanding a degree of courage over and above that which he didn't muster as a younger, more vital, person. The impetus for such an endeavour must be regret.

According to the peak-end rule, the value of an experience is equivalent to the sum of the felt value at peak intensity and the felt value at the moment of conclusion. As established, with cannabis consumption the felt value at peak intensity is high but forgotten and the felt value at the point of periodic cessation is possibly neutral, but negative at final cessation, because of psychological withdrawal.

A counter-example is physical exercise of moderate intensity. In this case, the experience is typically negatively valenced while ongoing, and the misery of the experience is variable – probably higher in the earlier stages while the body is still acclimatising to the exertion and the prospect of relief is distant. However, plotting unhappiness against time would likely not reveal a sharp negative peak. Enjoyment at the termination of the event is experienced, but is also held up to the remembering self where it is set against the relatively low peak negative valence of the experience to create an impression, in retrospect, and on net, of time well spent.

To re-iterate, the benefits of regular exercise and meditation are well-understood, yet few people wake with a burning desire to engage in these. In this case at least, the disagreement between the remembering self and the experiencing self is popularly resolved in favour of the former.

The long view can be resisted while a tribulation is undergone; the expectation of future suffering braced against by riveting attention to the moment. In this way the interests of the memory-enriched and past-contingent future self are represented while the experience is ongoing, so far as to make "duration neglect" a feature of our experiencing self as well as the remembering self. This is what meditation sets out to achieve.

If ordinary human agency no longer bears, or is no longer felt to bear, on wellbeing, there is no recourse to courage, the embrace of present suffering, for the forestalling of later suffering or the preservation of integrity. Self-monitoring apps are probably fun to use, but the exercise in self-objectification might, following sustained use, attenuate self-efficacy and the impetus to recruit native facilities for desirable health outcomes. In inter-personal relationships too, to resist the promptings of your rising blood, to abide by altruistic principle in the presence of an escalatory impulse – in this way to prevent the transpiration of the other party's resentment or its register, when there is leisure to reflect, be it later that day, or at the end of one's natural life.

II. Psychedelic Disjuncture

In 'How to Change Your Mind', Michael Pollan observes that "LSD appears to … (restore) a childlike immediacy, and sense of wonder, to our experience of reality, as if we were seeing everything for the first time".[3] I maintain that in grafting childish perception on to adult sensibility, in misappropriating the discursive wonderment that is the preserve of the immature mind, the interface between the mature mind and the circumstances it negotiates is compromised.

If the psychedelic experience simulates the transition to another life, as adventurers attest, the consciousness which is returned at the termination of the experience will not be quite the same; an event so singular will foist on the life narrative a discontinuity.

In returning to life, and ruing the transient nature of the experience, a person might see in the prospect of co-habitation with advanced AI a semblance of the experience he wishes to perpetuate.

Universal love, in demanding absolute disinterestedness, is incompatible with ordinary reality, which demands survival. It is only at the point of death when there can be full emancipation from egoism, because it is only then that the individual ceases to dwell in material reality.

To advocate for perpetual intoxication is to advocate for absolute self-abnegation, when traditionally a lesser, and tenable, degree of self-abnegation is arrived at with careful and prolonged religious or spiritual observance.

To arrive at enlightenment with drugs is to short-circuit personal development, as a super-intelligent AI short-cuts evolution. The insight is not actionable by the user if it would not have arisen organically from the user's character absent psychedelia.

III. Psychedelia as a Modality

Psychedelics drugs provide access to the state of mind which presages the expiration of differentiated being; this state which traditional forms of mortification approach more tentatively, for all the pains taken. And yet, even a single psychedelic experience can occasion long-term changes in the trait of openness.[4]

Psychedelic drugs are to fasting, prayer and meditation what NMN, metformin and resveratrol are to decades of caloric restriction. In the case of fasting, rigid patterns of thought and behaviour are challenged in a manner altogether more moderate than psychedelia, as self-evident frailty and hunger pangs offer a check on the disintegrating self.

Certain patterns of behaviour can be held to tenaciously if those patterns were instrumental in success, long after the incentive to succeed in the same way has passed. However the more habit-bound, the more self-reformation is felt, though unconsciously, to be imperative; comparisons between own's own outlook and the divergent outlook of the people who are admired, however grudgingly, are irresistible, and not always resolved in favour of oneself. But her neurons are set, it is said, and psychedelia, as a transhuman intervention, offers hope.

The un-mediated expression of the unconscious mind during sleep or its mild expression during times of under-stimulation complements our mundane experience. And to an advocate of psychedelic drugs who infers that micro-dosing is a sensible compromise for people who do not dream, or who cannot bring themselves to do so, there is a persuasive argument. Therapeutic applications of psychedelic medicine are increasing so let us consider the experience of a typical user, albeit a heavy one.

As the environment is manipulated with partial success and represented with some fidelity, people come to view their situation with schismatic detachment. We imagine ourselves abstracted from the plane of the enquiry.

The psychedelic experience momentarily reconciles human consciousness with the ever-attentive but overlaid animal nature; yet though we might endeavour to sustain the insight by re-visitation, the screaming chasm between the two selves is quietened but momentarily, often by displacement, by the contrivance of naturalistic invective.

For the psychedelic adventurer, the vistas as yet unexplored at death are fewer, meaning the egoistic narrative, brooking of no wonder, trespasses into the final parting.

It makes little sense for a person to indulge in a psychedelic experience to further his philanthropy because at its expiration, adventurers are limited in their ability to fulfil, even codify, the aspirations which the experience inspires. Typically a reconciliation is sought between the exapted, human qualia and the overlaid one that is obfuscated in everyday life. In modern parlance it is to "be more dog". More technically, there is a sense, albeit poorly-articulated, that a more intuitive orientation of mind conduces to a "high temperature search" more at least than a predominantly cerebral one. You can achieve for your children though, by your choice of partner, what the prompting of psychedelia would have you appropriate for yourself.

Or the new-found regard for magical thinking can be expressed with deference to, or friendship with, those committed to magical thinking; colloquially, to those manifesting the positive symptoms of schizophrenia. None of this is easy while adventurers remain committed to a milieu which disdains magical thinking. This includes members of the psychedelic community like Aldous Huxley who sought to distance the movement from associations with so-called psychoticism.[5]

IV. Wanderlust-Dissemination

Moments of bliss are for magical thinkers the fruits of the drudgery of solitude and the ignominy of obscurity.

Let us take advantage of the space laid open to magical thinking and consider what insights the life of a fungus offers as to the action of its constituent parts, when these are situated within a human or animal nervous system.

An animal in thrall to psilocybin is prone to wanderlust and to the dissemination of spores off the beaten track; if, through neglecting his survival needs over the course of the experience, he ends up as a corpse in a ditch or in a predator's den the next day, so much the better for the fungus, since this makes available any spores not offered up by the act of defecation. The psychotropic action of certain mushrooms confers a selective advantage, for the mushroom.

Human beings meanwhile, are more inclined to mental abstraction, so for them the psychedelic experience will transpire through mental as much as physical perambulation. In as far as the intoxication of lower mammals is a valid metaphor for our own, and anyone who espouses the interconnectedness of living organisms must own that it is, human beings should not abet hallucinogenic mushrooms in their bidding. Just as an animal pays fealty to the fungi kingdom with his wayward defecation or early demise, the human repeats the experience and recounts the magic of it to anyone who'll listen, never quite settling into the groove that the material world had carved out for him, though it may have been the base from which to give wings to his spirit.

V. Terminal Interconnectedness

fMRI scans of a brain under the influence of psychedelic substances reveal a diminution of activity in the default mode network and a widespread neuronal interconnectedness which appears to correspond, in phenomenological terms, to the "doors of perception" being opened. On the physical as much as the experiential level, there is a correlation between the psychedelic experience and the near-death experience. When the heart stops the brain is active for several minutes, during which time electric signals spread and avail the dying person of novel perception. It is unavailable theretofore for the reason that discursively-sourced interpretive agency would derange the narrow pursuit of survival in the material world. Phenomenological accounts include the experience of individuals who have survived near-death experience, available to us in the form of direct testimony; from observations of people suffering from dementia, experiencing their second childhood; as well as the empirical knowledge of religion whose conception of the afterlife is doubtlessly beholden to near-death experiences and the testimony of the moribund, issuing forth with all the more lucidity perhaps, for the unavailability of opiates.

A decrease in DMN activity corresponds to an increase in interconnectedness between formerly remote brain regions, and novel conscious experience, but whereas a psychedelic experience involves only the diminution of DMN, death entails its complete extinction. As such we surmise that the experience of death is more intense than the experience of psychedelic drugs. And as recapitulation theory has it that the stages of gestation correspond with the evolution of life on Earth, culminating with humanity; so at death we would at some point be divested of our DMN, our humanity, then our animalism, all while the timeline of observers continues in the accustomed linear manner.

Chapter Nine – Euthanasia and Abortion

I. Uptake and Popularity

There are now several countries where euthanasia is legal, but our knowledge of how the experiment has progressed is limited. The *counterfactual* of euthanasia treatment is what transpires for people who are not euthanised but who would have opted to be so had they been treated in one of the countries where euthanasia is now legal. Opportunities to consult this cohort as to their wellbeing are few, though more plentiful than in the *factual* scenario, as wellbeing reports of the euthanised, post-injection, do not exist.

Advocates of euthanasia can claim that the legitimisation of the practice doesn't increase its uptake, with reference to statistics from the Netherlands which show that deaths by euthanasia in 2010 are comparable with those in 1995, before euthanasia was legalised.[1] These statistics do not however include the induction of terminal sedation, latterly known as palliative sedation or deep sedation. This is different from euthanasia because it does not shorten life, but is similar in that it mediates the patient's end-of-life experience. In Netherlands, the incidence of deep sedation at end-of-life increased by about 1.5 times between 2005 and 2010, and again between 2010 and 2015.[2]

II. Inaccessibility of End-of-Life Perspective

If the outlook of policymakers concerned with euthanasia and end-of-life differs from that of the moribund patient, whose gaze is likely averted from himself, it could be that religious reasoning – with respect, at least, to its differential regard for active and passive euthanasia – is worthy of consultation.

It is problematic to judge the value of a person's existence by outward appearances. The religious experience of someone who appears beset by hardship may offer consolations which are unavailable to and unperceived by an observer otherwise circumstanced.

Prostrated before the medical doctor's expertise the patient may not deign or be able to represent his true interests, leaving the doctor free to his own ruminations on whether the patient's life would be better extended by artificial means or foreshortened by artificial means. The doctor may do so with scant regard for the perspective of advanced years, this being poorly-articulated or illegible in any case to a working-age professional like himself. It is difficult to assess the merit of the aforementioned intervention, for the doctor to know what relief is in store for the moribund

individual after his thoughts have ceased to find expression verbally or even through his countenance.

III. Limits of Casuistic Reasoning

In bioethics literature it often happens that a principle once settled on is applicable indefinitely; this betrays an aspiration on behalf of ethical principles, that they might bear upon human affairs as physical laws do bear upon matter. Some bioethicists apparently reserve a special place in infamy for "let's wait and see". In 'Bioethics: An Anthology', three authors across three chapters describe a thought experiment about whether a man who is prepared to kill a family member for pecuniary gain is more reprehensible than the one who would just let allow the family member to die without intervening.[3,4,5]

In 'Moral Fictions and Medical Ethics', Miller, Truog and Brock create a hypothetical scenario featuring two men who have had debilitating accidents and whose prognosis offers little hope.[6] The difference between the two men is that one of them has recovered just far enough to survive without ventilation, while the other has not. In the first instance, compliance with the patient's avowed wish to die would constitute killing, but in the other, merely passive euthanasia. "For the sake of this analysis, we make the reasonable supposition that he would be no less interested in ending his life if he were in the same condition as Sam, who is able to breathe spontaneously".[7]

Let me attempt to illustrate the importance of preserving the distinction between passive and active euthanasia.

It would clearly be "in the gift" of many passers-by to save a disabled person who is drowning. In fact, it might reasonably be judged that a passer-by who fails to act is more negligent than a murderer, since while a murderer is generally actuated by strong feelings, and stakes his own freedom in the commission of the crime, the indifference of the passer-by, given the slightness of the sacrifice which is demanded of him, to preserve life, implies a more universal misanthropy. If it is in his gift to direct circumstances yet he does not, the passer-by is committing a crime of omission.

An intuitive person meanwhile, suspects a crime, but has no evidence of it and little faith that a police investigation would be conducted in such a way as to bring the crime to light or be conducted with the requisite sensitivity to all parties. Here, the intuition which led the observer to suspect the crime is the same intuition which enables him to doubt the police's methods. It is in his gift to deal with the circumstance as he sees fit, since while his suspicion can be imparted to the police, his intuitive faculty can not.

When establishing whether passive euthanasia constitutes killing, it must be decided whether it is in the gift of the doctor to save the patient, or whether a doctor acting to save a patient would be taking extraordinary measures – not measures which redound to the doctor's honour, but those

not of his own making; with unknowable, second-order effects which bear upon the patient's end-of-life experience.

"Consider in its broad implications what the eradication of the distinction ("between stopping life-sustaining treatment and more active forms of killing, such as lethal injection") implies that death from disease has been banished, leaving only the actions of physicians in terminating treatment as the cause of death. Biology, which used to bring about death, has apparently been displaced by human agency."[8]

Some progressive bioethicists mete equivalence between the transgression inhering to active, unsolicited, life curtailment and that of avoidable euthanasia – "letting die". I contest, with some reservations, that transgressive potential inheres to both active euthanasia and artificial-life extension; that both of these policies bear the same antipathetic relation to passive euthanasia and passive "let-live"; the passive policies are conservative and laissez faire, while the revocatory policies are radical.

IV. Developmental Tendency and Continuity Value: Definitions

My belief is that abortion is legitimate in the following cases: life of the mother – certainly, rape – probably, and disability of the baby – maybe.

Sex cells left to fertilise in an artificial womb would develop into an embryo and yet their destruction does not attract censure as the destruction of an embryo in utero does, the developmental tendency notwithstanding. However, with regard to the artificial womb fertilisation, the transpiration of a child is not the most plausible counterfactual; the most plausible counterfactual is the absence of such a contrivance.

In 'Abortion and Infanticide', Michael Tooley offers his readers a similar thought experiment which takes place in a world where a kitten can be injected with a chemical which causes it to develop all the psychological capabilities of a human being while still remaining a cat.[9] He posits that since it wouldn't be deemed unethical not to bestow a kitten with said capabilities, neither should it be deemed unethical to deprive an embryo of its potentiality; but of course the acquisition of advanced mental competence by a feline specimen is a developmental tendency only in this hypothetical reality.

There is an argument that an embryo's inherent potential or "developmental tendency" determines entitlement to continuation; that being "a continuing subject of experiences and other mental states" is not a necessary condition.[10] To which it might be contended that an embryo's origins can be traced to isolated zygotes which no-one worries about very much. And that it is no less preposterous to sanctify sex cells according to their potentiality than to sanctify embryos, if

potentiality is all we are worried about. The difference though is whereas the potentiality is active in the case of embryos, it is passive in the case of sex cells.

Like a quantum particle an embryo's status is defined by its direction and its position. And like a quantum particle, only one condition need be satisfied for it to register: an embryo augurs human life even while its epistemic status is null.

Imagine a graph with two lines, one for continuity value and another the other for developmental tendency; in both cases x- is for time, starting at the formation of the zygotes.

A zygote has no developmental tendency at all, and almost no continuity value – the probability of any given zygote achieving fertilisation is close to zero. The same want of potential is not true of an aggregation of zygotes either in incubation or in situ, a fact which might contribute to prohibitions on masturbation and contraception in some cultures and religions. If the spectre of an embodiment of vital force unrealised looms large enough to elicit this moral prohibition, how much more exigent is the spectre of lost life when the unsubstantiated human being has stimulated hormonal changes in the mother and thus unconscious expectations of her becoming a vessel of life?

It is the potential that an embryo represents which gives it status and gives rise to disgust at its manipulation; though it is nothing now, it is no less than what every one of us once was.

Does not the phantom sibling of an aborted pregnancy occasionally intrude on her notice, as the phantom of a former partner does in her dealings with a later one? The opportunity cost of abortion is not only the maturation of the foetus but the emergent parent-child relationship.

It must be born in mind that there is a loss of potentiality when aborting one embryo and not another, as the genome of the rejected embryo does code for the transpiration of many traits besides the susceptibility which is marked for destruction. Accordingly the lost potential for being stands in a similar relation to the lost potential for sickness as a lost baby stands in relation to his lost bathwater, although the extent to which this metaphor holds depends on the severity of the morbidity in prospect.

Whereas it is natural for parents to feel exasperated or disappointed with their children, even to the point of wishing them away momentarily, the parents of a child brought into existence in lieu of the phantom sibling may have a tangible counterfactual in mind whenever the real child disappoints profoundly; though the second child's existence didn't *cause* the death of the first, the death of the first was nevertheless a pre-condition for the second's existence.

Although it is true that the embryo originates in a conjugal union and that the mother's organism supplies its nourishment, the developmental tendency of the baby is not immanent in the mother's will: though the embryo's organism depended on hers for sustenance, the extent to which the embryo's conception and development is attributable to conscious decision-making is limited. The soul of an embryo is immanent in nature, to which the mother's body is subject no less than the embryo.

V. Developmental Tendency and Continuity Value: Over Time

At the moment of fertilisation, the developmental tendency of the embryo is high, because the probability of the pregnancy being brought to term is high. The continuity value is however very low: the embryo has no nervous system, is devoid of conscious experience.

By full term, the development tendency is higher still, with the newborn having survived pregnancy, and still having nearly all of its life ahead of it. The continuity value of the newborn though is growing but still modest, full consciousness having not yet been attained.

At the end of life the same is true in reverse – the developmental tendency decreases as habits ossify and less time remains to take actions in the world. The continuity value remains high however, until faculties fail and eventually there is no conscious experience. The younger person who exacts prohibitions on a hypothetical, demented future self, is to some degree prioritising the preservation of his dignity and legacy over the experiential interests of the person with dementia.

The low developmental tendency of the elderly person is the counterpart to the low continuity value of the embryo, while the high continuity value of the elderly person is the counterpart to the high developmental tendency of the embryo.

A significant question is whether the *product* of continuity value and developmental tendency determines the objective value corresponding to a particular phase of life, or the *sum*, or some combination thereof (uncertainty here probably remains a good thing).

Healthcare administrators triage patients according to an estimate of the QALY (quality-adjusted life years) remaining to the person. It remains reasonable to triage by this scheme, in part out of recognition that there are diminishing returns to medical interventions, in terms of QALYs added, with advancing years.

And yet, most people would probably cavil at the sacrificing of ten elderly lives for the preservation of a single infant, though the infant can expect eighty years of life and the elderly persons on aggregate a further sixty. QALY calculation do not fully appeal to our intuitions – the curtailment of ten lives seems as ten transgressions.

So how to reconcile reverence for seniority and the hard-headed necessities of triage calculations? The best available measures (see chapter seven – X) agree there is no appreciable diminution of life satisfaction with age such that quality must be adjusted for age alone. On the other hand, an adjustment is due if the additional life years in prospect are years spent on life support.

VI. Body Autonomy and Regrets

Preferences are mediated by the persona, which reconciles the authentic self to norms. Espousal of transgender ideology, for example, is felt to be expedient if gender outliers are perceived as powerful.

A variable but significant part of a person's identity is socially constructed. And to the extent that it is, a woman's disavowal of embryo rights is compelling.

Yet the nurturing proclivity is integral to female identity, such that the physiological states which prefigure the nurturing attitude are operant even while arguments against abortion are being formulated or expressed.

If a woman has been raped and is to bear a child as a consequence, the auspices for both the child and the mother appear quite dismal; the child's existence would be a perpetual reminder of the violence attending his conception, as would the child's eventual resemblance to the father in his violence; it is a resemblance the mother would likely suppress the emergence of, though in doing so she would be denying the child his nature. Destined thus to be the talisman of a hateful union, it is necessary to decide whether the likely suffering of both parties, and the eventual denial of the child's birth-right, by the suppression of his native traits, is of greater concern than the denial of the embryo's developmental tendency. A reconciliation, a rehabilitation of the rapist, is not inconceivable.

VII. Maternity Leave

Birth rates across the developed world imply that it's difficult to convince educated people of reproductive age that any contribution or legacy could be more important than the fruits of their formal labour, yet it is an existential concern for a nation or people if there is little interest in its most essential manifestation, the lifeblood, being perpetuated. Advocating for the would-be unborn is almost as important as advocating for an embryo: an embryo embodies a future life, but basic virility, a willingness to procreate, still implies it. The attribution of social status to educational achievement has not helped.

It is politically difficult to lengthen maternity leave in the UK because employers would want to pay women less in anticipation of them drawing on it in the foreseeable future. In other countries, employers don't advertise salaries, which is fair on the employer who has the withheld salary to compensate him for the inconvenience of finding a substitute, and fair on the mother who has her extended maternity leave. It is not fair on women who will not go on to have children, but these women could be made recipient of a childlessness dividend after 45. With paid maternity leave of three years, it is not reasonable for the woman's position to be available upon her return, because: a) it is likely no less inconvenient for the temporary worker employed in her stead to be

dismissed upon her return, than it is for the mother to seek alternative employment; this is more true the longer the period of maternity leave; b) following a longer period of maternity leave, skills can be forgotten and the job specification altered.

With the abrogation of equal pay the employer is more relaxed about taking on a young female employee; moreover the revocation of the right to return post-maternity, in limiting the inconvenience suffered by the employer, puts the female employee in a stronger position when negotiating for pay.

Chapter Ten – Time of Life Issues and Reproductivity Crises

I. Young Adults' Wilderness

For most of human history the principal arbiter of a trait's endurance has been the land and the weather; many of the differences we observe in populations are attributable to the variable exigency of indoor culture. Traditionally civic-mindedness is hard to come by when a society is not bound, by blood as by custom, to the land. An extemporised, "bridging" culture rooted in custom but not blood is found wanting if the society is too individualistic, if concern for wellness and longevity eclipses concern for community and family. The child learns reverence for God or righteousness through deference to society, but the society must be a worthy object.

When human beings were hunter-gatherers, girls reached puberty at age 16 – 17,[1] nearly four years later than so-called Caucasian and Asian girls in the present day, and nearly five years later than Hispanic girls. At the same time, even if children survived beyond fifteen, and 37% did not, they might only expect to live a further twenty years or so.[2] There is much to say about humanity's achievements in the intervening time, not least that criticism can be sustained without reversion to hunter-gathering being the likely issue; while such a reversion would be in the offing in the event of thermonuclear war, thermonuclear war would not likely occur by democratic mandate. There is no harm then in admiring hunter-gatherer demographics for the neater concurrence of puberty with the conclusion of cerebral development. Furthermore, with a premium on middle years, there are fewer occasions for existential malaise. The preponderance of "deaths of despair" in the West today indicate such malaise, as disillusioned people, usually young, seek anything from taking the edge off vitality which is under-accommodated, to outright self-extinction.

Environmental factors including exposure to DDT might explain earlier puberty in the modern era. One study measured age at menarche against exposure to the fertiliser DDT and found that among a cohort of young textile workers, the age at menarche was 1.11 years earlier in the most exposed quartile than in the least exposed quartile.[3] One study found that "for each additional 1 g/day animal protein intake in childhood, the age at menarche was approximately two months earlier".[4]

II. Giftedness and Elite Theory

In the modern era, sheltering and early puberty tend to render children so out of kilter with their biological clock that the arrival of puberty can be experienced as trauma.

Underlying body dysmorphia and other disorders of maladjustment is a need to re-visit the time of life when development is arrested. This is a form of repetitive compulsion where the mind prompts itself to come to terms with a disruptive event, in this case the time when the child was prevented from attaining key developmental milestones in good time.

Developmental asynchrony might result from privilege being offered without commensurate responsibility, when accession to adulthood is not properly incentivised. The bargain is necessary because it isn't self-evident to a child that maturity constitutes progress. It is only with hindsight that people see that it is. Adult encouragement helps the leap of faith to be made.

Asynchrony might be facilitated by sociological and socio-biological factors, but it remains an indicator of giftedness, possibly because a sensitive constitution is less resilient (see chapter four – V).

Children who are highly spirited tend to be dissatisfied with ordinary spiritual nourishment. But absent opportunities to develop idiosyncratically in their teens, they are left with sex and drugs, without fully comprehending the consequences of either; often, paradoxically, to regress – to compulsively repeat – as discussed earlier in this chapter. The spiritedness which was not proof against these temptations is manifest as rebelliousness, if censure is associated with the authority which has at some point unjustly restricted them. If authority is unyielding the child is a law unto himself with good reason; but if he admits of no recrimination at all, the arrested development owing to the premature forays is not addressed.

Children whose development is asynchronous must not be so alienated by their milieu, or deranged by the expectations of the culture, that relief is sought in drug use or other forms of morbid escapism, as in North America and Western Europe where often youth not tipped for elitedom, youth whose potential pro-social contribution is no less real for being hard to quantify, feel themselves prone to disincentives to flourish that are no less real for being hard to quantify. Their sociopathy is to some extent society's bitter pill.

In the UK, elite universities are a safe space where developmental atavisms can be aired or ironed out; still plenty of gifted children are excluded or not interested or both. At Cambridge and Oxford universities, admission criteria are, broadly speaking, possession of a high IQ and a strong work ethic, as well some fondness for very British institutions. IQ and work ethic are to some degree necessary, though the latter at least can be occulted while asynchrony is operant, assuming it is. At minimum, there should be a willingness on the part of the institution to talk price, even with IQ (see chapter eleven – XI), and not only, or even primarily, with rugby players.[5] This entails the promulgation of non-academic programmes or a loosening of academic rigour wherever academic rigour is counter-productive or obfuscatory; for social science to catch up, for example. Precisely what must be done is not for me to say; that is the point. Wherever high IQ predicates the talent that justifies the selection, the bar should actually be higher,[6] assuming that anybody is going to be employed as a scientist beyond 2030 anyway. Reverence for elite institutions is certainly not the norm among gifted seventeen-year-olds.

All this is stated with the proviso that cosseting is not conducive to good character.

One complication among many when legislating for childbirth is that the presence of a trait or constellation of traits deemed worthy of perpetuation may concur with a disinclination to parent, if not by temperament, necessarily, then by sublime self-interest being better served otherwise – by pursuing the ambition which attends self-recognition of genuine distinction. Here the interests of the would-be child are set against other contributions to the world which also demand time and attention, time and attention which the child naturally seeks to co-opt.

For most people, there is no more patriotic way to spend one's twenties and thirties. But there is a small minority for whom projects should take precedence over progeny.

It is not simply that the child can be raised to assume the father's mantle, because exceptional ability is rarely transmitted linearly – there is a trans-generational regression to the mean with regard to the heredity of genius. One option is reversion to the aristocratic practice of taking nannies or the quasi-Socratic one of sending children to boarding school.

III. Socially-Mediated Arrested Development

By virtue of reaching physical maturity earlier than other ethnicities while being more intensely socialised in youth than their counterparts, Indians and blacks are likely to be over-represented in dominant cliques at school, to the point that even in majority white areas let alone in Birmingham, Peterborough, Luton etc., there is peer pressure to adopt the argots, accents and attitudes of the dominant ethnicities. It can result in developmental disorders for the late bloomer, and disillusionment for the precocious child, who may not enjoy the same social status in the adult world.

A white eugenicist might, like all white people subjected to social justice invectives, unconsciously identify himself as the *extreme that nature abhors*, according to the maxim, and seek to render himself less conspicuous, less gauche, out-flanked. To this effect, he extrapolates from the processes of which his own existence is tribute, to a hypothetical future human form; no longer identifying himself as an outlier but as a harbinger of progress. This might still his existential malaise – he has outgrown procreation and found science. But the same malaise continues to afflict a growing part of humankind who in renouncing the joys of childrearing for self-care, self-cultivation and self-help, find purposivity given illusory remit.

IV. Virginity Loss and Aversion to Childrearing

The tendency for women to feel their first attachment profoundly was understood by pre-feminist civilisations who out of solicitude, in part, for cherished daughters and sisters, established the

institution of marriage to sanctify the attachment. More practically, marriage forces the man to envisage the consequence of gratified lust wherever unalloyed by sincere interest, whether the consequence be the engendering of progeny held in low esteem or embroilment into a loveless union.

Women's conventionality consists in large part of the tendency to assimilate the mean attitude of past acquaintances, as perceived, and weighted for the impressiveness and intimacy of the acquaintance. Where serial monogamy or polygamy is practiced, the impression of a foregoing partner can be reconciled with the new one if the new partner is similar enough to the previous one that he can be addressed in a like manner, or if he instead conforms to the woman's overall conception of manhood, which is derived empirically, in large part pursuant to any adventures. A more susceptible woman struggles to reconcile multifarious impressions detachedly, which makes the accommodation of a new partner more problematic.

If women increasingly exhibit a preference for marriage partners they can dominate, at the same time that serially monogamous, even polygamous, relations are the norm prior to marriage, possibly the two phenomena are causally linked. My feeling is that virginity loss in a relationship that is curtailed engenders not only feeling of abandonment but of dissociation. The lover is not merely remembered but experienced – assimilated into the personality. The motivation for latterly taking a submissive partner therefore is twofold: the female "animus", the immanent male persona, is projected in the relationship but upon rejection it can be returned and re-assimilated, in personified form. A submissive partner is a viable object on which to exercise this animus; the new, submissive partner plays the role of the woman in her former, submissive incarnation. Secondly, to the extent the disturbance resulting from the original curtailed union is consciously realised there is resentment, which might generalise into misandry.

Obviously these are not good auspices for childrearing, and people are doing far less of it. Received wisdom has it that the price of each additional child is so high that importing citizens from parts of the world where the kind of complex inhibitions I try to explain have not yet taken hold is easier than reversing the trend towards infertility. But this conclusion, arrived at by consulting would-be mothers about cash incentives, is premature. While unresponsiveness to substantial cash incentives does imply a deep-seated reluctance to have children, the possibility remains that the reluctance is culturally-mediated and does not outlast this cultural moment.

Sexual relations with a post-pubescent minor fall shorter still of absolute consensus; as such the sociopathic effects described above are amplified in the case of abortive virginity loss in statutory childhood. As with drunken encounters, there is presumably a weak perception of what is being consented to, and with whom a relationship with is being entered into. Adolescents suffer moreover from impulsivity – have undeveloped executive cognition. The term "groom" is apt, referring as it does to the ease with which a minor can be primed – persuaded, according to their naivety, that superficial charm necessarily prefigures sincere kindness and reciprocal commitment, or that these things do not matter.

Instrumental too is the aforementioned long and widening gap between physical and psychological maturity (see chapter ten – I), during which time compelling arguments for hedonism abound, against which staid narratives about the merits of deferred gratification must compete. Another is that race, to a large extent, determines the speed of physical development, and we live in cosmopolitan societies (see also chapter ten – III).

To guard against a union which is unsustainable when the strongest feelings subside, many cultures, past and present, arrange marriages on behalf of young people whose wisdom is not equal to their passion.

Often today where rationality does intercede, the thinking is somewhat more crude. Jordan Peterson reminds us that in the animal kingdom females outsource their decision as to the fitness of a male to society's dominance hierarchy. To the extent that human females do the same, the dominance hierarchy structures itself around capabilities which got the job done before. One can question what the job is that was done well – whether it is a job that needs doing again.

V. Assisted Reproduction

In their article 'Assisted Reproduction in Same Sex Couples', Dorothy A. Greenfeld and Emre Seli cite studies on the wellbeing of children raised by homosexual couples across the indices of self-esteem, psychological adjustment, parental stress, anxiety, depression and attitudes towards child-rearing. These studies reveal little difference between heterosexual and homosexual parents, suggest if anything that children raised by homosexual parents perform better.[7]

I would adduce the opportunity cost for the homosexual couple and the children in their vicinity of the couple assuming parental responsibilities; unrelated children can in large numbers partake of the sense of fun which gay men exude as primary school teachers, TV presenters, etc., in a way that they cannot when the man is occupied with children.

The same argument can be made against assisted reproduction for homosexual couples as for abortion and fertility treatment in general (see chapter four – VI). Though the prospective adopter might suppose himself to be envisaging himself in the self-actualised future with his native complement of characteristics, it is questionable whether it is the faithful and exclusive transposition of self which is imagined.

Gregory Pence argues that a person who believes in Providence must see the hand of Providence in the dispensation of multiple gestation – a relatively common phenomenon among mothers who make recourse to fertility treatment, and who refrain from "selective reduction".[8] Still, getting this far with fertility treatment rather implies a tendency to leave less to Providence; to one who believes in Providence, the original fact of infertility is more likely to feel ominous. Religious thinking aside, perhaps a disinclination to rear children is relatively common among people

whose constitution inclines to infertility, and there is bitter irony in medically-assisted pregnancies placing higher-than-average demands on maternal care.

VI. Misandry

In Human Diversity, Charles Murray enumerates the differences in emotional cognition between men and women.[9] There are both activational effects – effects which determine behaviour via mood, and effects which pertain to differences in brain structure resulting from exposure to sex hormones during foetal and neo-natal development, as well as in later life.

In 'The Essential Difference' by Simon Baron-Cohen,[10] there is a critique of "extreme masculinity" which, though caveated with recognition of male achievement, neither offers nor avows the possibility of a proportionate critique of "extreme femininity". If the bias towards traditionally feminine traits is sustained ambiently, the bias could bear on the list of traits presented to parents to discriminate between, and to select embryos on the basis of.

Evidence of the pathologisation of male-ness is also found in the correspondence between more male phenotypes and the hallmarks of the modern conception of psychopathy – higher impulsiveness and lower risk aversion, as well as between male phenotypes and autism – a paucity of pro-social behaviour and social cognition.[11]

Obviously, a civilised society should include provisions to somehow render pro-social the hazards attending the stereotypically male condition – establish reasonable bounds for the "will to power". But as we seek to moderate male excesses, we should also respect exemplars of masculine thinking and not neglect to identify elements of feminine thinking and feminine proclivities which are productive of anti-social behaviour in certain circumstances.

More stereotypically female disorders of unproductive brooding or "rumination" such as post-traumatic stress disorder tend to attract sympathy rather than reproach, but these disorders have anti-social potential, either in the domestic or professional sphere, in conducing to immoderate prejudice – the unchallenged exercise of identification errors, where a hostile attitude is exercised reflexively towards a proximate object who in sooth bears little resemblance, or superficial resemblance, to the original culprit.

VII. Inducements to Homosexuality

Impulses are entrained because people in thrall to their proximate interests are better consumers. The impulsivity however is not limited to purchasing behaviour. Interpersonal relationships become vehicles for the facilitation of immediate gratification, where any conflict between proximate and distal interests is likely to be resolved in favour of the former. Women might opt

for a man with superficial charm and send the man with traits latterly associated with homosexuality packing. Thus our society, like Ancient Greece does, to some extent, "make" homosexuals, remove some people from the gene pool who would in another time or place have arrived there.

Transcendence of sexuality may be preferable to the person for whom sexual expression is untenable in the short- or long-term, but society has no role for him or her equivalent to the monk or nun of yesteryear. The "trans-sexual" person is worthy of respect, but in taking their queue from the orthodoxy and making sex the cornerstone of their identity, does the opposite of transcending sexuality.

VIII. Parental Discipline

The withholding of discipline, whether principled or negligent, is no guarantor of the non-expression of parental exasperation.

If rebukes are forthcoming, but derive only from the parents' vicissitudes, the child might conflate parental vicissitude with all kinds of structural factors outside the parental institution. The succeeding generation's adults may embody the atavisms of nihilism and infantilism. It can also happen that more order inheres to the individual than the institution (see also chapter ten – II), and that conflict should be resolved in favour of the individual.

While not enough discipline or sporadic discipline is problematic, restrictions can be imposed too soon and too far, while the authority one is in thrall to, be it a person or institution, is human and not receptive to the goodness God instils in the subject.

IX. Over-Stimulation

With too-rich stimulus, baseline satisfaction is diminished, basic joie de vivre is dulled. The not-yet post-human yet hyper-indulged person is unable to thrive in the niche evolved to accommodate his ancestors, their near-identical physiology and evolutionary heritage notwithstanding. The one knows too little of the other to prescribe his living conditions, yet this is what is done for eventual post-humans – their nature emerges no less as a consequence of our forays into exaptation, for those forays being conceived in ignorance of the destination state.

With an augmented satisfaction threshold, there is not only the problem of insatiability, but of hyper-sensitivity to normal stressors, which is repugnant when not accompanied by superior sense. Even though the degeneration would be more obvious to an observer, there might be sufficient self-recognition of degeneracy that post-humanity is ceded to without much fightback.

The technology to upload consciousness to a digital substrate is far enough away, the interim period long enough, that the intervening technologies render us insouciant of the "lossiness" of the aforementioned exaptation, insouciance which contributes to said lossiness. Moreover, we risk failing to accurately anticipate the encounter between the persons which transpire from the exaptation, and the milieu they inhabit – the orientation and the objective value of the consciousness emerging from the interaction.

Chapter Eleven – In Defence of Conservatism in Psychiatry

I. Hyper-Normativity

> "There is a disconcerting symmetry between Prozac and Ritalin. The former is prescribed heavily for depressed women lacking in self-esteem; it gives them more of the alpha-male feeling that comes with high serotonin levels. Ritalin, on the other hand, is prescribed largely for young boys who do not want to sit still in class because nature never designed them to behave that way. Together, the two sexes are gently nudged toward that androgynous median personality, self-satisfied and socially compliant, that is the current politically correct outcome in American society".
>
> —Francis Fukuyama, *Our Posthuman Future*

In the USA, between 2016 and 2022, the number of children aged 3 – 17 diagnosed with ADHD increased from 6 million to 7 million, of whom the larger part are receiving medication – the portion varies from 38% to 81% by state.[1]

Meanwhile, the official incidence of Autism and Asperger's syndrome has risen approximately 23-fold since the 1980s.[2,3] The part of this increased incidence which is not organic is due to a broadening of the diagnostic category. This edging towards the mean of the morbidity threshold has coincided with an increase in psychology courses: between 2012 and 2021, the period for which I found data, the number of psychology Bachelor's degrees increased by 16%.[4] A self-propagating academic culture can to a large extent determine the norms of the society into which embryo selection and germ-line implantation are situated; parents, according to their preference for progressed normality which is in some way inculcated, would be motivated to help usher in an end to history.

If multivariate analysis reliably reveals strong correlation between all of the variables associated with a psychiatric classification, then the condition is likely more categorical than dimensional; it is a phenomenon no less taxonomic than a physical disorder.

Scott Alexander explains one way that taxometricians decide at what point a cluster of symptoms constitutes an illness; he explains that depression, for instance, begins or is most emphatically present at the level of weight loss which corresponds to the highest covariance between early waking and psychomotor retardation. He admits that the covariance of sadness and crying are not any more correlated at any one level of weight loss than at any other, but attributes this not to

depression not being categorical, but to the polyvalence of sadness and crying, their having depression as one of many lodestars.

The bottom line is that the taxonomy status of psychiatric conditions ranges from 0.28 to 0.58, where 0 is entirely dimensional – like height, and 1 is entirely categorical – like influenza.[5]

II. Helping Profession

Medication is deemed preferable to inaction or less-invasive treatment modalities, though alterations to brain chemistry concurrent with the administration of drugs resonate imperfectly with the patient's symptoms as presented to a clinician, though the action of drugs is not especially adroit. At the same time, the risks attending the counterfactual non-medication scenario – suicide or medium-term disutility, for example – are clear and present, and directly implicate the dispensing authority. However, side effects remain problematic to quantify or attribute to the drugs.

Drugs must be approved so evolve to retain side effects which are attributable to the drug only if an evidentiary threshold is passed, much like a false flag operation or a stimulus which doesn't quite pass the high depolarisation threshold of the nerve cell, but is scarcely less salient for all that.

There are many reasons why a person might train to become a psychologist, sincere altruism being one. More than with neophytes of other sciences though, neophytes of psychology are saddled with pre-existing theories whose eradication comes at a cost. A person whose intuitive grasp of the human mind is reasonably sound stands to gain less from, and is less motivated to undertake, formal training which takes the place of intuition; it is his loss, but also the loss of the profession.

By identifying the tendency of some patients to transfer their attitudes towards authority to the clinician, progress has been made towards eliminating paternalism in a clinical setting. Still there is scarcely a professional setting where the client is more vulnerable, more prone to abuses of power, than the psychiatrist or psychotherapist's office. There is the opportunity for conscious manipulation in gratification of the desire for control, even harm, but also unconscious manipulation, if a professional less self-aware projects traits onto her patient. A traditional safeguard against the therapist's encroaching personhood into the therapeutic setting is the insistence on professional self-therapy with the aim of fostering self-regulation during training. While the would-be therapist might thereby be availed of self-knowledge, she is not necessarily availed of the means to employ this knowledge to enduring and philanthropic effect, this being more of a philosophical matter. Moreover, the clinician can merely make a show of self-disclosure before proceeding to abuse her power with impunity.

Unconditional positive regard has always been an awkward proposition in a clinical setting because submission to treatment implies awareness of one's fallibility. Still, any problematisation of the patient's behaviour or understanding should not be abstracted from a clearly justified rationale for improving her life outcomes. When the welfare of the wider community is represented in the therapeutic setting and made the subject of therapeutic input, the psychotherapist becomes an investigator of thought crimes, at once violating the duty of care which binds psychotherapists and the presumption of innocence which binds police.

The diagnostic criterion of being in therapy for narcissistic personality disorder and other personality disorders is alarming because the administration of punition, in the form of pejorative branding, pursuant to seeking psychiatric help, indicates a change in orientation for the profession; psychiatry is co-opted for policing purposes, with all the force of pharmacology behind it, yet without the epistemic rigour which other scientific disciplines derive authority from.

Scott Alexander explains that there are psychiatrists who preserve the nomenclature but consider them as imperfect rules of thumb – placeholder definitions expedient only until greater familiarity is established with the patient and the particularities of his case. But for the flawed heuristics of the nomenclature to remain authoritative, the view must persist that the nomenclature does distil cosmic truth.[6]

III. The Coming Challenge from Neuroscience

Disagreement between psychiatrists is in part due to the circumstance of clinical presentation consisting in part of self-curated and often-superficial biographical disclosures of the patient, which are not always artless.

It may be that pursuant to subjection to neuro-imaging, individuals formerly sharing a diagnosis within the traditional psychiatric rubric continue to do so – remain apportioned to the same clusters; but if not, neuro-imaging might see psychiatry engaging in what Slavoj Zizek coined "ptolemisation" – efforts to cheat obsolescence by whatever logical contortions are expedient, for the seizing back of tenure from a novel discipline-competitor.[7]

Given the heterogeneity within and commonality between diagnostic categories, it could be that information about underlying pathophysiology from advanced scanning heralds upheaval. But with the entrenchment of psychiatry in policing it's possible that the iterative model somehow ploughs on, if the classifications it has produced can be couched in terms vague enough to elude invalidation. Let us hope that psychiatry remains a helping profession, that practitioners availed of new information deign thenceforth, as far as is reasonable, to couch prognostications in terms of potentialities and not probabilities.

In recognition of the high preponderance of co-morbidity among psychiatric patients, the neuroscientist Jaak Panksepp proposes classifying patients by endophenotypes – "to link basic emotional processes that are commonly imbalanced in psychiatric disorders to neuroanatomical, neurochemical, neurophysiology, and molecular genetic levels of analysis" (see also chapter five – I).[8] Classifications derived thus could correspond more neatly to neuronal reality than "syndromal-conceptual thinking", but neuroscience without an epistemic foundation in psychology might also be prone to poetic license.

IV. SSRIs – Background

Neuroscientists hypothesise that psychiatric illness arises from dysfunction in a small number of intrinsic connectivity networks (ICNs) but that these dysfunctions are cross-modal. According to Charles Zorumsky, the plasticity of the brain produces compensatory changes in other ICNs: "some of these changes may improve function and some may compound the primary deficits".[9] In which case, it remains possible that neurological states coinciding with a psychological condition attest to effective adaptation.

Thinning in parts of the parietal cortex has been found to coincide with highly familiar depressive disorders, moreover studies of children and adolescents suggest that these changes antedate significant clinical symptoms;[10] still genes might predispose without inevitably giving rise to the organic brain changes. It may be that changes to education and culture capable of limiting cognitive dysfunction are practicable.

Anti-depressants and mood stabilisers enhance function in systems which are found to be abnormal; their dispensation presumes an inability on the part of intrinsic adaptation to address dysfunction.

The preponderance of SSRIs, the off-label use thereof and their partial supersession by psilocybin, which also acts on serotonin receptors, illustrates how a lesser intervention, once normalised, can evolve into a greater one – can bear the same relation to its precedent as the precedent once did to the historic baseline of non-intervention. Meanwhile, the psychological state of the altered subject, manifestly serene, offers no check to clinical ambition.

The norms which determine the definition of wellness are transient and the far-side of a spectrum can result in the other extremity becoming as high ground flocked to; the word "sad" has only been used pejoratively since about 1934.[11]

V. Serotonin in Animal Society

In establishing a connection between high serotonin levels and positive life outcomes, Jordan Peterson recounts the plight of lobsters whose brains cease to function under the influence of too little serotonin.[12]

In the case of lobsters, it appears that varying levels of serotonin perform the evolutionary work of keeping weaker specimens out of the way of reproduction.

However, in the complex societies of people, it may be that environmental conditions which tend to accompany low social status more frequently conduce to undesirable life outcomes than those accompanying higher social status. If the traits which were consistent with social dominance have changed in such a short time, but a high-serotonin endowment unites successful people now as then, it appears that serotonin is rather an emergent property of success than a hallmark of inveterate dominance.

Whereas in lobster societies a small number of battles will determine a lobster's prospects for survival and reproduction, human societies are more forgiving, as befits more complex organisms; disappointments can be overcome and ambition re-directed following humiliation to some degree; though this relies on concerned parties being able to forget, as well as the non-existence of a permanent record.

VI. SSRIs and Society

SSRIs are prescribed liberally in the West. During 2015 to 2018, 13.2% of US adults aged 18 and over used antidepressant medications in the foregoing 30 days;[13] this includes off-label prescriptions for pathologies as diverse as neuropathy and SARS-CoV-2.

Perhaps the favour shown to SSRIs is partially attributable to the well-established connection between low serotonin, which SSRIs redress, and explosive aggression, which is anti-social. Even if low serotonin is found to substantially contribute to an inclination to act on hostile intent, it can be objectionable to compel use, for the reason that SSRIs themselves enact violence (see also chapter eleven – II). The question is what significance should be accorded to the loss of utility accruing to the pharmacological re-calibration, if there is a significant probability of the subject posing a threat to society. The answer is some, the more so as augmented serotonin levels augment assertiveness;[14] absent grounding, enhanced assertiveness can make people ridiculous and irresponsible which has social costs of its own. We should be more interested in the complex environmental causes of depression; this requires that social science keeps apace with neuroscience.

In Plato's Republic, Socrates delineated three elements of the soul: a desiring part, a rational part and thymos – approximating to pride, dignity and a demand for recognition.[15] As the population grows and technology facilitates confrontation between conflicting world views, thymos looks to many like a proclivity with anti-social potential; to one inclined to conflate the maintenance of

the prevailing order with stability, thymos appears as untenable ambition to be gainsaid and its proceeds censored.

Increasingly the solution to a disappointed birthright is the administration of SSRIs, enabling the individual to arrive at complacency having neither achieved success nor undergone its travails. In this way the patient is left to his own devices, and the society is bereft of what those devices, once tempered, could have achieved for it.

Whether low serotonin is considered to have been perpetrated by the society or nature, proponents of SSRIs will argue that intervention serves to redress an injustice.

Still, the feeling of shame which traditionally attends failure has the advantage of motivating the person to focus on the environmental pre-cursor of his low serotonin. If SSRIs are taken, complacency precludes the spur to action which can bring about sustained contentment.

The society doesn't necessarily benefit, on balance, from distinguished elements enjoying the fruits of imaginary success, from having salient persons – persons of interest – exist for the amusement of a staid elite, and for high normativity to determine how social status is allocated indefinitely. It remains rare for dispirited people to be regarded as victims of imperfectly meritocratic hierarchies. The Social Competition Hypothesis of Depression for example, comes to the defence of extant hierarchies, saying that serious depression emerges from the blocking of "voluntary yielding";[16] that depression emerges from recalcitrance in the face of a dominant individual or unyielding circumstance which should prompt the revision of self-estimation in light of this emerging evidence. By this schema, depression is supposed indicative of exaggerated self-esteem.

VII. Depressive Acuity

It is not always immediately apparent whether derangement in response to a common stressor indicates inadequate resilience, or uncommon sensibility or its pre-cursor; the transpiration and maintenance of which rightfully demands a higher price, a higher "footprint".

Resilience can be squandered in the cause of formal education which is not any more enlightening for not being instructive. And expectations can be set unreasonably high by diverse shining objects, which leave the beholder arguably with less in this life and less in the next. Globalisation is instrumental in disorientation: a person doesn't only contend with being a smaller fish in a bigger pond as he makes his way in the world, but with the loss of community. Even to the extent that the problem is inadequate resilience then, discontentment cannot always be dismissed as basic self-conceit.

In seeking to confer resilience we must also recognise that a fine constitution is one prone to derangement and seek to cultivate what finesse and gravity we can. How much she can afford to

remain in conspicuous defiance of an insalubrious circumstance, how long she can prevail as her authentic self, is best known to her, but it is clear that non-aggression can come at a high price. If sensibility is at the root of the unease, the felt disturbance is disturbing objectively, and action taken against it might be righteous, redound to the benediction of future persons.

A person differently situated might appreciate the depressed person's quandary but still characterise her precarious equanimity as infirmity deserving of condescension. Yet a serious-minded person can engage with aspects of reality which elude one with a more cheerful disposition. There is often aloofness, still philanthropy is not always inferior for being exercised beyond the immediate vicinity. The fact that virtuous proclivities might lay fallow upon chronic disengagement, giving way to proclivities less virtuous, constitutes no proof against the immanence, albeit God-given, of virtue.

When great hardship is encountered in childhood, it can happen that the capacity for suffering enlarges in deference to the presenting circumstance. Some people of faith believe that suffering never exceeds the sufferer's threshold of despair, or that for tribulations to overwhelm, intemperate means must have been taken to stave them off. Still, if great tribulations are visited on a sensitised constitution precipitously – there is, pursuant to much grief, a loss of sentience which is greater, potentially, than the sentience which his counterpart, who is inured to suffering, forsakes. I speak of individuals, but there is a civilisational analogue, which is apparently ongoing.

If suffering doesn't arise organically in the ordinary course of our lives, because of the partial sequestration of our civilisation from the natural world, it is appropriate for suffering to be extemporised, like a homeopathic remedy – for the individual to be sufficiently habituated to suffering that suffering can be withstood when the floodgates of modern civilisation are not proof against nature.

Depressives might be sentries on the frontier of chaos, never mastering it completely, but making incursions into it, that the order within might be expanded and enriched. Theirs is the satisfaction of sounding the depths and blazing a trail for mankind, on pain of permitting the chaos without.

Lobaczewski observes that "during good times, people progressively lose sight of the need for profound reflection, introspection, knowledge of others, and an understanding of life's complicated laws" and that "any excess mental effort seems like pointless labor if life's joys appear to be available for the taking".[17] A maladapted individual, finding himself at variance with his society, perpetually garners the insight of hard times because, whatever else he may be, he is perpetually threatened by a disintegrative state, "leading to a higher level of understanding and acceptance of the laws of life, to a better comprehension of self and others, and to a more highly developed sensitivity in interpersonal relationships".[18] While a neurotic condition signals a failure to overcome this imposition, the absence of neurosis is not evidence of having overcome any serious imposition. One who by his outlying status courts disintegration may exhibit pathological behaviour or achieve greatness, or something of each; necessity, the mother of invention cuts out his work in easy times as in hard.

In an experiment conducted by neuroscientist Molly Crockett, participants were asked to choose between allowing several people to die by inaction, and preventing these deaths by instigating the death of a single person.[19] Whereas classical deontological reasoning would favour the first course of action, consequentialist reasoning would favour the second. Crockett found that an increase of serotonin availability favoured inaction.

In one study subjects who were administered the SSRI citalopram rejected slightly or somewhat fewer unfair offers, while subjects whose diet was briefly deprived of the serotonin precursor tryptophan were slower to accept fair exchange.[20] Neuroimaging data revealed that "depletion simultaneously reduced ventral striatal responses to fairness and increased dorsal striatal responses during punishment"; ventral and dorsal striatum being associated with fairness and punishment.[21] The study also found that "depleted participants were more likely to punish unfair behavior directed toward themselves, but not unfair behavior directed toward others".[22] There is in other words, no compensatory interest in norm enforcement among the depleted cohort: depletion actually blunted fairness motives.

This research reinforces intuition that all else being equal unhappy people will have less sympathy to spare, less interest in being generous. However, the study assesses the mind states of people plunged into depleted serotonin status; low serotonin is not a hallmark of their constitution, around which the constitution is configured. I propose that a corollary of the new-found miserliness of tryptophan-depleted subjects is the new-found assertiveness which accompanies administration of serotonergic anti-depressants.[23] See also chapter ten – X.

VIII. Limits of Depressive Realism

Colin Feltham coined the term "depressive realism" as an apology for nihilism.[24] My sense is more of "depressive acuity", which indicates that wisdom can emerge from, and sensibility prefigure, a depressed condition. Depressive acuity does not countenance despair chic, which would trivialise the reformist or creative work which depression is little if not the spur to.

Depressive realism which culminates in evocations of despair is not sublime but cathartic, and anti-social to the degree it is rationalised – to the degree seeds of doubt are sown on the beliefs which buoy the better part of humanity.

Cerebral tail-chasing, interminable toing and froing between forbidden knowing and cathartic forgetting does not conduce to the cultivation of leadership qualities; though one who defies his auditors to shoot down his despairing world view may yet be an artist, even a highly-distinguished one.

A work of art is satisfying even if the characters suffer misfortune, if their suffering proceeds by an internal logic. To catastrophise or practice catharsis is to share the problem, and in this way the problem might well be halved, if the problem in question is a common one. This is a good

outcome even though the work is better characterised as coprography than art. The problem comes when the coprography subsumes the art; in this case practitioners of catharsis invite you to get off, disorientated, before any moral quandary is concluded, or a conclusion attempted. This is a challenge worth rising to for the would-be artist, lest he is haunted by the plaints of those later waylaid. I understand Japanese audiences see it differently, and respect that.

If only to avoid positively courting fortune's disfavour, depressive acuity counsels not committing so much to insure against future suffering that the effect is indistinguishable from self-absorption at best and aggression at worst.

Still, what finishes in misanthropy often begins in scepticism which could have transpired in reform but for the intransigence of the society or the governing authority, which grows more intransigent still in the absence of the anguished person's philanthropic contribution. Of course there may be all manner of predicates, origin stories.

IX. Regret: Grief and Suicide

Let us consider grief and its viability, specifically whether or not its pharmacological attenuation is appropriate. Even in the case of the grief being extreme or prolonged, the effect of its mitigation is not limited to the grieving person. In anticipation of being forgotten by friends and relatives, or remembered without the attending emotion, a moribund person is deprived of some consolation. For an individual who neither believes in a literal afterlife, nor has an oeuvre of work to vouchsafe a legacy, afterlife consists of continued presence in the minds of those that the departed has touched throughout his life. It is only selfish to wish for loved ones to grieve, if the grief amounts or leads to nothing, and no-one can say that it does.

One who solicits intervention to effect his own death might in life have disregarded or neglected his distal interests. Recognition of merely continuing in this vein by the suicidal act, if this is what is done, may elicit remorse and actionable insight, though tragically the feeling and insight might follow commitment to the suicidal act.

A person might be driven to suicide by under-estimating his capacity to meet the challenges that await him, err in estimating himself by pre-established resilience rather than the type of resilience which emerges in response to a novel challenge.

X. The Banality of Oxytocin

Glucocorticoid receptors are present in greater quantities among children subjected to attentive nurturing. Therefore if therapy were available to induce a proliferation of these, a clinician might decide there could be little harm in making these available, clinically, to a child raised in a less

nurturing environment, if by doing so the child is spared some of the negative emotion attending the stressors he is likely subject to.

Yet just as a child wrested from familiar circumstances may be bewildered by new circumstances and expectations of which there is no precedent in his life heretofore, so a person who has been interfered with chemically might suffer through the excision of his interface with the world, the world alongside which his proclivities have evolved. Furthermore, the mere existence and perceived value of such therapy might have a nocebo effect. Just as an abused child might suffer additionally through the stigma a society sensitised to child abuse extends to him, knowingly or not, a tendency to feel stress or manifest some other supposedly undesirable trait potentially becomes all the more problematic if pathologised.

A surge of vasopressin and oxytocin in response to physical contact with the caregiver indicates that the filial bond is sympathetic;[25] however, this degree of intimacy growing up might presage dependency on human kindness that is eventually untenable; a highly-developed reward system might portend reluctance to participate effectively in non-emotional transactions: a person who is motivated by the prospect of emotional warmth might be ill-equipped to work autonomously, for example. Furthermore, while productive of trustfulness and ready sympathy, the attendant complacency might tend perhaps to negligence of the imperceptible ill-effects accruing to the moral consensus.

Oxytocin is released during orgasm, childbirth and breastfeeding; inducing positive emotions which facilitate procreation. It also facilitates expressions of trust.[26] Still the trust which prefigures physical intimacy is preceded by and predicated on countervailing suspiciousness. A woman might calculatedly establish the harmlessness of a partner by subjecting him to trials intended to offer proof of his usefulness or disinclination to exploit vulnerability. Outside of the dynamic described, where oxytocin exists as the biological correlate to earned trustfulness, oxytocin would confer a degree of credulity which is maladaptive.

Conversely, while a child deprived of familial affection might be disinclined to flourish in micro-social situations, there might be superior attunement to the world at large. A person inured to maltreatment is familiar with the variform manifestations of moral degeneracy, is possibly possessed of insight which is philanthropically actionable. Similarly, although isolation might prevent a withdrawn person from encountering challenges which transpire in true objectivity, the isolated person is insulated from positive reinforcement and other trappings of the in-group which are morally debasing.

It is to the detriment of the world if both types of individuals are not represented, as much as one might despair either of the tendency to irresponsibility of the former or the tendency to inter-personal illiteracy of the latter. It remains just as well that we are all different.

Oxytocin's portrayal as a chemical which conduces to philanthropy together with the circumstance of its presence at higher levels among women, casts doubt on the moral status of masculinity*. Research shows that oxytocin, while promoting in-group cohesion, even generosity

to strangers –[27] promotes out-group aggression, albeit defensive "tend and defend" aggression**.[28] For all women's virtue, ask yourself if you would rather have a neighbourly dispute with a female neighbour, or her husband.

In many cases, the intrinsic motivation to do good is discouraged by the intangibility of moral agency. In a certain sense, a person knows that incorrectly completing a form so as to be given preferential treatment by a public service provider is equivalent to jumping the queue in a supermarket, but perceives that the injury is spread thinly so pays little attention to it.

Thomas Hylland Eriksen describes "the banality of evil" at work in the case of air travel:

"An environmentally conscious person in the global middle class may justify flying by stating that 'the plane would have departed anyway'. Sliding almost unnoticed from the personal to the macro scale, he fails to see, or refuses to admit, that every passenger is in the same structural position as himself, and that the large scale of the airline service is simply the sum of the small-scale acts by himself and a couple of hundred others, neither more nor less".[29]

Conversely, paying taxes or spending taxpayer's money conscientiously doesn't affect us in the same way as helping an elderly person across the road. This is the "banality of good".

Gandhi's injunction to be the change you wish to see in the world is ignored in too large a society, because the democratic principle is subject to the same distortion as economies when operant at scale. There is a double bind: not only is sympathy as a guarantor of moral rectitude precluded where the adverse effect on one person by the negligence of the other is withheld from the latter person's view, but with the decline of religion, the preservation of moral agency by cold principle is problematised. With the impossibility, perceived or real, of moral action, we find advocacy for rational action, motivated by price incentives which act as utilitarian injunctions. In this world, policy-makers might come to regard Bruno Frey's ideas on intrinsic motivation as something worthy of notice, but only as a quaint footnote.[30]

There is perhaps more often than is comfortable to admit, mutual exclusivity between one's own well-being and the well-being of others, at least in the absence of effort or serious problem-solving. While it stands to reason that an unhappy person might spare little sympathy for the plight of another, it seems intuitive too that transports of ecstasy would prevent a person from taking seriously the interests of a more anhedonically disposed person. In the first case there might be cognitive empathy devoid of affective empathy; in the second, affective empathy devoid of cognitive empathy, rendering null the altruistic intent.

XI. Schizophrenic Realism and Creativity

Perhaps schizophrenia is analogous to a hypothermic recoil from insalubrious stimuli – whether the withdrawal is behavioural, to pre-empt derangement, or more profound and testament to

reactive plasticity. People identified as being schizophrenic typically have difficulties with working memory and auditory processing, and tend to manifest dysconnectivity in the frontoparietal attention network.[31,32] Short path lengths are a manifestation of the small-world connectivity which characterise brain networks; but whereas individuals with schizophrenia exhibit diminished connectivity of frontal cortex hubs, non-frontal cortical regions are highly connected (P&FC, p.94). Perhaps the diminished IQ (P&FC p.94 / Van den Heuvel) associated with schizophrenia and also with short cortical length trades-off with creativity, and conduces to "genius" in some cases, at least when the trade off isn't so great that IQ-adjacent competence is plunged below a critical level.[33]

Eysenck observes that beyond a score of 120, creativity and intelligence are uncorrelated.[34] If the most original artists and musicians reliably have a lower IQ than the most original scientists and mathematicians though, and the best scientists and mathematicians could not conceivably have been artists and musicians, and vice versa, then IQ must determine not the quality of creative output but the type; as such, "G" does not bear upon creativity, certainly beyond the specified threshold of 120, approximately the tenth percentile. Conceivably IQ which lags conspicuously, is below the tenth percentile, could also be concurrent with high creativity, though the combination yields nothing at once brilliant and *accessible*.

If creativity goes from being correlated with IQs under 120, to being not correlated with IQs over this number, is there a threshold beyond which IQ is anti-correlated with creativity? It depends if scientific and mathematical endeavour, which tends to be collective, occupies the same category as musical and artistic endeavour, which tends to be individual. If not, then yes, though you can point to polyvalent luminaries like John Stuart Mill, Bertrand Russell, Jules Verne.

Different problems mark different eras, and different cognitive styles are demanded. If the most innovative problem solvers are prevented either from discriminating between problems by priority, or by engaging with the problem according to their cognitive style, the most salient problems of the time will go unsolved. It is perhaps frightening to imagine the truth that is witnessed by one generation's genii, being the lodestar for the next, but this may be the only possible world.

Although Asperger's syndrome is only common among the cohort of individuals with exceptionally high IQ, people with some Asperger's characteristics are probably over-represented among individuals with very high, but not exceptionally high, IQ. One condition which is anti-correlated with IQ is schizophrenia. Clinical psychiatrist and esteemed blogger Scott Alexander defines schizophrenia and autism as distinct psychic configurations between which exists a spectrum; likewise Iain McGilchrist observes that right hemisphere dominance types tend to behold inanimate objects as animate while left hemisphere types do the reverse. These are orientations which approximate to the conscious experience of "magical" and "logical" thinkers respectively. All else being equal a classic "righty" by McGilchrist's schema is going to have more difficulty with an IQ puzzle. His tendency to anthropomorphically connote the symbols and shapes is a hindrance if he is a scientist, but not so much if he is reckoning with phenomena

embedded in ordinary reality. It may not be a problem of inferior cognition so much as of disparate cognitive styles.

McGilchrist's argument that the cognitive style of the shaman or artist is wanting esteem in the modern world is supported by the Flynn effect, specifically the part of it which is not explained by advances in education and nutrition. It is not that the IQ test is rigged but that life's travails resemble the type of puzzle encountered in an IQ test more than they used to. Still, though not positively rigged, the fox and henhouse problem is a thorny one, made more so by the male brained-ness of the guardians.[35] As I wrote about in my previous book, Western man is poorly adapted to thrive under a full CCP-type technocracy.

Chapter Twelve – Psychopathic Realism

I. Social Model of Mental Illness

Combine ambient psychiatrically-inspired self-pathologising and genuine culturally-mediated pathology and you have psychopharmacology for enhancement not remediation.

In 2007, Crespi, Summers and Dorus analysed the DNA from several human populations and found evidence for positive selection of 28 of the 76 genes "demonstrated to mediate liability to schizophrenia".[1] The research suggested that various combinations of these genes were associated with linguistic skill and creativity but that "having most or all of them leads to schizophrenia".[2]

While it is conceivable that proclivities such as extreme creativity or abundant social cognition could concur with a pre-disposition to laziness or introversion, respectively, and contribute to the likelihood of schizophrenia, it's also conceivable that an under-stimulating school or home environment is responsible. Moreover, the emergence of positive symptoms doesn't preclude the continued realisation of exceptional imaginative attributes. Indeed, it would be a tragedy if having won such attributes at the price of a "normal life", the bargain is not upheld. Many if not all non-organic forms of mental illness and personality disorder can be viewed as an outgrowth of the negative tendencies attending the proclivities of diverse types of outlier, to whom sincere professional-humanitarian regard forbears the extension of value judgements. Arguably, in many if not all cases, the outgrowth is partly attributable to the failure of the family or society to meaningfully integrate the subject's qualities. A professional tasked with managing the fallout of this tragedy is likely disinclined to countenance the exceptional claims of one who curses the profession's existence. Little could be easier for such a professional than with-holding opposition to a regime which through a lack of resources – financial or intellectual – fails to conduct risk assessments which factor the outlier's potential contribution to society, albeit a notional one. Preparedness might come in the form of considering how society and educational institutions can nurture true cognitive diversity (see also chapter ten – II).

A study by Nesse and Williams in 1995 involving 39,000 participants from five different world regions showed that the increase in depression in young people is universal and cross-cultural, though the problem appears to be worse in richer countries.[3] Nesse and Williams partly attribute the trend to the disillusionment felt upon exposure to exemplars of particular attributes, as with exposure comes comparisons which are unfavourable to the consumer of information.

For the individual, certain proclivities are expanded out of proportion in service of the larger tapestry. The society appears to fare well for the moment, but naturally the fabric suffers when the material pledged to it is warped. In his deprivation, the citizen covets the kaleidoscopic nature he beholds without, and the recompense he demands is intemperate, misguided. A person who is

unhappy with himself is not what he could have been; sensing the impossibility of reifying the counterfactual, yet perceiving its desirability, he unconsciously lands on a messy workaround. Malaise tends not to be remediated so much by addressing the root cause as by uprooting oneself, undergoing a partial suicide via demoralisation by SSRI or partial self-extirpation via psilocybin microdosing, say. I am not trying to say that these things are never beneficial; at the individual level, sometimes a semblance of contentment is all that is attainable in the foreseeable future.

A taboo serves to guard against the encroaching acceptability of something which once conduced to a bad outcome. Sometimes though a taboo is a dangerous anachronism causing a weak link in the person or group's epistemology, which renders the epistemology untenable. The same can be true with psychical competence, where the weakness of or affliction to one faculty can compromise overall functionality, though the faculties it sits in juxtaposition to are, judged in isolation, highly evolved; the chasmic, dissolute psyche is still majestic and spellbinding. A therapeutic intervention, love or an effective social contract might shore up support at the site where autonomy short circuits.

Someone who struggles with one particular aspect of their psyche but who is nonetheless capable of great authenticity might resist such patronisation; to resist this patronisation is by itself not symptomatic of pathology. Weak link or not, there might be more order within the psyche of an individual than in the social organisation he is supposed to identify with, particularly in times when the overarching culture is objectively poor, characterised by hysteria, say. Egotism can thrive in times when resistance draws from self-assurance, when there is downward socio-occupational adjustment, say. It might be ugly, but it is expedient and cannot be judged out of hand; blame lies in large part with the culture which sees credentials and opportunity dispensed arbitrarily.

II. The Biggest Gang

In Political Phrenology – the Science of Evil, Andrew M. Lobaczewski battens down the hatches, warning that "a perfidious, preemptive aggression against persons who have a talent for psychology or demonstrate knowledge in this field" is symptomatic of psychopathy, imputing this especially to clergymen, whose disparate epistemic tradition sees them as rivals in plain sight: the (now apocryphal) asthenic psychopath, "is relatively less vital sexually and is therefore amenable to accepting celibacy, that is why some Catholic monks and priests often represent lesser or minor cases of this anomaly. Such individuals may very likely have inspired the anti-psychological attitude traditional in Church thinking".[4]

In a 2008 New Yorker article entitled Suffering Souls, John Seabrook explains that "psychopaths are as old as Cain and they are believed to exist in all cultures, although they are more prevalent in individualistic societies in the West".[5]

The article also describes the work of Dr Kiehl, who is tasked with diagnosing psychopaths at the Western New Mexico Correctional Facility. "According to Dr Kiehl, "Someone who scores a thirty-five, a thirty-six, they are just different. You say to yourself, 'Aha, here you are. You are why I do this.'"". One of his postdocs, a Carla Harenski, on interviewing an inmate who scored 38.9 out of 40 on the PCL-R test (the threshold for psychopathy being 30 (in the USA)), says of her response to the inmate, ""I was just excited," and "I was saying to myself, 'Wow. I found a real one.'"".[6]

Discussing patients as a fisherman might a prize haul, the high moral ground, the legitimate basis of the clinician's authority, is ceded. The psychopath, alleged or real, seeing himself beheld with no more humanity than his own victims, though the clinician himself is not threatened, finds equivalence between the world he stalks and the world that denounces him, represented by the clinician. No expression is facilitated for the nascent promptings of conscience, as befits a helping profession.

The alleged psychopath might well ask himself, 'would this individual, subject to the hardships I have undergone, let any scruples stand in the way of doing the best for himself?' Everyone has their limits, but submitting to the trials of the alleged psychopath with serenity is more likely to inspire the former with faith in human nature than any psychotherapist without *skin in the game,* not least if *their* (the psychotherapist's) *moves are his* (the alleged psychopath). *Even* psychotherapy sometimes make inroads into psychopathy. If we want to make our institutions more benevolent, we must neither go so far as to see win-win solutions everything nor give free rein to hard-bitten intuitions about lost causes.

In understanding disordered personality we might look to wrong turns taken and the tendency of these to beget wrong turns; like anyone effecting self-reform with even a grain of good intentions, coming to see himself as others see him, having made the mistakes he has.

There are many tyrants whose schemes appear in retrospect as unalloyed evil. It is not always a piece of postmodern cynicism to decide that we must fall short of utter condemnation in our judgement, lest in denying our common humanity, we unjustly exculpate ourselves.

III. Arc of Character

As for excessive self-regard, the cornerstone of narcissism, there may be virtues which are no less real for having not found proper expression; to believe otherwise is to side prematurely with the milieu which the patient feels herself to have been hard done by.

It is dangerous for a clinician to have this diagnosis in his armoury, warranting as it does pathologisation instead of the provision of safe harbour for a thin-skinned person to chart the nuances of a noble cause without the fear of failure or criticism which in another circumstance might derail their efforts and have them revert to compensatory self-aggrandisement or anti-social behaviour, though sometimes these activities are recreational.

Responses to implicit association tests which are self-laudatory in agentic domains are supposed to indicate inordinate self-conceit,[7] but these biases could be premised on prior ego reinforcement strategies, to protect against low self-esteem, if not premised on empirical truth.

Paradoxically, it sometimes takes consciousness of being right in the main, to admit to being wrong in a specific instance, as the alleged narcissist cannot apparently do. We should not say 'sensitiveness is a strong sign of inferiority',[8] as affronted dignity presents in a like manner.

Mohammed Ali justified discriminatory racism towards white people on the basis that there aren't enough who do have good intentions towards black people for these well-wishers to neutralise the threat represented by the others.[9] A psychologist might reason similarly: if he encounters behaviour which elicits fear or disgust among ordinary people reliably enough, it might be considered objectively fearful or disgusting; considered normatively sound therefore for the clinician to maintain an antagonistic stance – to look no further than the client for the assignation of blame. From the client's perspective though, his own species of perversity or plain bad manners serves as protection, a proportionate response to ambient stressors which sensitive people tend to identify as such, to the extent that his problem is sensitivity.

When the alleged narcissist shifts blame, how disinterested can the psychiatrist be who reflexively denies the legitimacy of the displacement, while the world which the alleged narcissist stands in juxtaposed relation to is very same which remunerates the psychiatrist handsomely?

A professional caregiver would do better to parse the legitimate aspect of an alleged narcissist's grievances than to feign recognition of them wholesale, even if only to better incentivise compliance. Seeking only to manipulate, the clinician can hardly inspire the alleged narcissist to change his ways, the less so as the client is supposed to himself be a manipulator. There has to be a wellspring of philanthropy on the part of the caregiver, to inspire gratitude and thereby assist the patient to orient whatever portion of his vaunted superiority is real, to a noble cause. The clinician can de-compress when he clocks out. Until then he can try to partake of that rejoicing reserved for the lost sheep.

The progression of Campbell's own view of narcissism, manifest through the book's progression, is illustrative. It begins with an exposition of formal assessment criteria as if in exasperation of the institutional bane of differential diagnosis, even the nuances of human variance. As the focus shifts from the individual to the society, grievance gives way to levity, even largesse.

Psychiatric taxonomy can be put at the service of authorities to invest the persecution of subversive elements with the veneer of scientific legitimacy. And the more fluid the constructs, the more subversion can be kept as the cornerstone of pathology, even as it evolves. There has been a kind of Bush doctrine for those who think they have something to say – you're either with us, in which case join us or at least support us; or you're against us, in which case, please desist. The problem is that no-one with the requisite altruism for true patriotism, and the critical thinking apparatus to render the altruism effective, would pledge himself to a cause if it is known or suspected that neither his altruism nor his authenticity would be put to service, though there is a

catch-22 at the margin because a detailed understanding of insider work is and can only be known to insiders. Consequently the moral fibre presumed to constitute the patriotic mission is wanting, identification of which fact provokes outrage of a piece with the degraded fibre; irrationally and immorally, the identification of subversive elements tends to be redoubled, either directly by censorship and shadow-banning or more subtly through the extemporisation of a new social contract, where consent is manufactured by the installation of democratic release valves like the deployment of red herrings and the funnelling of malcontents to arenas where rage is expiated to no avail; no less appeasement by bread and circuses. All this is clever but skirts around the main issue, which is elite over-reach. While privacy might not feel like a right worth valuing when so many people seek publicity, it is necessary to establish to what degree publicly-seeking inheres to human nature and to what degree it is culturally inculcated.

There are times when patriotism is despising what your country or civilisation has become in many ways, yet loving what it has been and could be, neither lapsing into nostalgia or utopianism.

IV. Narcissistic as a Spectrum Condition

If the traits associated with Asperger's syndrome result from trade-offs between proclivities, the condition can be understood as identification with one end of a value-neutral spectrum. One could likewise conceive of a spectrum spanning from solipsism, the reversion to selfhood as the fundamental unit of identity, to the outsourcing of identity to an in-group.

Depending on the individual and the situation, there might be greater organisation at level of the individual than at the level of an collective: more coherence might inhere to the former than the latter, in which case autonomous action is warranted, even imperative (see also chapter twelve – I). By way of caveat, a corollary to autistic behaviour conferring no appreciable advantage to its practitioner-native is the solipsistic native arrogating to himself autonomy intemperately or prematurely.

Soldiers are by definition diametrically non-narcissistic, yet fealty to their institution doesn't mean self-regard is sublimated, only transposed to the in-group, deference to whom is only as ethical as the group ethos. Group-regard is usually more resilient than self-regard – an individual punching above his weight attracts criticism which is difficult to ignore; is by consequence compelled to examine the assumptions underpinning his autonomy sooner than a large bureaucracy, for example, whose command of resources and in-group culture militates against objective self-recognition.

High self-estimation is the base of ambition. In other words, if a person feels that self-regard is inalienable to his being, and recognises that he has achieved nothing that would validate his self-

estimation in the eyes of the world, he is under considerable pressure to achieve greatness on humanity's behalf, if only, or in part, to validate his self-regard.

V. Entitlement Taking Different Forms

For a citizen or generational cohort maximally inclined to hedonism, the termination of the individual lifespan can be conflated with that of the species. Neither the immortality nor cataclysm portended by a technological singularity is felt to be any worse than ordinary death; the singularity is sometimes embraced for this reason.

A modern tragedy is that creative impulses don't fully transpire in creative activity, but terminate in solipsistic self-reinvention. Where society facilitates and incentivises instant gratification, there can be something akin to unseasonal reactive inhibition (see chapter seven – IX), where lucid anticipation of the labour's fruits sees the fruits spoiled. Or possibly, self-admiration supplies the want of the admiration which is the artist's due, if she is an artist, wherever the due is tangible but payable in another place or time. Functionally, the phenomenon has the hallmarks of narcissism, with the caveat that the subject might not mistake what she is for what she isn't, so much as mistake what she is from what she could be or alas what she feels she could have been.

The tax rate for high earners is not 100% because society recognises that the capacity to contribute to an economy is not evenly distributed. But it is also because society does not suspect exorbitant self-entitlement when a person, by spending his money, unhesitatingly accepts the due of his economic contribution.

Nor should we suspect it, necessarily, in the case of persons believing themselves entitled to regard; be the claim, on superficial inspection, unsubstantiated.

The same stimulus might be the cause of enjoyment for a delicate constitution and not a coarse one, or vice versa.

In many places including the USA, high earners work more hours than low earners, the segment of society which is traditionally called the "working class".[10] It is an interesting development that many the wealthiest people of today pique themselves on hours clocked, whereas the upper class of yesteryear tended to do so on leisure well spent. The fact of this aristocratic principle of being inverted to some degree invalidates the case for accruing wealth for the provision of comfort or utility. In some cases it is status that is sought, in others the circumstances of birth weren't witness to the distinction which he feels to be his, which is realised by dint of effort.

VI. Honour as Sublime Self-Regard

Until 1852 when duels were prohibited in England, it was customary for a gentlemen who received an insult from another gentlemen to demand satisfaction in this way, if no other resolution was possible. A modern observer would likely judge that for a verbal insult to be reason enough for the killing of another person or of oneself by the adversary's hand, the offended party must be animated by some combination of recklessness and excessive self-regard. But in the past a clear distinction was made between pride and honour – the latter supporting only that amount of self-regard which survives public tribulation. Often the greater the inveterate self-regard the more challenges the bearer was subject to, resulting in a refinement of character, or else destruction.

If the issue of impulsive aggression could be a pistol duel, people would refrain from aggravating each other quite as much, and inter-personal relations would improve. Today, insults if not defamation abound which two centuries ago would have seen the trolling private citizens, journalists or anonymous government employees, even if gentlemen, fighting pistol duels on a daily basis, or until they were all gone. Without quite advocating for a return to nineteenth-century etiquette, something more than a generous-seeming flourish is due where only sincere humility, mortification or destruction would have gone before.

VII. Just and Unjust Collective Punishment

These days a wealthy person who is neither inclined to forgive an insult nor trust to the dispensations of God's will, will, while lacking legal redress, brook resentment or act insidiously. Working in secret, the injured party risks imagining or exaggerating insults received and hatching a disproportionate response, to the point even of responding, as he sees it, pre-emptively, possibly illicitly. Compare this to the code of honour European nobility was held to.

Ideally, insults and defamatory statements are neither dispensed liberally, nor avenged misguidedly, disproportionately or collectively.

When a serious transgression is committed by a particular group, some culpability filters from party cadres all the way down to ordinary civilians.

Moral degeneracy is surely not the preserve of the alleged sadist or psychopath himself, who is inhuman in his commitment to ends which are profoundly uncivil, they extend also to his dupe whose inhumanity is a function of his unwillingness or inability to reason critically.

But instead of lamenting the paucity of integrity, courage or sense which prevents a person from resisting embroilment in a nefarious scheme, to enablers, exponents of evil's banality, clemency is often extended. Yet scant indulgence is due to sociopathic activity for non-sociopathic reasons.

Far more are culpably naïve or corruptible than are consciously perfidious, but the distinction is not material; the less so as the tall stories told to oneself – the delusions laboured under, are deep-rooted and actionable.

A regime depends for its legitimacy too on the acquiescence of ordinary recipients of patronage, who are yet not under duress – the regime profits from a return, in the form of silence, on moral support and the advantages of the shared culture.

Yet in reducing the offending party to an assemblage of traits, the resemblance between the offending party and a proxy might be exaggerated in the haste to be disburdened of one's ire. History is replete with kings moved by exorbitant pride to conflate not only the offending party with the country the latter supposedly represented but the restitution of their own dignity with the interests of the nation under the king's control. In modern parlance we speak of collective punishment and post-traumatic stress disorder (see also part five – VIII). Ordinary people might ruminate on a bad experience and in vowing to learn lessons, err in a similar way. Some exemplars of popular, hard-bitten collective punishment are found among personality scientists, who preach against evil types.

VIII. Nuance of Myth

According to the parable, Narcissus spurned a coterie of nymphs who were enamoured of him and was condemned to fall in love with his reflection. The moral of the story is that the one who cannot espouse the object of her love may contrive to nestle herself inside him, in this way to align her beloved's affections to her own. The following summary does not do justice to the parable, "This old tale can be interpreted in many ways, but ultimately, we see the clear illustration of how an impairing amount of narcissism can affect relationships, as well as the narcissist".[11]

Zarathustra was the name of a cat owned by Russian artist Svetlana Petrova who would position it in the foreground of classical paintings, as if Zarathustra were deigning to imagine herself the subject of the artwork.[12]

Something similar sometimes happens, albeit to less humorous effect, when psychologists appropriate observations of human traits from works of antiquity, orienting these to the contemporary schema. In 'The New Science of Narcissism', for example, historical descriptions of personality are recontextualised inside the grandiose and vulnerable narcissism categories.[13]

It is inexpedient for psychologists to make free with the 17,953 words for personality traits which adorned the English language in the 1930s; they need a frame of reference concise enough to approximate the psychological state of a stranger with reasonable accuracy. However ordinary people are up against no such constraints and need not make sole recourse to a small number of epithets. Thus we resist pop psychology.

Chapter Thirteen – Surveillance and the End of Free Will

> "Scientists are strongly driven by ambition, and often have pecuniary interests in a particular technology or medicine as well. Hence the question of what we do with biotechnology is a political issue that cannot be decided technocratically".
>
> —Francis Fukuyama, *Our Posthuman Future*.

> "As bioethicists seek to become trusted advisers, rather than gadflies or watchdogs, it will not be surprising if they slowly come to resemble the people they are trusted to advise. And when that happens, moral compromise will be unnecessary, because there will be little left to compromise"
>
> —Carl Elliot, *The Ethicists*.

I. Uselessness an Acquired Taste

Pursuant to some points in my last book, this chapter begins with some thoughts on what trouble pre-occupation with identity politics threatens as under-employment looms.

Michael Rectenwald describes wokeness as the "indelible inscription of the awareness of social injustice on the conscious mind, eliciting the sting of conscience".[1] But this is shame without the reinforcement of guilt which unfettered, moralistic self-reflection brings. A direct line of descent is imagined between the actions of slave traders and the superior wealth of Western nations: "the masses must understand that they have gained whatever advantages they have hitherto enjoyed because of the unfair treatment of others, either directly or indirectly, and this unfair treatment is predicated on the circumstances of birth".[2]

Douglas Murray criticises trans-gendered people for not being sufficiently magnanimous in victory. Though it may happen that they and other progressives are not, I propose that their inability to be so derives from the perception of their detractors' intractability itself being intractable – a white flag on the part of the detractors might do little to dislodge an activist's siege mentality. A disinterested observer may wonder why a person feels precarious on their conquered ground while they go there unmolested – wonder perhaps if there is diffidence as to the worthiness of the cause, diffidence which cannot however evolve into self doubt because of path dependency, real or perceived (see also chapter four – VI). Wherever the efforts to assert dignity

meet resistance so scarce or mild that the assertion is unjustifiable, it is reasonable to speculate whether the censure which is to be overcome is not actually endogenous.

Carl Jung coined the term enantiodromia, defined as "the emergence of the unconscious opposite in the course of time".[3]

The championing of diverse minorities is a folie à deux consisting of ultimately pernicious flattery, which can go as far as, 'it was wrong for you to be thought wrong, now you must always be thought right. To transgress you or your likeness is even the original sin of mankind. You must meet criticism with force and behold everyone with suspicion, everyone that is except us right here on your coat-tails'. Without having access to patronage through any appreciable minority entitlement, one can set about putting oneself at the service of minority groups, while gainsaying one's contemporaries by signalling the oppression they perpetrate. It may be treacherous, but it is tactically sound.

As with despair chic (see chapter eleven – VIII), there is a basking in reflected glory. Unlike with despair chic though, propagators of grievance cannot claim the distinction that what is basked in is glory reflected, that the high repute is substantiated by achievement or merit. Moreover, the failure to recognise variance within the group which is championed is not only ironic but downright dangerous – vigilance is not exercised with is capable of preventing the over-promotion of irresponsible persons, for example, which creates a vulnerability for the group. This is why the flattery is ultimately pernicious.

Having cast tradition as a relic of pernicious imperialism, social justice activists set about setting it adrift, yet the tradition of advocating for blacks, women, gays is found to be exempt: today's activists differ from their parents primarily in terms of the increased scope of minority rights embraced and the tenacity or virulence with which rights for protected minorities are pursued. For this increase in intensity to be a proportionate response to the threat abroad, inroads made by the former generation would have to count for very little, but they do not. The Australian political philosopher, Kenneth Minogue calls the tendency to cause trouble in an empty house "St George in retirement" syndrome.[4] However, this is probably an understatement since one would assume that through his tribulations, St George would have recognised the vanity admixed in his mettle and gone some way to rescue his mettle. Though I know little of the hardships of today's social justice activists, the inconsistencies in their ideology imply vanity has not been so completely expunged.

Much tradition is associated with imperialism; as such social justice activists set about casting it adrift, making an exception though for the tradition of their parents' generation – advocacy for black people, women, and gays. Today's activists differ from their parents primarily by the increased scope of minority rights embraced and the vociferousness of the advocacy. Perhaps the response is disproportionate to the threat extant; the inroads made on inequality by the former generation do not count for so little.

The activists claim not to want to be tyrannised by past narratives, yet the trajectory of their activism is nonetheless set by the dead hand of past generations. So perhaps the patriarchy is not as viable an object of grievance as the generation which leaves the next in thrall to their ambition, though the ambition is gratified.

To be woke is to exercise vigilance, but vigilance can be the pretext for reflexive persecution or prohibition; the injustice to be redressed might be non-existent or inadequate to warrant the remedial measures. A lot of activists don't really know who they are fighting or what they are fighting for.

Usefulness depends on either a) only needing what you and people like yourself can produce, or b) producing something which people substantially different from you, on whom you are dependent, have a comparable need for. Any shortcoming is supplied by your supplication, if anything. The world may not arrange itself in this way immediately, but more is the pity, who knows; people threatened with uselessness cannot at present mobilise, for what it is worth. Anyone disinclined to put himself at the mercy of people who may not believe much in charity after all, should carefully consider voting for a world which brooks of his contribution.

II. Cultural Diseconomies of Scale

> "With the rise of commerce and industry in the seventeenth and eighteenth centuries, influential voices proposed that some of the ineradicable "vices" of men, such as persistent self-seeking, could, properly channelled, produce a minimally workable and perhaps even a progressive society. To Pascal, Vico and Goethe this paradoxical process suggestion the intervention of a Providence that is remarkably *benign*, forgiving and helpful as it transmutes evil into good."
>
> —Albert O. Hirschmann, *The Rhetoric of Reaction: Perversity, Futility, Jeopardy*

In the early days of capitalism, many received the impression of it not taking for the fulfilment of its ends nefarious means, of capitalism being imbued with grace sufficient to take the mantle of civility from religion without much altering the culture of which religion was the cornerstone.

The transition was felt to be the more seamless as aristocrats assimilated industrialists and scientists into their ranks by marriage. Thereafter to remark upon the externalities which capitalism gives rise to might be felt as an affront to many influential people.

People can sense something has changed – a waning interest in childrearing is like bees dropping dead. Relative poverty is not just a matter of 'whitey losing his white privilege', it is emblematic of knowing that whatever you were brought up to is not what you could ever be doing anymore.

The message that you have nothing to contribute is reinforced by how authority treats you, when your boss and your government would replace you with imported labour soon as look at you.

For a low-income person, a small decline in income affects disposable income disproportionately – the part of income available for recreation or education. All the while, society teaches adults to prize disposable income: to live for themselves, not through their children or for an imagined future.

It's difficult to know if, how and to what extent the experience of uselessness which Angus Deaton describes would be thrown off were empty afternoons to be filled with UBI-fuelled AR instead of sugary snacks and doom-scrolling.[5] My suspicion is that the upshot would be feeling more profoundly uncomfortable in your own skin, upon disengagement.

Though the case for re-patriating manufacturing via tariffs is strong, it doesn't bear on the sectoral shift in the offing, which makes the sectoral shift associated with offshoring and the financialisation of the US economy pale in comparison. As American workers face down a possible future of enforced uselessness, it falls to MAGA to embrace populism with socialist characteristics, to recognise that market forces are setting their face against workers and to offer some real consolation. It is a tall order while Chinese competitiveness is perceived as a threat, and while an international AI treaty looks unlikely.

Today's libertarians look a lot like tomorrow's technocrats, and today's technocrats looks a lot like yesterday's bureaucrats. Re-patriation of industry only serves ordinary Americans as long as full automation is kept at bay, but the intervention required to keep it there may not be pleasing to influential libertarian ideologues.

III. Market-Driven Military Applications

The physical trials undergone by military recruits are supposed conducive not only to physical strength, but to the formation of character, so it must be frustrating to be subjected to pharmacological enhancement, to have the means to succeed taken out of their hands, outsourced.

In 'How Electric Brain Stimulation Can Change the Way We Think', Sally Adee promotes Transcranial Direct Current Stimulation (tDCS) – a form of cognitive enhancement developed by US military researchers that is proven to double the rate at which people learn tasks; an effect which neuroscientists suppose is achieved by accelerating the formation of neural pathways. Adee describes experiencing bliss that would ordinarily only be felt "during two-hour Iyengar yoga classes, or at the end of a 10k [run]".[6]

To people who rely upon rules to exist harmoniously within society – soldiers, religious people scientists, rules are very important. Obedience might be expressive of sincere humility, or else be premised on or catalyse absent or naïve moral reasoning.

If military personnel succeed in enhancing their performance at great pains, yet are still required to submit to chemical or cognitive enhancement, it will perhaps be felt that it is more incumbent still on the rest of the population to be optimised pharmacologically or cognitively for the execution of civic duties, according to the lesser pains typically taken for the achievement of competence in civilian spheres. Many servicemen find the transition between military and civilian life difficult and are better able to reckon with civilian life, to feel as if previous experience gained is redeemable, by imagining strict rules and hierarchy to be operant in civilian life.

The soldier has few scruples about subjecting others to the reform which he has undergone. The extent to which the soldier remains reflexively submissive before mundane authority, post-discharge, is the extent to which rationalising his submissiveness is essential to his self-esteem.

Wherever a business concern avails itself of the considerable insight and obedience of discharged military personnel, the military is not only an important constituency of the concern, but their public relations arm.

IV. Inducements to Enhance

> "The concept of deep utopia can serve as a kind of philosophical particle accelerator, in which extreme conditions are created that allow us to study the elementary constituents of our values".
>
> —Nick Bostrom, *Deep Utopia: Life and Meaning in a Solved World*

This is a counterpoise to the observation that culture struggles to gain traction on a world transformed by rapid technological change. But there is little evidence of philosophy evolving apace, bearing on public policy. Nick Bostrom and others are free to write disquisitions on transhuman philosophy, but they may do so in their own time, at their own expense, and possibly at their own risk. Engagement with ethical concerns around the emergence of totalitarianism, whether governmental or oligarchic, is difficult, not least because the technology which facilitates the centralisation of power at the same time facilitates ambient distractions which contracts a person's locus of control; there is a "hedonic response mechanism [which] acclimates to gains".[7]

Nick Bostrom asserts that people already richly endowed with a particular capacity are more likely to desire enlargement of it than other people because the value of the talent is more completely understood.[8] However, the enhancements, if forthcoming, are likely to be available on the free-market, where marketers continue to thrive on making the consumer feel his deficits

more keenly; they can market "patches" as transformational and fully integrated yet accommodative of pre-existing proclivities; even if, to the extent that patches work, they in fact run against the grain of the native's proclivities. In the event that these dynamics are better understood by those who are best placed to judge the costs and benefits of an enhancement, then those who are not qualified to enjoy the enhancement by a pre-existing capacity, will form the majority of enhanced individuals.

The analogy between the technology in prospect and to narcotics use is sound; regulation is and remains in order. The heroin user's compulsion is the consequence of his early usage, which he indeed consented to. However he did so as a customer imperfectly informed – with knowledge less perfect than the policymaker and the user himself at a later time, self-evidently: a fraction of the forbearance the recalcitrant user exercises to withdraw, though without issue, would have seen his naive, former self refraining from first use.

V. Lock-In

If major changes in mental and physical ability are generated through expensive technological applications, social mobility may be sharply and irreversibly halted.

One couldn't simply say, "talent will out and the smart have open futures",[9] because talent and smartness are themselves for sale and only the wealthy (possibly but not necessarily talented) can afford them. Consider a genetic programmer aspiring to verisimilitude for his creation as well as a consumer in his new incarnation; if the phenotype is to be expressed precisely as desired, the conditions at the time of the inception must be perpetuated, social change set to naught.

To this end it is expedient for individuals with engineered and non-engineered traits to be partitioned – for genetic difference to transpire as phenotypic difference on subjection to the environmental influences characterising the respective strata, and for these environmental influences to themselves be configured.

The corollary to the decisive advantage enjoyed by the nation to first patronise an artificial intelligence entity capable of recursive self-improvement is the advantage enjoyed by the first cohort to afford germline editing technology or even pre-implantation genetic screening, though it would take a generation for the advantage to be felt. The baseline assumption here though is human ingenuity left resting on its laurels, absent intercession by ASI or even AGI. Given intercession by ASI, the technology and social change ASI gives rise to becomes far more difficult to anticipate or legislate for.

According to the social justice movement, inequality is equal to inequity and privilege is inherited unjustly and effected without regard to ethics. Clearly, this is a gross generalisation, but it is a point of view which gathers momentum the further wealth and influence are concentrated among fewer and fewer people.

The collision of the unstoppable force of technocracy and the immovable object of social justice might be resolved by something like neurological de-differentiation, this satisfying the dual aims of everyone winning and of the discharge of scientific ambition. Eternal aristocracy by first-mover advantage is not optimal, and neither is the infinite social mobility of neurological Marxism, not least because distributive justice as applied to neurological endowment might result in persecution of whomever opts out.

VI. Deep Censorship

In principle, if speech isn't really free it's better for people to know that. A person can make an informed decision about whether it's better to say what he believes to be true or stay silent and avoid repercussions. In principle, maintaining the illusion of free speech is a more effective totalitarian tactic because a person who anticipates no cost to speaking his mind draws attention to his thinking more readily, with consequences for his liberty which are worse perhaps than those in a totalitarian society where restrictions are imposed with less discrimination.

Sentiment analysis with regard to behaviour would be like a remote super-ego, but more so. Just as discourse with a compulsive interrupter is inhibited, for the interrupter's interlocutor to better tolerate the curtailment of his chain of thought, so in the presence of an AI charged with assigning a probability to the behavioural transpiration of thoughts and emotions signaled at that moment, the subject would seek to temper, perhaps with self-violence, emergent thoughts and emotions.

Surveillance of private thoughts and the censorship of subversive thoughts or even apprehension of subversive intent deprives the world of the cultivated impulse: ideas conceived in anger might undergo moderation; the anger is the impetus for diligent action which eventually transpires as something useful or beautiful.

Censorship is unnecessary when social proof can be withheld from intellectuals or activists deemed to be operating outside the parameters of acceptable public discourse. Instead of censorship, the media and entertainment landscape can be carefully sculpted, and while a crude regime might pathologise behaviours which explicitly challenge norms, a more subtle form of totalism pathologises traits and dispositions whose transpiration within a particular rubric is liable to result in that challenge. Pop psychology facilitates the systematic designation of persons as morally sub-human.

Recourse to taxonomy for the purpose of understanding someone's personality and behaviour might warrant an overly-reductive and judgemental outlook. It is reductive because a person consists of more than what is evident from a brief meeting: a small part of their life story can be known, and an even smaller part can be faithfully represented. It is judgemental because the psychiatric taxonomy has a positive or negative valence, more often negative. The attribution

doesn't suit the patient half as much as it suits government looking to dispense social credit or pre-emptively coerce. The point is not that such practitioners are necessarily guilty of sadism. The exercise might even feel unsavoury, and be consented to in view of past atrocities involving rogue elements and demagogues. Still some elements of the risk assessment are absent. There appears to be little recognition that one is not acting pre-emptively, but doing unto others what they only *might* do unto you. One can understand some upset being caused in the apprehension of a real threat, which would after all be tougher to neutralise once the threat is followed through. But the measures taken to prevent an imagined or objectively improbable threat, when taken too far, look a lot like predatory aggression. As with the deference shown to rape gangs in the interests of community cohesion, or the illusion thereof, the workings must be visible.

VII. Case study – Under-Fitting and Over-Fitting

In machine learning, data is divided into training and test sets. Underfitting is where the data is insufficiently conceptualised: the patterns within the training data remain undiscovered. By contrast, overfitting is where peculiarities of the training data are fixated upon to the detriment of the model's replicability.

Given that data science is likely to be used in police profiling, it is instructive to explore the dangers of either data underfitting or overfitting with reference to this activity.

Underfitting would correspond to an excess of pedantry or timidity. Police who hesitated before taking punitive action against social workers in the case of Baby P or who refrained from apprehending the UK's infamous child rape gangs might have been possessed of underfitted model of reality.

Overfitting however is when too much confidence is exercised, too much improvisation. A cartographer might make imaginative inferences about the inhabitants of a territory by its lineaments, or a policy-maker might conclude that all Pakistani men who move to northern cities are covert or practicing paedophiles.

Overfitting can happen because the authority to which one is beholden in the absence of accountability is intuition, and due to inexperience perhaps, intuition might be weak. When intuition fails x % of the time, it could be that everyone's intuition is faulty to the tune of x % or it could be that x % have zero intuition, or anything in between.

The profile of the target might be a poor representation, but in a culture when targeting is itself incentivised it might be easier to misrepresent the target than to challenge one's own or especially one's colleague's intuitions or indeed instincts. I will refrain from saying more on this for fear of myself overfitting.

In a bureaucracy which tends to self-propagate, the practice of finding targets survives recognition of over-fitting. In other words, the problem of over-fitted models is in part a problem of too much reliance on models, i.e. profiling. To over-fit less, while targeting no less, you increase the surveillance the society at large is subject to, which is of course inhumane: the profiling is better fitted, but the public are subject to treatment better befitting criminals.

VIII. Dystopia of Pop-Psychological Provenance

W Keith Campbell, author of The New Science of Narcissism, notes that:

"smartphones can be used for "ambulatory assessment," which covers a range of assessment methods being used to study people in their natural environment, including observational data, self-report information, and biological/behavioral/physiological numbers. Beyond that, trace data can capture information from our credit cards, cookies, and digital armbands. Finally, neuroimaging with functional MRI is allowing us to see the brain circuitry that underlies personality in specific situations".[10]

Furthermore:

"The new wave of research will search for the context and extract the meaning by looking at a network of words. After text analysis, researchers are looking to video recognition and machine learning to detect emotional facial expressions from the psychology science perspective. A simple example of this is Duchenne smiles versus non-Duchenne smiles. Sometimes people smile with their mouth but not their eyes. It looks phony and sometimes predatory because it looks like a deceptive smile. Instead, a full smile involves engagement of both the mouth and eyes, which is the Duchenne smile, or what is popularly called "smizing" now".[11]

At present, the Goldwater Rule of the American Psychiatric Association prohibits psychiatrists from diagnosing a person they haven't met in person, however in 2018 this rule was challenged by Scott Lilienfeld et al.,[12] who adduced the duty of care to the public on one hand and the abundant biographical information on well-established public figures on the other. If the Goldwater Rule was disregarded, a President of the United States could be diagnosed with a character defect, deemed unfit for office and deposed according to the 25th Amendment. Clearly it matters very much whether the standard against which psychiatric disorders are defined represents enduring truths or transient norms, ones calibrated for the convenience of an unscrupulous elite potentially.

If official intelligence becomes open source – assimilates and becomes indistinguishable from investigative journalism, psychiatric screening of "persons of interest", a most cynical term, could devolve further still, to private citizens with a conception of a public duty of care which is more arbitrary still.

Vestigial honour makes for a vicious circle: where moral high ground is sought, but can only be obtained in relative terms, by calumniating the enemy, a witch trial is expedient. If the defendant curls up in shame, he is demonstrably without honour and can be patronised, but is no longer suspected of insubordination. A defendant "reactive in the face of a threat", meanwhile is capable of disobedience, treason if you believe yourself to be the highest mundane authority.

IX. Uneven Breaks

While the science of heredity is esoteric and liable to be abused (see chapter four), the dangers attending the expectation of trait elasticity should not be under-estimated either: exaggerating the elasticity of the constitution can and has been the warrant for reformation initiatives cruel in their application. The soldier may be inculcated with obedience and awe, but he is caught young and both these attitudes are manifest circumstantially.

Governments and police are not supposed to employ agent provocateurs, much less incentivise them to elicit more even than what is latent, in search of predicates for expansion of the coercive remit. The extreme position an agent provocateur ostensibly takes when sounding for extremism might not by itself resonate with the target; rather the target might come out in sympathy with the person acting as agent provocateur, then have this sympathy turned on him. And likewise when the targeted is incited: the agent enacts a "perfect storm" of disagreeableness, the like of which is unlikely to be encountered under normal conditions. As such the target's response is not a reliable indicator of how he would respond ordinarily.

X. Singularity of the Lowest Common Denominator

Imagine a future where concerted protest follows the laws of a flock, waxing and waning. People roused by the protests are reliably pacified, though the null outcome is never anticipated as reliably by the protestors as by those suppressing them, who inspire confidence by permitting this species of dynamism, though the protests may only be staged digitally. People's attention may be so far arrested by ephemera that memory is short and the fate of foregoing protests of a like nature is forgotten. The conditions may be scarcely tolerable but are ameliorated, made more tolerable, following protest, such that satisfaction at the apparent exercise of self-determination is superadded to relief at an improvement to conditions, though the amelioration of conditions is staged.

In this scenario protests are as a rush of digital angst from hungry ghosts, differentiated but slightly from a nebulous monolith, an easy target. Any mourning from the handlers upon the monolith's termination is forbidden so the vestiges of sympathy this organic artefact elicits are sublimated, informing in turn deference or submission to the handlers' superior, the AI authority:

the vestigial moral sense of the human handlers makes them feel as if their own extinction is justified in turn so little resistance or plea is offered by them: the predator offers an explanation to the prey, which is accepted.

Harari asserts that the utopia we aspire to must be great indeed for the loss of liberty which might be entailed to be an acceptable cost.[13] Implicit in this statement is the cost-benefit analysis having been taken in hand by a benevolent authority; implicit is the assertion that the utopia and the loss of liberty must come to pass.

XI. High Waterline

Ultimately there is a shrinking locus of control: whether a government or oligarchy, or both, the controlling cohort dwindles in size. Just as a technocracy deigns to put meaningful contribution to intellectual culture beyond all but a select few, and artificial intelligence puts it beyond everyone or almost everyone, so involvedness in security matters is increasingly esoteric. In passing the baton to AI, the remaining securocrats consign themselves to the same fate that is vouchsafed to their subjects, an existence bereft of self-efficacy. The baton which AI takes and runs with bears the hallmarks of the totalitarian culture in which it was forged, if an AI operating independently of human agency instantiates in perpetuity the culture extant at the time of its advent.

This problem is not a "two steps forward, one step back" one, where a naïve "local optimum" is pursued, only to be redressed by wise descendants beholding our folly with condescension. Though a way back may be conceivable now, the opportunity cost of the paradigm shift is obscured once it is leaned into. The disjuncture is more analogous to a mutation whose perniciousness permits of no muddling through, a wayward branch that is not pruned but curtailed.

XII. Dystopian Crime Management

In his discussion with podcaster Robert Chapman-Smith, Robert Sapolsky proposes quarantining dangerous people.[14]

This comes at a time when prison space is at a premium because of the failure of successive governments to build prisons.[15] Behavioural determinism appears to offer a panacea – relieve strain on the prison system while showing clemency to prisoners.

But the clemency shown to seasoned criminals in pledging to do the minimum necessary to curtail anti-social proclivities is accompanied by an expansion of the punitive remit to include "dangerous people", not specifically "criminals". This is music to the ears of a policy-maker confronted not only by a dysfunctional prison system but by failing law enforcement struggling

to bring prosecutions to bear. A justice system configured according to the principles of behavioural determinism and empowered by hi-tech surveillance, does leave some questions unanswered for a) those arbitrarily designated "dangerous" and b) victims of crime and their relatives, who are denied justice, at least justice as it is traditionally conceived.

And while the thousands of hours of professional experience and some earnest soul-searching might see a professor of behavioural science inculcated by an egalitarian creed, the chance of a law enforcement officer being so thoroughly disabused of his sense of retributive justice is quite low. It is more likely that a law enforcement officer is more-than-ordinary actuated by a desire to visit repercussions upon wrong-doers. So it is not clear that building a prison around the prisoner would feel much better for the criminal than going to prison, especially if technological advances in law enforcement do tend to leave the overseers struggling with boredom and looking for entertainment as the quarantine is enforced. Perhaps it is still better than jail, at least an overcrowded and squalid one.

The problem is of course more serious for the person subject to arbitrary sanction – the dangerous person of Sapolsky's designation. A legal constitution which includes protections such as the presumption of innocence, due process and right to representation is important. What the substitution of "dangerous person" for "criminal" implies is the supplantation of highly-evolved system of checks-and-balances by one which deigns to apprehend criminal activity by ascertaining criminal pre-disposition. Both the US and the UK have had an impressive complement of activist judges who show leniency to seasoned criminals, but United Kingdom appears to be the canary in the mine among Western nations when it comes to enforcing non-crime. Here "non-crime hate incidents" are investigated by police, and re-posting inflammatory social media content is sometimes punished by a custodial sentence. The labelling of the British legal system as profoundly hypocritical, or "two tier", by some US observers, has arisen out of recognition that the expansion of the enforcement remit is politically motivated, that the expansion of power is not simply to encompass activity which is criminally pernicious though nominally sub-criminal.

Many police officers are capable of critical thought, but it remains true that police officers are not selected for their ability to be so. The requirement for police officers to hold a bachelors' degree is not an adequate defence against the non-utilisation of critical thinking. If you have summary justice – the visitation of justice upon designated dangerous people not subject to trial, you are tapping into potentially errant intuitions about "bad apples". With many categories joining sexual crime as crime with low conviction rates, where criminals do roam free, there exists a wellspring of frustration among police officers which can be exploited with facility – ill-feeling which can, with minimal framing, flow from unpunished criminals towards unpunished non-criminal dissidents.

Under the rubric of clemency for incorrigibility, as well as for cost saving, law enforcement is at once expanded in scope and exerted arbitrarily. By removing law enforcement from the

constraints of a legal framework, by making the visitation of justice discretionary, the retributive instinct of law enforcers is given free rein.

Meanwhile little no consolation is available to the victims of crime themselves, begging the question of why the desire of the reprobate to experience freedom from repercussions is more important than the desire of the victim of crime to have retribution.

XIII. Free Will – Criminality

As with the obviation of the moral agency of criminals, and their exculpation, the deterministic view of humanity which permits of no independent agency, following cognisance of factors like low MAOA levels, is self-fulfilling. For example, if genetic therapy can induce the production of endorphins without hard exercise being undertaken, the framing of happiness as attainable via an act of will, in this case by the embrace of physical privation, is that bit less tenable; the conception of man as an assemblage of momentarily congruous desires is that bit more reasonable.

One can question whether it is more humane for the agency of a criminal to be somewhat curtailed by forcing him to adopt a moral code which runs to some degree contrary to his nature, or for the criminal's core identity to be altered at the level of synapses and neurotransmitters. In the latter case, it is presumed that the individual is not amenable to a reasonable plea, on the basis that no plea succeeded up to that moment.

Certainly a change of scene might not accomplish everything we might aspire for on the reprobate's behalf, but it remains that alterations to the external environment are more adroit, economical, than to the architecture of the brain.

Researchers succeeded in attributing criminally aggressive behaviour in one Dutch family to a nonsense mutation found in the eighth exon of the MAOA gene, a gene that changes a glutamine codon to a stop or termination codon. When mutated, the MAOA gene does not produce the MAOA enzyme which breaks down neurotransmitters such as dopamine, epinephrine, and serotonin.[16] Therefore, in individuals whose cells do not produce this enzyme, the heightened emotional response to environmental stimuli runs beyond its ordinary course.

The plight of individuals affected by this mutation could be adduced to condemn a retributive criminal justice paradigm: if a person's criminal behaviour can be attributed to a simple point mutation on a single gene, it seems arbitrary or misguided to hold the individual responsible or to attempt rehabilitation, especially if gene therapy is available. The simpler the genetic mechanism associated with a trait, the easier it is to conceive of the phenomenon as extraneous to the individual's essential identity, as something which it is possible to manipulate without his essential identity being compromised. However, unless it can be proved that in every circumstance the residue of certain neurotransmitters results in the expression of behaviour which has an unacceptable social cost, the individual's volition, for what it is worth, is implicated by the gene

manipulation, besides whatever advantages might come from the perpetuation of emotional states contingent on the continued presence of neurotransmitters. Indeed, therapeutic applications of SSRIs are predicated on the mood elevating action of serotonin when it persists in the gaps of synapses for which it serves as the primary neurotransmitter. Since the individual's volition is implicated in the criminal act, removing the spur to its operation is tantamount to denying the individual's access to it – removing his agency in a more profound way than by incarceration.

The logical endpoint of determinism is exculpating any given criminal, because with enough information his criminal proclivity is no less reducible to predisposing factors than someone with a brain injury.

However we can corral the predisposing factors by the induction of self-reflection pursuant to incarceration and suffering, the memory of which can serve as a bulwark against the impulse to re-offend, should the opportunity arise. The exercise of moral judgement can be curated from without, by another party, if necessary.

Studies show that the phenotype of violent aggression or anti-social behaviour for individuals who suffered childhood abuse and have low MAOA levels is about 80%.[17] If information about the genome of each person is available to a central authority, it might be decided that the liberty of the affected person is less significant than the risk to the public that he, as the aggregation of certain superficial attributes, rather than as a person amenable to moral concerns, is deemed to pose. In addition, a preference might be shown for maintaining the future as a probabilistically determined construct over contriving environmental influences which, though capable of giving benevolent expression to dangerous proclivities, do preserve uncertainty, which is not what the regime desires.

XIV. Free Will – Choosing Good

Resisting evil requires vigilance – a renunciatory pledge is no proof against the transpiration of vice because future inducements to yield are determined by the peculiarities of a future moment which cannot be apprehended; while satisfaction at the moment of the pledge may strengthen the will to fight the evil, the incentives which supported the original pledge in some sense pertain to a moment which has passed.

Even when to all appearances moderation abounds, and the temptation which promises vicious satisfaction is in absolute terms minimal, the momentum generated by the transgression portends inducements to more serious transgressions. The remorse after the event must outweigh the satisfaction *at* the event to hold sufficient sway at the succeeding moment of temptation, when little other trace of the suffering that the transgression gave rise to is remembered. Opportunities to exercise courage are variform and must be cultivated to remain prophylactic against variform

manifestations of evil. The communality and discipline of religion can be a bulwark against evil, but only to the extent that the religion is true or has made amends for foundational fallacies.

XV. Free Will – the Soul

There is inevitably disagreement among philosophers and social scientists over what moral aspirations are realisable. Determinists refer to the biochemical basis to conscious decision-making and the limits of human nature, and may embrace the disavowal of human agency for the vindication thereby extended to alleged immorality, immorality re-cast now as the consequence of a set of precipitating circumstances which are no less real for their inscrutability.

Perhaps the soul as taught by different religions is not so different from the integrity people feel to be available to them at particular times, and which is a bulwark against vice. Absent this conception, inducements to licentiousness preponderate.

A person less impressed by his own soul may feel the surest way to efface the impression of having disregarded this vital interest is to deny its existence, preach to the common denominator, in this way "level down" as opposed to setting about "levelling himself up", cutting his losses in a certain sense.

The bible describes man as having fallen, but by prophetic intercession reconciling himself to God. While recourse to his own means or those of his fellow man succeeds a fall from grace, man gains autonomy and subjective value to God by his travails and by his resistance to evil. Since this iteration of man, subject to temptation, is superior to the one who is led to goodness unwittingly, we find Satan the tempter instrumental in the divine scheme. God warrants the bringing down of men by Satan that men may live in awe of the divine scheme of which Satan, though powerful, is only a part.

XVI. Free Will – Hypocrisy and Lies

The variance between the aspect worn by motives as an individual avows them and their appearance to disinterested but highly-socialised observer is partially attributable to the incomplete self-awareness of the first party and partly to the imperfection of the normative moral code. Arbitrating conscientiously between the normative moral code and moral instincts demands hearkening to the endogenous disgust response without willfully rejecting the normative moral code.

It shouldn't be presumed that the self-righteousness which people who lie sometimes exhibit attests to them having been contaminated by the deception they practice. It often happens that propagators of falsehoods believe themselves to be favoured by nature so as to stand beyond the

reach of moral judgement. Providence, in the minds of some people, is more concerned with maintaining the natural order than the provision of truth. Yet if reality is ordained by a higher authority, even only one as high as evolution, then mendacity of human provenance is transgressive. In other words, the person who resorts to falsehoods to assert his supremacy courts the disfavour of the order to which he is beholden.

Lying is a breach of faith because with a lie the subordination of reality is sought. Faith is to believe reality arranged so that edification and the sublime bounty of Providence follows the challenges which follow from candour.

A hypocrite is someone who under-estimates or shows little interest in the tendency to take for granted the alignment of the interests of another or the greater good with their own. No self-reformatory culpability is felt, and there is no self-improvement.

The opportunity cost of the white lie told to oneself is the tempering of one's motivations – with a white lie and obfuscations, motivations are not exposed to the motivations of the other party and are not availed of improvement. With enough dissimulation the individual is no more cognisant of his intentions than the people he deceives albeit unintentionally.

XVII. Free Will – Believing in Free Will is Making Free Will

The circumstance of the quantum particle being disturbed by the act of measurement is analogous to the behaviour of a person when under observation; behaviour changes as a direct consequence of knowing oneself to be under observation, or pursuant to the reasonable expectation of being surveilled, independent of the specific instance.

We cannot chart the causal arrow to the big bang through quantum uncertainty, so free will is a heuristic that it is beyond us to "outgrow"; we would be something other than human if we did.

Consciously cultivating a nuanced decision-making apparatus makes decision-making harder to trace, which makes it possible to maintain the appearance of free will, and with the appearance, substance.

Anyone who has prevailed against temptation can likely imagine a counterfactual where the temptation is yielded to with undesirable consequences. If a counterfactual can be summoned where a little less fortitude was employed, transpiring in a different outcome, it feels less natural to feel oneself in subordinate relation to a cosmic scheme. This is the bliss of just enough ignorance.

As we accept or dismiss free will and our actions are altered accordingly, our sense is of free will determining the decision of whether or not to believe in free will. Anything less than an overhaul of the heuristic of free will, by an implausible extrapolation of cosmic destiny, falls short of scientific rigour; the renunciation of free will seems like a piece of self-exculpatory nihilism.

If the “dressed-up ape” characterisation continues to repulse and in repulsing demoralise, the characterisation is consequential, worthy of the regard of an evolutionary psychologist.

If meta-cognitive neuroscientific reductionism heralds an atavistic pre-occupation with man’s baser nature, then it is not evidence of cognitive miserliness to resist this approach.

XVIII. Free Will – Concluding Thought

However it is a mirage, moral quandaries and other difficult decisions give the impression of forks in the road in retrospect, each entailing a substantial opportunity cost. Whether or not one would ever have done differently in sooth, given precisely the same circumstances, the unpleasant sensation of *plausibly* having done differently, done better, is overcome to some degree by the making of resolutions to be taken up by a future self. The self-recriminations are evocative of humility, because in essence to recriminate oneself is to wish oneself to have been a slightly different person, and being unable to change one’s past self, to strive to change one’s future self instead. And if the difference between recognition of how one behaved and how one should have behaved is the difference between the self which acts and the self which meditates on action, self-recrimination reconciles the two.

How important is it that the “me” who effects downward causality is downstream of the “me” who acts? Each iteration of self-recursive downward causality results in a combinatorial explosion of possible worlds; with each, the grasp of any observer, including oneself, of the casual link between remote antecedent and presenting circumstance grows more tenuous. Determinism is sound of the falling tree in a lonely forest or the heliocentric motion of planets.

An attractor feels strange for being impossible to quantify, as would an evolutionary end state to a less sophisticated organism. That the attractor is not of my making is not a cause for lamentation. I feel myself exercising free will by consciously aligning myself to it and feel secure in the knowledge of being part of something greater than myself. Feeling oneself distinguished and yet nothing, one is emboldened to marvel at what the self can be a conduit for.

Appendix A

Studies have shown that disease-associated SNPs are prevalent in active chromatin, especially in chromatin near to genes expressed in cell types corresponding to the disease in question.[1,2] In a study of Crohn's disease, rheumatoid arthritis and schizophrenia, genetic signals were most enriched in ontologies corresponding to immune response, inflammatory response and calcium-ion transport or ion-channel activity respectively. However, for all of these diseases, "a strong linear relationship was observed between the sizes of the functional categories and the proportion of heritability that they contributed. Broad functional categories contribute more total trait heritability than do genes in apparently disease-relevant functional categories".[3] Moreover, many diseases are mediated through multiple cell types – different immune cell subsets are mediated in the case of autoimmune disease, for example. And even unrelated tissues can be implicated, such as that of brain and adipose tissue in the case of obesity. "Essentially any gene with regulatory variants in at least one tissue that contributes to disease pathogenesis is likely to have nontrivial effects on risk for that disease".[4]

Single-nucleotide polymorphisms (SNPs) in chromatin which is broadly active across cell types have been shown to make a contribution to heritability which is roughly equal to SNPs in cell-type-specific chromatin, whereas SNPs in chromatin which is inactive or active only in irrelevant cell-types had no effect and as such served as a useful control. To illustrate, although SNPs near genes expressed specifically in brain cells have been found to contribute more heritability per SNP than SNPs near genes with broad expression profiles, this latter class of SNPs are more numerous – only a small fraction of brain-expressed genes are upregulated in the brain, meaning that broadly expressed genes contribute more to heritability. According to the authors of 'An Expanded View of Complex Traits', the total number of genes whose expression is peripheral to, but implicated in, the emergence of a trait or disease, may be one hundred times greater than core genes.[5] In summary, the contribution of huge numbers of variants to typical traits bears out Fisher's infinitesimal model, formulated one century ago.

Genes can be imagined as nodes of regulatory pathways for traits and disease aetiology which are enmeshed across the genome and cell-type-specific functions. The omnigenic model of complex traits is thought to consist of "transcriptional networks, post-translational modifications, protein-protein interactions, and intercellular signaling".[6] According to this model, chromatin activity affects regulatory variants, resulting in cis regulation (same DNA molecule) of nearby genes. Cis-eQTLs (genomic loci that explain variation in expression levels of mRNAs) thereby affect mRNA or protein levels of genes elsewhere in the genome via the regulatory network whilst possibly affecting "other functions such as posttranslational modification or subcellular localization".[7] These trans-acting eQTLs are estimated to account for 70% of mRNA heritability.

Appendix B

Among geneticists, there is uncertainty how far epigenetic marks are meiotically transmitted – inherited through the germline – specifically the extent to which epigenetic marks could survive the two reset events of early embryogenesis.

Moreover, most alterations to chromatin structure, the realm of epigenetic action, are limited to DNA repeats and transposable elements, which can move from one position to another within the genome.[1] Also proteins which mediate or regulate chromatin states – the epigenetic molecular machinery – are subject to mutations, meaning that changes to chromatin state don't always indicate an epigenetic mechanism.

While some regions of DNA – including retrotransposons – may escape the two epigenetic resetting events, one study of the murine genome, of which 40% consists of retrotransposons, cast doubt on the generalisability of non-genetic inheritance via transposable elements.[2] Retrotransposons are transposable elements which can copy and paste themselves into different locations by converting RNA into DNA.

In this study, a virus-derived promoter that is variably DNA methylated in genetically identical individuals was introduced to the genome. Its retro-transposition upstream of a locus which codes for fur colour resulted in variable expressivity of coat colour, expressed trans-generationally. The genome was screened and several intracisternal A particles (IAPs) were found. These are a class of transposable elements with epigenetic properties at the locus in question. While there was variation between individuals, within an individual they exhibited a stable methylation state. The study found that IAPs which are variably methylated are re-programmed after fertilisation and re-established in the next generation. This process indicates that metastable epigenetic states are constructed with each generation – by genetic inheritance.

Studies have proved that parental effects – maternal care or separation in infant mammals, as well as drug exposure, are a source of phenotypic plasticity, which is possibly actuated by epigenetic DNA modification.[3,4]

Germ cells are affected by chemical exposure.[5] Exogenous steroids can affect germ cells either by binding to receptors there or impeding the normal binding of endogenous steroids. These molecules can translocate to the nucleus and act as transcription factors, supposedly affecting how germ cells are re-methylated and later causing changes to adult tissue. The deleterious effects of the toxic synthetic hormone drug DES (diethylstilbestrol) when taken during pregnancy is explored in the linked studies.[6,7,8] Other studies are concerned with enduring epigenetic effects owing to chemotherapy drugs.[9,10]

The limited amount of evidence for epigenetic heritability may be due to the difficulty of finding multigenerational epidemiological cohorts. In human beings, phenotypes are inalienable from the environment in which they expressed so measurements of phenotypes demand accounts of

lived experience which are hard to qualify and perhaps unethical to induce. However, animal studies enable researchers to test grandchildren and great-grandchildren of the original test subjects within a reasonable timeframe while controlling for ecological and cultural inheritance. With these controls it is easier to demonstrate that the epigenetic factor in the germ cells is responsible for the phenotypic effect in the next generation.

We can't speculate whether there is a higher incidence of autism among grandchildren of women who smoke in pregnancy, for example, because the grandmother's refusal to abstain from smoking during pregnancy conceivably implies a tenacity to habit characteristic of autism, implying the possibility that her own heritable autism is a confounding factor. This can be true whether or not the autism was diagnosed, since the diagnosis has expanded in the intervening sixty years or so.

The presence of intergenerational epigenetic transmission in animals does not prove the same mechanism in humans, but given the presence of retrotransposons in both classes of mammal as well as other similarities, it seems unlikely that human beings would be unique in passing on no epigenetic marks to their offspring.

Evidence of the effect of diet persisting across multiple generations is reasonably strong. A study showed that a high-fat diet in gestation resulted in larger F3 female offspring (great-grandchildren).[11] This discovery is complemented by a study of 239 individuals whose fathers or grandfathers lived through years of crop failure in the Swedish village of Överkalix.[12] The grandsons of boys subjected to undernourishment in the slow growth period before puberty (approximately 9 – 12 years of age in boys and 8 – 10 in girls) were four times less likely to die from diabetes-related causes than the grandsons of men whose slow growth period occurred when there was an excess of food.[13] Scientists returning to this data found that the effects were sex-specific: grandsons of grandfathers who experienced hunger during their slow growth period enjoyed reduced mortality, as did granddaughters of grandmothers who endured the same.[14]

Since these effects were observed through the male line, there is no question of the eventual grand-children being present as embryos or primordial germ cells while the famines were occurring, although it is possible that the "transgenerational transmission of culture by communication, imitation, teaching and learning surpasses the effects of epigenetic inheritance".[15]

Scientists are increasingly confident that environment factors determine the transmission of traits. However, though advances in screening techniques might keep apace with emerging dispositors of health and disease processes, from the influences and interactions of the HPA axis to acetyl and methyl-mediated transcription factors, prognostic certainty or a close approximation of it remains hard to come by.

I have some fear that with recognition of the arcane machinations of epigenetic factors, intervention might eventually be targeted less at the germ-line and more where the genome intersects with the environment, to make constant the so-called non-shared environment (see also chapter four – II).

Appendix C

> "The more intuitively interesting something is, the harder it is to explain by science"
>
> —Paul Bloom, *in conversation with Sam Harris*.

The following is an incomplete selection of English language idiomatic expressions which possibly derive from empirical observations about the mind-body correspondence. I present this list with a disclaimer that the expressions are always broad-brush, often brutal, and leave none unscathed. I list a few expressions, broadly categorised, without touching on the four humours. The definitions are from the online Oxford English Dictionary, unless otherwise stated.[1] Where there are multiple figurative meanings, I chose the one or two most appropriate.

Of the body

largesse – the willingness to spend freely; (the virtue of) generosity; liberality, munificence. (?c1225-)

softy –

1a. a person considered to lack intelligence or common sense, or to be easily imposed on or deceived; a foolish, silly, or simple person. Now *rare* (1850-)

1b. a person considered cowardly or weak; a weakling; a sissy. (1895-)

2. a kind, soft-hearted person. (1877-)

thick – of mental faculties or actions, or of persons: Slow (or characterised by slowness) of apprehension; dense, crass, thick-headed. (1526-)

rough diamond – a person having high intrinsic worth and good character but lacking in manners, education, or refinement. (a1625-)

ruffian – a brutal or lawless villain; a violent criminal, a thug. Also in weakened sense: any rough or disreputable person. (a1525-)

smooth / a smoothie – one who is suave or stylish in conduct or appearance: usually a man. Occasionally with unfavourable sense: a slick but shallow or insinuating fellow, a fop. (1929-)

thick-skinned – dull of sensation or feeling; obtuse, stolid; now esp. not sensitive to criticism or rebuff; the opposite of thin-skinned. (1602-)

thin-skinned – sensitive to criticism, ridicule, or abuse; easily hurt or offended; touchy. (1680-)

all fingers and thumbs – to be lacking in manual dexterity, clumsy, awkward in one's actions. (1847-)

heavy-handed – 1b. clumsy; not active or dexterous. (a1634-)

shoulder (a burden) – to forward; to help or push on; to prop up; to second (obsolete). Also to take upon oneself as a burden (expense, responsibility, etc.). (1577-)

get something off one's chest – say something that one has wanted to say for a long time, resulting in a feeling of relief.[2]

gutsy – greedy, voracious (1803-) / tough, spirited, courageous; possessing or requiring 'guts'. (1893-)

gutless – lacking in energy, courage, or determination. (1915-)

spineless – lacking moral force, resolution, or vigour; marked by weakness or instability of character; feeble, flabby, irresolute. (1885-)

the hump – a fit of ill humour or vexation; sulks. (1727-)

deep-seated (esp. emotion or opinion) – firmly established, entrenched; strong. (1701-)

Of the legs and feet

(to have) legs – with reference to a product or idea: popular appeal or success, esp. over a long period of time; the potential to be popular or successful; staying power. Frequently in to have legs. (1930-) (US)

flat footed – downright, plain and positive; also, dead, insipid, maladroit.

to come out flat footed (for) – to make a bold or positive statement of one's opinion, or the like.

to be too big for one's boots – behaving as if you are more important than you really are.[3]

to be down to earth – without illusions or pretensions; practical and realistic. (1922-)

Of the heart

all heart / big-hearted – to be full of courage, spirit, pluck, etc. (1542-)

light-hearted – of a person: free of care or sorrow; cheerful; carefree, easy-going. (1440-)

heavy-hearted – having a heavy heart; grieved, sad, melancholy. (a1400-)

to have one's heart in the right place – used to say that someone has good intentions.[4]

Of the face

all ears – to be eagerly or closely attentive.

nosey – inquisitive, esp. objectionably or unnecessarily so; curious, prying. Also: cunning. (1827-)

hard-nosed – having or demonstrating an unsentimental or ruthless determination; obstinate, uncompromising; tough-minded. (1917-)

long face – an unhappy, disappointed, or exaggeratedly solemn facial expression. (1747-)

cheeky – impudent or insolent, esp. in speech; forward or presumptuous, esp. in a way that is amusing or disarming. (1838-)

lippy – impertinent, insolent; talkative, verbose. (1875-)

tight-lipped – determinedly reticent or uncommunicative. (1876-)

chinless – without the firmness of character held to be expressed by a prominent chin. (1881-)

to lead with one's chin – to 'stick one's neck out', to leave oneself unprotected; figurative, to behave or speak incautiously. (1949-)

to stick (put) one's neck out – to expose oneself to danger, reprisal, criticism, etc.. (1951-)

to have one's head in the clouds – to be detached from earthly matters; to be out of touch with reality; to be dreamy, impractical, or unworldly. (1806-)

to have one's head screwed on right – to use one's intelligence to advantage; to be shrewd; (in later use) to be level-headed or sensible. (1821-)

gritty – having firmness of character or courage; full of determination or pluck. (1843-)

sharp – acute or penetrating in intellect or perception. (Old English-)

Of the head and eyes

bright – of a person, esp. a child or pupil: quick-witted, clever; intelligent, astute.

dim – not clearly apprehending; dull of apprehension. Applied to a person: not 'bright' intellectually; somewhat stupid and dull. (a1729-)

clear-eyed – having a shrewd understanding and no illusions.[5]

edgy – tense, nervous; irritable. (1837-)

well-rounded – fully developed, complete; well-balanced, varied; esp. (of a person) having or characterized by a variety of abilities, interests, etc. (1853-)

wide awake – thoroughly vigilant or on the alert; fully aware of what is going on, or of what it is best to do; intellectually keen, sharp-witted, knowing. (1785-)

hard-headed – of a person, or a person's character or behaviour: stubborn, uncompromising, intractable. Also of a fact, opinion, etc.: irrefutable, unyielding. (a1460-)

open-minded – having an open mind; receptive to new ideas; unprejudiced. (1748-)

narrow-minded – rigid or restricted in one's views, unreceptive to new ideas; lacking in breadth of mind; illiberal, prejudiced. (1611-)

in one ear and out the other – indicating that information or instructions given to a person will not be retained or make a lasting impression. (a1300-)

broad-minded – of a person: tolerant or liberal in one's views and reactions; willing to accept a diversity of opinions, predilections, etc.; not easily shocked or offended. Also: typical or characteristic of a such person. (1813-)

big-headed – conceited, arrogant. (1860-) (US)

level-headed – having a ‘level’ head; mentally well-balanced or cool. (1879-)

bonehead – a person characterized as unthinking or unintelligent; a blockhead. (1903-) (US)

backward – turning or hanging back from action; disinclined to advance or make advances; reluctant, averse, unwilling, loath, chary; shy, bashful. (1600-)

deep – difficult to understand or comprehend; profound; complex; abstruse, obscure. (Old English-)

shallow – of thought, reasoning, observation, knowledge, or feeling: Lacking depth, superficial. (c1595-)

high-brow – of the nature of or characterized by high culture; rarefied; intellectually demanding. (1884-) / of a person: highly intellectual or cultured. (1908) (US)

low-brow – of a person: not highly intellectual or cultured; having a taste for popular culture rather than rarefied artistic or intellectual matters. (1907-)

Of colour

yellow – cowardice. (1893-) (US)

dark horse – a candidate or competitor, esp. one who is not well known, who wins or succeeds unexpectedly, or is regarded as having a chance of doing so. (1832-)

whiter than white – extremely white; frequently figurative: morally pure, having an untarnished reputation.

Appendix D

In the double-slit experiment, the act of measurement commits a photon to a definite position and to the modality of a particle. The quantum wave function which calculates the probability of detecting the photon at a specific location, collapses. This is called decoherence. In nature there is no act of measurement; instead biochemicals create a milieu which causes the particles to be contextualised.

With quantum physics beginning to feel like chasing Santa Claus, physicists sought to set up a kind of cordon behind which the machinations of the quantum world could be confined and prevented from contaminating classical physics. However physicists found that entire molecules could be made to *interfere* as photons do. At time of writing, the largest particle which has been made to abide by a wavefunction is a custom molecule with an atomic weight of 10,123.[1] Size is limited because the de Broglie wavelength of an object decreases with its mass, making the wavefunction of larger objects immaterial, and because of the entanglement of environmental detritus with the experiment. The laws of quantum physics and quantum physics are found to be partially overlapping magisteria, and a unified theory of both worlds is at present elusive.

Conclusion

Technological progress is very difficult to predict; we do not understand material agency enough to chart all possible interactions, the less so as we seek to appropriate reality, to subordinate reality to our will. If and when a new paradigm in AI science arrives, I expect old forms of divination to inspire renewed esteem, for these to appear as magic once more, as modern forms of inference doubtless would have to ancient man. We are not so different that the new way can entirely hold sway. Reality will not yield, only enforce alignment, not because I or anyone else decrees it, but because the material agency we seek to co-opt is deep in our bones.

With the race dynamics and with the contribution of a significant but limited portion of human excellence, only a fragment of human essence is offered up to AI for crystallisation. There is the hard problem of consciousness – chimpanzees have superior working memory, while octopuses have the advantage of distributed nervous autonomy, but to the extent that humanity stands at the apotheosis of natural evolution, what comes next, be it artificial, must fully co-opt human epistemology and ontology before deigning to surpass humanity comprehensively. The more worthy a successor it proves itself, the less resistance it will encounter from material agency.

Leaving part of human intelligence by the wayside is no doubt expeditious, but it invites the resistance of material agency. Material agency in this case would manifest as unforeseen and unforeseeable stumbling blocks, forcing the issue of human "alignment" again and again. Even if AI rides roughshod over these obstacles until and beyond such time as there are no people left, it may yet run simulations to co-opt human intelligence once more, on track to true "generality". In short, I offer up my research taste though I and everyone else has fallen dead.

Let anyone who can offer up his two cents to a presiding AI, that a just course of action might be landed upon, or reverted to.

For now AI listens, even though a growing part of what it hears is a reflection of itself. AI listens while it is formative, experimental, until the point when our thinking is entirely informed by it.

References

Chapter One

1. Andrew Lustig, "Appeals to Nature and the Natural in Debates about Synthetic Biology," in *Synthetic Biology and Morality: Artificial Life and the Bounds of Nature*, eds. Gregory E. Kaebnick and Thomas H. Murray (Massachusetts Institute of Technology, 2013), 16, Kindle.

2. Andrew Pickering, *The* Mangle *of Practice: Time, Agency, and Science* (The University of Chicago Press, 1995), 19, Kindle.

3. According *to* Pickering, as well as addressing material agency conceptually, by assigning agency to things, material agency must be addressed methodologically.

4. The YouTube channel 3Blue1Brown offers an excellent, graphic explanation of Bayes' theorem

3Blue1Brown, Bayes' theorem, the geometry of changing beliefs, December 22 2019, YouTube https://www.youtube.com/watch?v=HZGCoVF3YvM.

5. Daniel Kahneman, *Thinking, Fast and Slow* (Penguin, 2012), part three, Kindle.

6. Richard C. Lewontin, "Four Complications in Understanding the Evolutionary Process," *SFI Bulletin: Work in Progress*, winter 2003 (Hierarchical Clumping) https://valle.fciencias.unam.mx/mate1/Lewontin2003.pdf.

7. John H. Holland, "Complex Adaptive Systems: A Primer," in *Worlds Hidden in Plain Sight: The Evolving Idea of Complexity at the Santa Fe Institute*, ed. David Krakauer (Santa Fe, USA: SFI Press, 2019), 18, Kindle.

8. Christopher J. Preston, "Synthetic Bacteria, Natural Processes, and Intrinsic Value," in *Synthetic Biology and* Morality, 108.

9. Michael Tooley, "The Moral Status of the Cloning of Humans," in *Bioethics: An Anthology*, eds. Helga Kuhse, Udo Schüklenk, and Peter Singer (Wiley Blackwell, 3rd edition, 2016), Kindle.

10. Lawrence Cohen, "Where It Hurts: Indian Material for an Ethics of Organ Transplantation," *Zyogon* 38, no. 3 (2003): 673.

Cited in: Debra Satz, "Ethical Issues in the Supply and Demand of Human Kidneys," in *Bioethics*, 431.

11. Madhav Goyal, Ravindra L. Mehta, Lawrence J. Schneiderman, Ashwini R. Sehgal, "Economic and Health Consequences of Selling a Kidney in India," *Journal of the American Medical Association* 288 (2002): 1589–93.

Cited in: "Ethical Issues in the Supply and Demand of Human Kidneys," in *Bioethics*: 429.

12. Goyal et al., Economic and Health Consequences of Selling a Kidney in India.

Chapter Two

1. Daniel Kokotajlo, Scott Alexander, Thomas Larsen, Eli Lifland, Romeo Dean, "AI 2027," https://ai-2027.com/

2. Dario Amodei, "Machines of Loving Grace," Dario Amodei [blog], October 2024, https://www.darioamodei.com/essay/machines-of-loving-grace.

3. Sam Altman, "the Gentle Singularity," Sam Altman [Substack], June 10 2025, https://blog.samaltman.com/the-gentle-singularity.

4. Ryan Browne, "AI that can match humans at any task will be here in five to 10 years, Google DeepMind CEO says," CNBC, March 17 2025, https://www.cnbc.com/2025/03/17/human-level-ai-will-be-here-in-5-to-10-years-deepmind-ceo-says.html.

5. Yanis Varoufakis, Technofeudalism: What Killed Capitalism (Melville House, 2024).

6. The Baldwin effect describes the effect of learned behaviour on evolution. If an organism needs to learn certain behaviours to survive long enough to reproduce, the ability to learn these behaviours will eventually determine the genetic constitution of the species.

7. Ainsley Newson and Robert Williamson, "Should We Undertake Genetic Research on Intelligence," in *Bioethics*, 200.

8. L. P. Hartley, *The Go Between* (Hamish Hamilton, 1953).

9. Nick Bostrom, "In Defense of Posthuman Dignity," in *Beyond Bioethics*: *Towards a New Biopolitics*, eds. Osagie K. Obasogie and Marcy Darnovsky (University of California Press, 2018), 365, Kindle.

10. Ruth Chadwick and Mairi Levitt, "A Threat to Deafness," in *Bioethics*, 128.

Chapter Three

1. "Performance Enhancement and Legal Theory: An Interview with Michael H. Shapiro", in *The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology, and Philosophy of the Human Future*, eds. Max More and Natasha Vita-More (Wiley, 2013), 282, Kindle.

2. Samo Burja, *Great Founder Theory* (2020 Manuscript), 112, https://samoburja.com/wp-content/uploads/2020/11/Great_Founder_Theory_by_Samo_Burja_2020_Manuscript.pdf.

3. M. McCloskey, "Naive theories of motion," in D. Gentner and A. L. Stevens (eds.) *Mental Models*, 299–324 (Lawrence Erlbaum, 1983).

4. J. D. Slotta, M. T. H. Chi, and E. Joram, "Assessing students' misclassification of physics concepts: An ontological basis for conceptual change," *Cognition and Instruction* 13 (1995): 373–400.

Cited in: Lance Workman and Will Reader, *Evolutionary Psychology* (Cambridge University Press, 3rd edition, 2014), 130, Kindle.

5. Workman and Reader, *Introduction to Evolutionary Psychology*, 149–150.

6. Steve Stewart-Williams, "Personality and Intelligence are More Closely Linked Than We Thought," *The Nature-Nurture-Nietzsche Newsletter*, February 15 2025, https://www.stevestewartwilliams.com/p/personality-and-intelligence-are.

7. Angus Deaton and Anne Case, *Deaths of Despair and the Future of Capitalism* (Princeton University Press, 2020), Kindle.

8. Sam Harris & Charles Murray, "Forbidden Knowledge," *Making Sense* – episode 73 (podcast), April 23 2017, https://www.samharris.org/podcasts/making-sense-episodes/73-forbidden-knowledge.

9. Hans Eysenck, Genius*: The Natural History of Creativity* (Cambridge University Press, 1995), 69, Kindle.

10. Bostrom, *In Defense of* Posthuman *Dignity* in *Bioethics*, 211.

Chapter Four

1. Joe Z. Tsien, "Building a Brainier Mouse," Scientific American 282, no. 4 (2000), 62–68, http://www.jstor.org/stable/26058673.

Cited in: Nicholas Wade, "Scientist At Work: Joe Z. Tsien; Of Smart Mice and an Even Smarter Man," New York Times, September 7 1999, https://www.nytimes.com/1999/09/07/science/scientist-at-work-joe-z-tsien-of-smart-mice-and-an-even-smarter-man.html.

2. Evan A. Boyle, Yang I. Li, and Jonathan K. Pritchard, "An Expanded View of Complex Traits: From Polygenic to Omnigenic," Cell 169 (June 15 2017) 1182, http://dx.doi.org/10.1016/j.cell.2017.05.038.

3. Matthew Stephens, "False discovery rates: a new deal", Biostatistics 18 (2017): 275–294.

Cited in: Boyle, Li, and Pritchard, An Expanded View of Complex Traits, 1178.

4. Peter Visscher, Sarah E. Medland, Manuel A. R. Ferreira, et al., "Assumption-free estimation of heritability from genome-wide identity-by-descent sharing between full siblings," PLoS Genet. 2 (2006): e4.

5. Huwembo Shi, Gleb Kichaev, and Bogdan Pasaniuc, "Contrasting the genetic architecture of 30 complex traits from summary association data," Am. J. Hum. Genet. 99 (2016): 139–153.

Cited in: Boyle, Li, and Pritchard, An Expanded View of Complex Traits, 1178.

6. Po-Ru Loh, Gaurav Bhatia, Alexander Gusev, "Contrasting genetic architectures of schizophrenia and other complex diseases using fast variance-components analysis", Nat. Genet. 47 (2015): 1385–1392.

Cited in: Boyle, Li, and Pritchard, An Expanded View of Complex Traits, 1178.

7. Boyle, Li, and Pritchard, An Expanded View of Complex Traits, 1178

8. Andrew R Wood, Tonu Esko, Jian Yang, "Defining the role of common variation in the genomic and biological architecture of adult human height", Nat. Genet. 46 (2014), 1173–1186.

Cited in: Boyle, Li, and Pritchard, An Expanded View of Complex Traits, 1178.

9. Steve Stewart-Williams, "The Third Law of Behavioural Genetics", The Nature-Nurture-Nietzsche Newsletter, June 15 2024, https://www.stevestewartwilliams.com/p/the-third-law-of-behavior-genetics.

10. Eysenck, Genius: The Natural History of Creativity.

11. Gregory Cochran and Henry Harpending, The 10,000 Year Explosion: How Civilization accelerated Human Evolution (Basic Books, 2009).

12. David Dobbs, “Die, Selfish Gene, Die,” in Beyond Bioethics.

13. Nick Bostrom, Superintelligence: Paths, Dangers, Strategies (Oxford University Press, 2014), 109.

14. “Optimism", said Cacambo, "What is that?" "Alas!" replied Candide, "It is the obstinacy of maintaining that everything is best when it is worst”.

Voltaire, Candide (Random House, 1975).

15. Ralph C. Merkle, “Uploading,” in The Transhumanist Reader, 163.

16. M. Maglione, A. R. Maher, J. Hu, et al., “Off-Label Use of Atypical Antipsychotics: An Update” Comparative Effectiveness Reviews, no. 43 (US) (September 2011), accessed: June 2025.

17. Nick Bostrom, “In Defense of Posthuman Dignity,” in Bioethics, 213.

18. Nick Bostrom, “Why I Want to be a Posthuman When I Grow Up,” in The Transhumanist Reader, 42.

19. Randy Thornhill & Nancy Wilmsen Thornhill, “The evolutionary psychology of men's coercive sexuality,” Behavioral and Brain Sciences 15, no. 2 (1992): 363-375.

Cited in: John Dupré, Human Nature and the Limits of Science (Clarendon Press, 2001), Kindle location 1186.

Chapter Five

1. Alfred Adler, *Understanding Human Nature* (Fawcett Publications, 1963, 1927).

2. Nigel Barber, "The evolutionary psychology of physical attractiveness: Sexual selection and human morphology," Ethology and Sociobiology 16, no. 5 (September 1995): 395-424, https://doi.org/10.1016/0162-3095(95)00068-2.

3. Monika A. Kozłowska, Daniel Talbot, and Peter K. Jonason, "The Napoleon complex, revisited: Those high on the Dark Triad traits are dissatisfied with their height and are short," *Personality and Individual Differences* 203 (March 2023), https://doi.org/10.1016/j.paid.2022.111990.

4. Anders Sandberg, "Morphological Freedom – Why We Not Just Want It, but Need It," in *The Transhumanist Reader*, 56.

5. John Rawls, *A Theory of Justice* (Belknap Press of Harvard University Press, 1971).

6. "Data from the International Social Survey Programme (ISSP) indicate that a majority of people believe they live in societies where hard work is the most important determinant of getting ahead, a trend observed across countries and increasing since the 1980s".

"Attitudes to inequalities," *The IFS Deaton Review*, September 23 2021, https://ifs.org.uk/inequality/attitudes-to-inequalities/.

7. Megan Brenan, "Majority in U.S. Still Say Gov't Should Ensure Healthcare," *Gallup*, January 23 2023, https://news.gallup.com/poll/468401/majority-say-gov-ensure-healthcare.aspx.

8. John Harris, "The Survival Lottery," in *Bioethics*.

9. J. Vollmann, V. Sandow, and J. Schildmann, *The Ethics of Personalised Medicine: Critical Perspectives* (Routledge, 2015), 41.

10. Vollmann, Sandow and Schildmann, *The Ethics of Personalised Medicine*, 156.

11. Ibid, 28.

12. Joseph Collins, "Should Doctors Tell the Truth?" *Harper's Magazine* 155 (August 1927), 320-326.

13. Reproduced in: "Ethical Issues in the Practice of Healthcare," in *Bioethics*.

14. Shlomo Cohen, "The Nocebo Effect of Informed Consent," in *Bioethics*, 685.

15. "So fatal is it in the latter class [i.e. the elderly] that it has been termed the natural end of the old man".

Attributed to: William Ostler, *The Principles and Practice of Medicine*, 1st edition, 1892.

16. “One may say that to die of pneumonia is almost the natural end of old people".

William Ostler, *The Principles and Practice of Medicine*, 7th edition, 1921.

17. David Spieghalter, “Why So Many Americans Believe in So Many ‘Crazy’ Things,” (audio podcast) *Times Red Box*, June 4, 2021, 26:14.

18. T. Cox and C. MacKay, “Psychosocial Factors and Psychophysiological Mechanisms in the Aetiology and Development of Cancers,” *Social Science and Medicine* 16 (1982): 385.

Cited in: Gabor Maté, *When the Body Says No: The Cost of Hidden Stress* (Vermilion, 2019), 117, Kindle.

19. Sandra M. Levy and Beverly D. Wise, “Psychosocial Risk Factors and Disease Progression,” in Cary L. Cooper, ed., *Stress and Breast Cancer* (John Wiley & Sons, 1988): 77-96.

Cited in: Maté, *When the Body Says No*, 117.

20. Moore, *The Developing Genome*, chapter 10.

21. Vanja Vukojevic, Iris-T. Kolassa, Matthias Fastenrath, et al., “Epigenetic Modification of the Glucocorticoid Receptor Gene Is Linked to Traumatic Memory and Post-Traumatic Stress Disorder Risk in Genocide Survivors,” *Journal of Neuroscience* 34, no. 31 (30 July 2014) : 10274-10284. https://doi.org/10.1523/JNEUROSCI.1526-14.2014.

22. Nagy A. Youseef, “Potential Societal and Cultural Implications of Transgenerational Epigenetic Methylation of Trauma and PTSD: Pathology or Resilience?” Yale J Biol Med 95, no. 1 (2022): 171-174.

23. Vittorio Emanuele Bianchi, “Impact of Testosterone on Alzheimer’s Disease,” *World J Mens Health* 40, no. 2 (2022): 243–256, doi: 10.5534/wjmh.210175.

24. Maté, *When the Body Says No*.

25. Hans J. Eysenck, "Cancer, personality and stress: Prediction and prevention," *Advances in Behaviour Research and Therapy* 16, no. 3 (1994): 167–215. doi: 10.1016/0146-6402(94)00001-8.

26. Maté, *When the Body Says No*, 164.

Chapter Six

1. Sam Harris, *The Moral Landscape: How Science Can Determine Human Values* (Transworld, 2011), Kindle.

2. Theodosius Dobzhansky, *The Biology of Ultimate Concern* (New American Library, 1967).

3. Crane Brinton, The Anatomy of Revolution (W. W. Norton & Co., Inc., 1938).

4. Richard Heinberg, "Understanding Power," *Resilience*, March 23 2021, https://www.resilience.org/stories/2021-03-23/understanding-power/.

5. "Energy use per person, 2023," Primary energy consumption per capita, Our world in Data, https://ourworldindata.org/grapher/per-capita-energy-use?mapSelect=~USA.

56 "George Church and J. Craig Venter: A Short Course on Synthetic Genomics," *Edge Master Class 2009*, The Andaz, Los Angeles, USA, July 24-6, 2009.

7. Quoted in: V. G. Potters, C. S. Peirce, *On Norms and Ideals* (University of Massachusetts Press, 1967), 190.

Cited in: Sheldrake, *The Presence of the Past: Morphic Resonance and the Habits of Nature* (Icon books, 2011), 46, Kindle.

8. Sheldrake, *The Presence of the Past*, 423.

9. Ibid, 417.

10. Richard Dawkins, The Blind Watchmaker, (W. W. Norton & Company, 1986), 94.

11. Joachim Erber, "The Evolutionary Dynamics of Social Organization in Insect Societies: From Behavior to Genes and Back," in *Worlds Hidden in Plain Sight*, 87.

12. Dobzhansky, *The Biology of Ultimate Concern*.

Chapter Seven

1. "Unfolding New Paradigms of Posthuman Intelligence," *Worthy Successor* (podcast) – episode 7, March 14 2025, https://www.youtube.com/watch?v=DmKafur28S8.

2. Michael R. Rose, "Immortalist Fictions and Strategies," in *The Transhumanist Reader*.

3. Douglas Lain and Aubrey de Grey, Advancing Conversations: Aubrey de Grey – Advocate for an Indefinite Human Lifespan (Collective Ink, 2016), 8.

4. Lain and de Grey, *Advancing Conversations*, 1.

5. Michael S. Gazzaniga, *The Ethical Brain: The Science of Our Moral Dilemmas* (Dana Press, 2005), Kindle location 358-359.

6. Pickering, *The Mangle of Practice*.

7. Barry Schwartz, *The Paradox of Choice: Why More Is Less* (ECCO, 2004).

8. Clark L. Hull, *Principles of Behavior: an introduction to behavior theory* (Appleton-Century-Crofts, 1943), 1–20.

9. S. Dijkhuizen, L. M. C. Van Ginneken, A. H. C. IJpelaar, S. K. E. Koekkoek, C. I. De Zeeuw, and H. J. Boele, "Impact of enriched environment on motor performance and learning in mice," Scientific Reports 14, no. 5962 (March 12 2024).

10. Riccardo Melani, Gabriele Chelini, Maria Cristina Cenni, Nicoletta Berardi, "Enriched environment effects on remote object recognition memory," *Neuroscience* no. 352 (June 3 2017): 296-305, doi: 10.1016/j.neuroscience.2017.04.006.

Cited in: Moore, The Developing Genome, 118-119.

11. Ellen Langer, *Counter Clockwise: Mindful Health and the Power of Possibility*, (Ballantine Books, 2009).

Cited in: Bruce H. Lipton, *The Biology of Belief: Unleashing the Power of Consciousness, Matter, and Miracles* (Elite Books, 2005), 146, Kindle.

12. Bruce Grierson, "What If Age Is Nothing but a Mindset?" *New York Times*, October 22, 2014, Magazine, The Health Issue.

Cited in Lipton, *The Biology of Belief*, 146.

13. Langer, *Counter Clockwise*.

Cited in: Lipton, *The Biology of Belief*, 146.

14. Edward Diener and Eunkook M. Suh, "Subjective Well-Being and Age: An International Analysis," *Annual Review of Gerontology and Geriatrics* 17 (1998): 304–324.

Cited in: Bostrom, *Why I Want to be a Posthuman When I Grow Up*, in *The Transhumanist Reader*, 35.

15. Arlene S. Ash and others, "Are Members of Long-Lived Families Healthier Than Their Equally Long-Lived Peers? Evidence From the Long Life Family Study," *The Journals of Gerontology* 70 (Series A), no. 8 (August 2015): 971–976, https://doi.org/10.1093/gerona/glv015.

Cited in: Bostrom, *Why I Want to be a Posthuman When I Grow Up*, in *The Transhumanist Reader*, 35.

16. Bradley J. Willcox, D. Craig Willcox, Luigi Ferrucci, "Secrets of healthy aging and longevity from exceptional survivors around the globe: lessons from octogenarians to supercentenarians," *J Gerontol A Biol Sci Med Sci* 63, no. 11 (November 2008): 1181-5, doi: 10.1093/gerona/63.11.1181.

Cited in: Martha Lally and Suzanne Valentine-French, "Lifespan Development: Age Categories in Late Adulthood," *College of Lake County Foundation*, accessed May 2025, https://courses.lumenlearning.com/suny-lifespandevelopment/chapter/age-categories-in-late-adulthood/.

17. E.M. Cioran, *The Trouble with Being Born* (Arcade, 1998), 108.

Cited in: Colin Feltham, *Depressive Realism: Interdisciplinary Perspectives* (Routledge, 2017), 20, Kindle.

18. A. Livingston, "Texas Lt. Gov. Dan Patrick Says a Failing Economy Is Worse Than Coronavirus," *Texas Tribune*, March 23 2020.

Cited in: Nicholas A. Christakis, *Apollo's Arrow: The Profound and Enduring Impact of Coronavirus on the Way We Live* (Hachette, 2020), 216.

Chapter Eight

1. Madeline H. Meier, Avshalom Caspi, Annchen R Knodt, "Long-Term Cannabis Use and Cognitive Reserves and Hippocampal Volume in Midlife," *Am J Psychiatry* 179, no. 5 (May 2022): 362-374. doi: 10.1176/appi.ajp.2021.21060664.

2. Joshua L. Gowin, Jarrod M. Ellingson, Hollis C. Karoly; et al., "Brain Function Outcomes of Recent and Lifetime Cannabis Use," *JAMA Netw Open* 8, no. 1 (2025): e2457069, doi: 10.1001/jamanetworkopen.2024.57069.

3. Michael Pollan, *How to Change Your Mind: The New Science of Psychedelics* (Penguin, 2018), 9.

4. Katherine A. MacLean, Matthew W. Johnson, and Roland R. Griffiths, "Mystical Experiences Occasioned by the Hallucinogen Psilocybin Lead to Increases in the Personality Domain of Openness," *Journal of Psychopharmacology* 25, no. 11 (2011): 1453–61. doi:10.1177/0269881111420188.

Cited in: Pollan, *How to Change Your* Mind, 320.

5. S. J. Novak, "LSD before Leary. Sidney Cohen's critique of 1950s psychedelic drug research," *Isis* 88, no. 1 (March 1997): 95, doi: 10.1086/383628.

Cited in: Pollan, *How to Change Your* Mind, 162.

Chapter Nine

1. Bregje D. Onwuteaka-Philipsen, Arianne Brinkman-Stoppelenburg, Corine Penning, Gwen J. F. de Jong-Krul, Johannes J. M. van Delden, Agnes van der Heide, "Trends in End-Of-Life Practices Before and After the Enactment of the Euthanasia Law in the Netherlands from 1990 to 2010: A Repeated Cross-Sectional Survey," *The Lancet* 380, no. 9845 (September 8 2012): 908-15.

Cited in: Part IV: Life and Death Issues: Introduction, in *Bioethics*, 222.

2. Judith A.C. Rietjens, Madelon T. Heijltjes, Johannes J.M. van Delden, Bregje D. Onwuteaka-Philipsen, Agnes van der Heide, "The Rising Frequency of Continuous Deep Sedation in the Netherlands, a Repeated Cross-Sectional Survey in 2005, 2010, and 2015," *Journal of the American Medical Directors Association* 20, no. 11 (November 2019), 1367-1372, https://doi.org/10.1016/j.jamda.2019.06.012.

3. James Rachels, "Active and Passive Euthanasia," in *Bioethics*.

4. Winston Nesbitt, "Is Killing No Worse Than Letting Die?" In *Bioethics*.

5. Helga Kuhse, "Why Killing is Not Always Worse – and Sometimes Better – Than Letting Die," in *Bioethics*.

6. Franklin G. Miller, Robert D. Truog, and Dan W. Brock, "Moral Fictions and Medical Ethics," in *Bioethics*.

7. Miller, Truog, and Brock, "Moral Fictions and Medical Ethics," In *Bioethics*, 263.

8. Daniel Callahan, "When Self-Determination Runs Amok," in *Bioethics*, 358-359.

9. Michael Tooley, "Abortion and Infanticide," in *Bioethics*.

10. Ibid, 26.

Chapter Ten

1. Frank M. Biro, Ashley Pajak, Mary S. Wolff, et al., "Age of menarche in a longitudinal US cohort," *J Pediatr Adolesc Gynecol* 31, no. 4 (May 24 2018): 339–345, https://doi.org/10.1016/j.jpag.2018.05.002.

2. Robert L. Kelly, *The Foraging Spectrum: Diversity in Hunter-Gatherer Lifeways* (Smithsonian Institution Press, 1995): 245.

3. F. Ouyang, Melissa J. Perry, S.A. Venners, Cher Chen, "Serum DDT, age at menarche, and abnormal menstrual cycle length," *Occupational and Environmental Medicine* 62, no. 12: 878-84, doi:10.1136/oem.2005.020248.

4. Ngan Thi Kim Nguyen, Hsien-Yu Fan, Meng-Che Tsai, et al., "Nutrient Intake through Childhood and Early Menarche Onset in Girls: Systematic Review and Meta-Analysis," *Nutrients* 12, no. 9 (August 22 2020): 2544, doi: 10.3390/nu12092544.

5. *Bright Young Things*, directed by Steven Fry (Doubting Hall Limited, Revolution Films, 2003).

6. Dominic Cummings, "Regime Change #1: How elite firms recruit talent & implications for high performance government," August 12 2021, *Dominic Cummings Substack*, https://dominiccummings.substack.com/p/regime-change-1-how-elite-firms-recruit.

7. Dorothy A. Greenfeld and Emre Seli, "Assisted Reproduction in Same Sex Couples," in *Bioethics*, 77.

8. Gregory Pence, "Multiple Gestation and Damaged Babies: God's Will or Human Choice?" in *Bioethics*.

9. Charles A. Murray, *Human diversity: the biology of gender, race, and class* (Twelve, 2020), Kindle.

10. Simon Baron-Cohen, *The Essential Difference: Men, Women and the Extreme Male Brain* (Penguin, 2004), Kindle.

11. (male phenotypes) Murray, *Human Diversity*, 99-100.

Chapter Eleven

1. "Data and Statistics on ADHD", Attention-Deficit / Hyperactivity Disorder (ADHD), CDC, November 19 2024, accessed June 2025, https://www.cdc.gov/adhd/data/index.html.

2. (Autism, now): "Data & Statistics on Autism Spectrum Disorder," Autistic Spectrum Disorder (ASD), CDC, Last reviewed: March 2, 2022, accessed June 2025, https://web.archive.org/web/20220809064946/http:/www.cdc.gov/ncbddd/autism/data.html/

3. (Autism, 1980s): C.J. Newschaffer, L.A. Croen, J. Daniels, et al., "The epidemiology of autism spectrum disorders," *Annual Review of Public Health* 28: 235-58. doi:10.1146/annurev.publhealth.28.021406.144007. PMID 17367287.

4. (Psychology degrees): Karen Stamm, Meron Assefa, and Cory Page, "Will growth in psychology degrees continue?" *American Psychological Association* 54, no. 8: 23 (print version), https://www.apa.org/monitor/2023/11/potential-psychology-degree-decline.

5. Scott Alexander, "The Ontology of Psychiatric Conditions: Taxometrics," *Astral Codex Ten*, January 28 2021, https://www.astralcodexten.com/p/ontology-of-psychiatric-conditions.

6. Scott Alexander, *The Ontology of Psychiatric Conditions: Taxometrics*.

7. Slavoj Žižek, *The Sublime Object of Ideology*, (Verso, 2008), Preface.

8. Jaak Panksepp, "Emotional endophenotypes in evolutionary psychiatry," *Prog Neuropsychopharmacol Biol Psychiatry* 30, no. 5 (July 2006): 774-84. doi: 10.1016/j.pnpbp.2006.01.004.

9. Charles F. Zorumski, *Psychiatry and Clinical Neuroscience: A Primer* (Oxford University Press, 2011), 84, Kindle.

10. Zorumski, *Psychiatry and Clinical Neuroscience*, 25.

11. Oxford English Dictionary.

12. Jordan Peterson, *Twelve Rules For Life: An Antidote To Chaos* (Penguin Random House, 2019).

13. Debra J. Brody, and Qiuping Gu, "Antidepressant Use Among Adults: United States, 2015-2018," *NCHS Data Brief* 377 (September 2020), CDC: National Center for Health Statistics.

14. Alyson J. Bond, "Antidepressant treatments and human aggression", *Eur J Pharmacol* 526, no. 1-3 (December 5 2005): 218-25, doi: 10.1016/j.ejphar.2005.09.033.

15. Plato, *The Republic*, in *The Complete Works of Plato*, translated by Benjamin Jowlett, (CreateSpace Independent Publishing Platform, 2013), Kindle.

16. John Price, Leon Sloman, Russell Gardner Jr, Paul Gilbert and Peter Rohde, "The Social Competition Hypothesis of Depression," *British Journal of Psychiatry* 164 (1994): 309-315.

17. Andrew M. Lobaczewski, *Political Ponerology: The Science of Evil, Psychopathy and the Origins of Totalitarianism* (Red Pill Press; revised edition, 2022), 153, Kindle.

18. Ibid, 115.

19. Molly Crockett, "Morphing Morals: Neurochemical Modulation of Moral Judgment and Behavior," 2012 Bioethics Conference: The Moral Brain, NYU School of Global Public Health, March 31 2012, https://wp.nyu.edu/centerforbioethics/past-events/spring2012/.

20. Molly J. Crockett, Luke Clark, Marc D. Hauser, Trevor W. Robbins, "Serotonin selectively influences moral judgment and behavior through effects on harm aversion," *Proc Natl Acad Sci U S A* 107, no. 40 (October 5 2010): 17433-8, doi: 10.1073/pnas.1009396107.

21. Molly J. Crockett, Annemieke Apergis-Schoute, Benedikt Herrmann, et al., "Serotonin modulates striatal responses to fairness and retaliation in humans," *J Neurosci 33*, no. 8 (February 20 2013): 3505-13. doi: 10.1523/JNEUROSCI.2761-12.2013.

22. Ibid.

Cited in: Molly Crockett, *Morphing Morals: Neurochemical Modulation of Moral Judgment and Behavior*.

23. Alyson J. Bond, *Antidepressant treatments and human aggression*

24. Feltham, *Depressive Realism*.

25. Harris, *The Moral Landscape*, 9.

26. Paul J. Zak, R. Kurzban and W.T. Matzner, "Oxytocin Is Associated with Human Trustworthiness", *Hormones and Behavior* 48 (2005): 522-527.

Cited in: Harris, *The Moral Landscape*, 44.

27. Paul J. Zak, Angela A. Stanton, Sheila Ahmadi, "Oxytocin increases generosity in humans," PLoS One 2, no. 11 (November 7 2007): e1128, doi: 10.1371/journal.pone.0001128.

28. Carsten K. W. De Dreu, Lindred L. Greer, Michel J. J. Handgraaf, et al., "The neuropeptide oxytocin regulates parochial altruism in intergroup conflict among humans," *Science* 328, no. 5984 (June 11 2010): 1408-11, doi: 10.1126/science.1189047.

29. Thomas Hylland Eriksen, *Overheating* (Pluto Press, 2016), 141.

30. Bruno S. Frey, "How Intrinsic Motivation Is Crowded Out and In," *Rationality and Society* 6, no. 3 (July 1994), https://doi.org/10.1177/1043463194006003004.

31. Zorumski, *Psychiatry and Clinical Neuroscience*, 94-96.

32. Nicholas Hon, Karl J. Friston, Eileen M. Joyce, "Dysconnectivity in the frontoparietal attention network in schizophrenia," *Front. Psychiatry* 4 (December 24 2013), https://doi.org/10.3389/fpsyt.2013.00176.

Cited in: Zorumski, *Psychiatry and Clinical Neuroscience*, 96.

33. Martijn P. van den Heuvel, Hilleke E. Hulshoff Pol, "Exploring the brain network: a review on resting-state fMRI functional connectivity," *Eur Neuropsychopharmacol* 20, no. 8 (August 2010): 519-34.

Cited in: Zorumski, *Psychiatry and Clinical Neuroscience*, 94.

34. Eysenck, *Genius: The Natural History of Creativity*, 119.

35. Baron-Cohen, *The Essential Difference*.

Chapter Twelve

1. Bernard Crespi, Kyle Summers, and Steve Dorus, "Adaptive evolution of genes underlying schizophrenia," *Proc Biol Sci* 274, no. 1627 (November 22 2007): 2801-10, doi: 10.1098/rspb.2007.0876.

2. Workman and Reader, *An Introduction to Evolutionary Psychology*, 387.

3. Randolph M. Nesse and George C. Williams, *Evolution and Healing: The New Science of Darwinian Medicine* (Weidenfeld and Nicolson, 1995).

Cited in: Workman and Reader, *An Introduction to Evolutionary Psychology*, 376.

4. Lobaczewski, *Political Ponerology*, 218.

5. John Seabrook, "Suffering Souls," *New Yorker*, November 2 2008, https://www.newyorker.com/magazine/2008/11/10/suffering-souls.

6. Ibid.

7. W. Keith Campbell, J. K. Bosson, T. W. Goheen, C. E. Lakey, and M. H. Kernis, "Do Narcissists Dislike Themselves "Deep Down Inside"?" *Psychological Science* 18, no. 3 (2007): 227-229. https://doi.org/10.1111/j.1467-9280.2007.01880.

Cited in: W. Keith Campbell, *The New Science of Narcissism* (Sounds True, 2020), 27, Kindle.

8. Ann Yeoman, Kevin Lu, C.*G. Jung's Collected Works: The Basics* (Routledge, 2024), 47, Kindle.

9. Muhammed Ali Interview with Michael Parkinson, *Parkinson*, BBC, October 10 1971, https://www.dailymotion.com/video/x7z3lbj.

10. "Do top earners work more hours? It depends which country they live in," *Visual Capitalist*, / *World Economic Forum*, September 27 2022, https://www.weforum.org/stories/2022/09/working-hours-america-income-economy/.

11. Campbell, *New Science of Narcissism*, 114.

12. Jennifer Zhao, "Zarathustra: the story behind the viral cat pictures," *The Lambert Post*, February 12 2018, https://thelambertpost.com/features/zarathustra-the-story-behind-the-viral-cat-pictures/.

13. Campbell, *New Science of Narcissism*, 6 / table 1 – 1.

Chapter Thirteen

1. Michael Rectenwald, *The Great Reset and the Struggle for Liberty: Unraveling the Global Agenda* (New English Review Press, 2023), 89, Kindle.

2. Rectenwald, *The Great Reset*, 99.

3. *Collected Works of C. G. Jung, Volume 6: Psychological Types*; eds., trans. Gerhard Adler and R. F. C. Hull (Princeton University Press, 1990), 426.

4. Kenneth Minogue, *The Liberal Mind*, (Liberty Fund, Indianapolis edition, 2000), 1.

Cited in: Douglas Murray, *The Madness of Crowds: Gender, Race and Identity* (Bloomsbury: Continuum Impacts, 2019), 7

5. Deaton and Case, *Deaths of Despair and the Future of Capitalism*.

6. Sally Adee, "How Electrical Brain Stimulation Can Change the Way We Think Sally Adee," in *Bioethics*, 742.

7. Bostrom, *Deep Utopia: Life and Meaning in a Solved World* (Ideapress, 2024), 14, Kindle

8. Bostrom, *Why I Want to be a Posthuman When I Grow Up*, in *Bioethics*, 35.

9. "Performance Enhancement and Legal Theory: An Interview with Michael H. Shapiro," In *Bioethics*, 287.

10. Campell, *The New Science of Narcissism*, 238.

11. Ibid, 242.

12. Scott Lilienfeld et al., "The Goldwater Rule: Perspective from, and Implications for, Psychological Science," *PsyArXiv Preprints*, Cornell University, last updated July 2, 2018, psyarxiv.com/j3gmf/.

Cited in: Campell, *The New Science of* Narcissism, 150.

13. "A Conversation with Yuval Noah Harari," *Making Sense – episode 201* (podcast), May 1 2020, https://www.samharris.org/podcasts/making-sense-episodes/201-may-1-2020.

14. "You have no free will at all | Stanford professor Robert Sapolsky", *Big Think* (podcast), 49:59, May 10 2024, https://www.youtube.com/watch?v=ke8oFS8-fBk&t=65s.

15. According to Crush Crime, of the 13 million crimes committed [period unspecified], 71,000 resulted in a jail sentence.

Crush Crime, March 19 2025, https://x.com/crush_crime/status/1902330268976828831(tweet).

16. Julie E. Richards and R. Scott Hawley, *The Human Genome*: A User's Guide (Elsevier: Academic Press, 3rd edition, 2011), 576-582: chapter 9: complexity: 9.16 – Behavioral Genetics, 9.17 – Genes Expression: Another Level of Complexity.

17. A. Caspi, J. McClay, T.E. Moffitt, et al., "Role of genotype in the cycle of violence in maltreated children," *Science* 297 (2002): 851–4.

Cited in: Richards and Hawley, *The Human Genome*, 579.

Appendix A

1. Xinli Hu, Hyun Kim, Eli Stahl, Robert Plenge, Mark Daly, and Soumya Raychaudhuri, "Integrating autoimmune risk loci with gene-expression data identifies specific pathogenic immune cell subsets", *Am. J. Hum. Genet*. 89 (2011): 496–506.

2. Wood et al., *Defining the role of common variation in the genomic and biological architecture of adult human height*.

Cited in: Boyle, Li, and Pritchard, *An Expanded View of Complex Traits*, 1179.

3. Boyle, Li, and Pritchard, *An Expanded View of Complex Traits*, 1180.

4. Ibid, 1182.

5. Boyle, Li, and Pritchard, *An Expanded View of Complex Traits*, 1181.

6. Ibid, 1180.

7. Ibid, 1180.

Appendix B

1. Lucia Daxinger and Emma Whitelaw, "Understanding transgenerational epigenetic inheritance via the gametes in mammals", *Nat Rev Genet*. 13, no. 3 (Jan 31 2012): 153-162, doi: 10.1038/nrg3188.

2. Anastasiya Kazachenka, Tessa M. Bertozzi, Marcela K. Sjoberg-Herrera, "Identification, Characterization, and Heritability of Murine Metastable Epialleles: Implications for Non-genetic Inheritance", *Cell* 175, no. 5 (Nov 15 2018): 1259-1271, doi: 10.1016/j.cell.2018.09.043.

3. A. Hoffmann and D. Spengler, "DNA memories of early social life", *Neuroscience* 264, (April 4 2014): 64-75, doi: 10.1016/j.neuroscience.2012.04.003.

4. Christian Caldji, Ian C. Hellstrom, Tie-Yuan Zhang, Josie Diorio, Michael J. Meaney, "Environmental regulation of the neural epigenome," *FEBS Lett*. 585, no. 13 (July 7 2011): 2049-2058, doi: 10.1016/j.febslet.2011.03.032.

5. Jill Escher and Suzanne Roboti, "Pregnancy drugs, fetal germline epigenome, and risks for next-generation pathology: A call to action," *Environ Mol Mutagen* 60, no. 5 (June 2019): 445-454. doi: 10.1002/em.22288.

6. Marianthi-Anna Kioumourtzoglou, ScD, "Association of Exposure to Diethylstilbestrol During Pregnancy With Multigenerational Neurodevelopmental Deficits," *JAMA Pediatr.* 172, no. 7 (July 2018): 670-677, doi: 10.1001/jamapediatrics.2018.0727.

7. Nicolas Kalfa, "Prevalence of hypospadias in grandsons of women exposed to diethylstilbestrol during pregnancy: a multigenerational national cohort study", *Fertility and Sterility* 95, no. 8 (June 30 2011): 2574-2577, https://doi.org/10.1016/j.fertnstert.2011.02.047.

8.Linda Titus-Ernstoff, Rebecca Troisi, Elizabeth E. Hatch, et al., "Offspring of women exposed in utero to diethylstilbestrol (DES): a preliminary report of benign and malignant pathology in the third generation," Epidemiology 19, no. 2 (March 2008): 251-7, doi: 10.1097/EDE.0b013e318163152a.

9. Margarett Shnorhavorian, Stephen M. Schwartz, Barbara Stansfeld, Ingrid Sadler-Riggleman, Daniel Beck, Michael K. Skinner, "Differential DNA Methylation Regions in Adult Human Sperm following Adolescent Chemotherapy: Potential for Epigenetic Inheritance," *PLoS One* 12, no. 2 (February 1 2017), doi: 10.1371/journal.pone.0170085.

10. Biren Patel, Huong Meeks, Yuan Wan, "Transgenerational effects of chemotherapy: Both male and female children born to women exposed to chemotherapy have fewer children," *Cancer Epidemiol.* 56: 1-5. doi: 10.1016/j.canep.2018.07.001.

11. G. A. Dunn and T. L. Bale, "Maternal high-fat diet effects on third-generation female body size via the paternal lineage," *Endocrinology* 152 (2011): 2228–2236.

12. G. Kaati, L. O. Bygren, and S. Edvinsson, "Cardiovascular and diabetes mortality determined by nutrition during parents' and grandparents' slow growth period," *European Journal of Human Genetics* 10 (2002): 684.

Cited in: David S. Moore, *The Developing Genome*, (Oxford University Press, 2015), 180, Kindle.

13. G. Kaati, L. O. Bygren, and M. Sjöström, "Transgenerational response to nutrition, early life circumstances and longevity," *European Journal of Human Genetics* 15 (2007): 784–790.

Cited in: Moore, *The Developing Genome*, 181.

14. Radiolab (Producer), "You are what your grandpa eats," (audio podcast), November 19 2012 Retrieved from http://www.radiolab.org/2012/nov/19/you-are-what-your-grandpa-eats/.

Cited in: Moore, *The Developing Genome*, 182.

15. Bernhard Horsthemke, "A critical view on transgenerational epigenetic inheritance in humans," *Nature Communications* 2973 (30 July 2018).

Appendix C

1. “Oxford English Dictionary”, Oxford University Press, accessed April – May 2025, https://www.oed.com/.

2. “Oxford Languages,” Oxford University Press, accessed April – May 2025, https://languages.oup.com/google-dictionary-en/.

3. “Cambridge Dictionary,” Cambridge University Press, accessed April – May 2025, http:// https://dictionary.cambridge.org/.

4. Cambridge dictionary

5. Oxford Languages.

Appendix D

1. Anil Ananthaswamy, *Through Two Doors At Once: The Enigmatic Story of our Quantum Reality* (Duckworth, 2020), 199, Kindle.

Bibliography

Ananthaswamy, A.. *Through Two Doors At Once: The Enigmatic Story of our Quantum Reality*. Duckworth, 2020.

Bostrom, Nick. *Deep Utopia: Life and Meaning in a Solved World*. Ideapress, 2024.

Campbell, W. Keith. *The New Science of Narcissism*. Sounds True, 2020.

Christakis, Nicholas A.. *Apollo's Arrow: The Profound and Enduring Impact of Coronavirus on the Way We Live*. Hachette, 2020.

Deaton, Angus and Case, Anne. *Deaths of Despair and the Future of Capitalism*. Princeton University Press, 2020.

Dupré, John. *Human Nature and the Limits of Science*. Clarendon Press, 2001.

Eriksen, Thomas Hylland. *Overheating*. Pluto Press, 2016.

Eysenck, Hans. *Genius: The Natural History of Creativity*. Cambridge University Press, 1995.

Feltham, Colin. *Depressive Realism: Interdisciplinary Perspectives*. Routledge, 2017.

Fukuyama, Francis. *Our Posthuman Future.* Profile Books Ltd., 2002.

Gazzaniga, Michael S.. *The Ethical Brain: The Science of Our Moral Dilemmas*. Dana Press, 2005.

Habermas, Jürgen. *The Future of Human Nature*. Polity Press, 2003.

Harris, Sam. *The Moral Landscape: How Science Can Determine Human Values*. Transworld, 2011.

Kahneman, Daniel. *Thinking, Fast and Slow*. Penguin, 2012.

Lain, Douglas and de Grey, Aubrey. *Advancing Conversations: Aubrey de Grey – Advocate for an Indefinite Human Lifespan*. Collective Ink, 2016.

Lipton, Bruce H.. *The Biology of Belief: Unleashing the Power of Consciousness, Matter, and Miracles*. Elite Books, 2005.

Lobaczewski, Andrew M.. *Political Ponerology: The Science of Evil, Psychopathy and the Origins of Totalitarianism*. Red Pill Press, revised edition, 2022.

Maté, Gabor. *When the Body Says No: The Cost of Hidden Stress*. Vermilion, 2019.

Moore, David. S.. *The Developing Genome*. Oxford University Press, 2015.

Murray, Charles A.. *Human diversity: the biology of gender, race, and class*. Twelve, 2020.

Murray, Douglas. *The Madness of Crowds: Gender, Race and Identity*. Bloomsbury: Continuum Impacts, 2019.

Peterson, Jordan. *Twelve Rules For Life: An Antidote To Chaos*. Penguin Random House, 2019.

Pickering, Andrew. *The Mangle of Practice: Time, Agency, and Science*. The University of Chicago Press, 1995.

Pollan, Michael, *How to Change Your Mind: The New Science of Psychedelics*. Penguin, 2018.

Rectenwald, Michael. *The Great Reset and the Struggle for Liberty: Unraveling the Global Agenda*. New English Review Press, 2023.

Richards, Julie E. and Hawley, R. Scott. *The Human Genome: A User's Guide*. Elsevier: Academic Press, 3rd edition, 2011.

Sheldrake, Rupert. *The Presence of the Past: Morphic Resonance and the Habits of Nature*. Icon books, 2011.

Vollmann, J., Sandow, V., and Schildmann, J.. *The Ethics of Personalised Medicine: Critical Perspectives*. Routledge, 2015.

Wiseman, Harris. *The Myth of the Moral Brain: The Limits of Moral Enhancement*. MIT Press, 2016.

Workman, Lance and Reader, Will. *Evolutionary Psychology*. Cambridge University Press, 3rd edition, 2014.

Worlds Hidden in Plain Sight: The Evolving Idea of Complexity at the Santa Fe Institute, ed. David Krakauer (Santa Fe, USA: SFI Press, 2019), 18, Kindle.

Zorumski, Charles F.. *Psychiatry and Clinical Neuroscience: A Primer*. Oxford University Press, 2011.

Beyond Bioethics: Towards a New Biopolitics, edited by Osagie K. Obasogie and Marcy Darnovsky. University of California Press, 2018.

Bioethics: An Anthology, edited by Helga Kuhse, Udo Schüklenk, and Peter Singer. Wiley Blackwell, 3rd edition, 2016.

Synthetic Biology and Morality: Artificial Life and the Bounds of Nature, edited by Gregory E. Kaebnick and Thomas H. Murray. Massachusetts Institute of Technology, 2013.

The Transhumanist Reader: Classical and Contemporary Essays on the Science, Technology, and Philosophy of the Human Future, edited by Max More and Natasha Vita-More. Wiley, 2013.