

Physics and social thought

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We want to understand the world.

We want to understand the world of human society. But we posit a realistic outlook, and you cannot understand any part of the world while labouring under a misconception as to what the world is. Therefore, we begin with an introduction to reality.

We want to understand the world, but in thinking about human society we usually suffer from misconceptions. We often fail to consider the perspectives of others; we often fail to consider all the consequences of our actions; we often fail to consider all the possibilities for action; we often fail to evaluate all alternatives. But more than any of these, and incomparably vaster in scale, is the misconception that human society constitutes a sizeable part of the world. We are conditioned to forget where we are, and miscalculate accordingly. Any realistic outlook, however, cannot fail to appreciate the nature of reality, and our place in the universe. So, we ask: what is our world, where are we, what is this situation?

We live upon a tiny blue speck in some remote corner of an uninteresting galaxy. Upon it our fellow beings live their lives, grow up and mature, love and laugh, suffer and cry, celebrate and enjoy, kill and fight, grow sick and die. Within it is the sum total of all humanity that has ever been and probably ever will. Within it is everything - that is, everything that we are referring to, when we usually say 'everything' - and yet it is nothing.

Within it are the thousands of millions of people, all with their friends, their families, their hopes, their fears, their happiness and their terrors; all the animals, all the habitats, all the mountains, all the meadows, all the forests, all the deserts, all the landscapes in their full diversity; all the cities, all the infrastructure, all the support systems of life, and the support systems of social life, of all the people in the world. The most glorious, powerful, heroic human beings, with all their conquering, their discovering, their enlightenment, their exploration, their creation, their destruction, their composition, their systematisation, and their extermination, was not more than a wisp of dust viewed from a small distance away. Even when considered in the aggregate, even when the greatest men and women are counted alongside their populations, with their numbers, with their armies, with their arsenals, with their libraries, with their equations, with their philosophies and religions and inventions and science, with all their consumer goods and factories and roads and shops and commerce and

all their economic and technological sophistication - and even then, when taken over all time, the whole titanic edifice of human civilization over the millennia, the entire human project - still it does not register. Even our planet, much older and much wiser than we are, much more stable, much more placid, and much larger - the host we so ungraciously inhabit - still does not register, and it rapidly recedes from sight too. Our planet is not even a speck of dust; our sun is not even a speck of dust. It is not visible from nearby in the galaxy. Even our galaxy, this majestic spiral of thousands of millions of worlds and fire and light, is small and average and distant.

We live in the real world. And where did the real world come from? It came from the distillation of supernova remnants, from the dust of exploding stars which lived for thousands of millions of years before our sun even existed. Dust, floating in space, from pulverised suns: that is our progenitor. And gravity is our midwife.

Under her painstaking, steady pull, our small star and our small planets congealed from the stardust, and our particularly small planet Earth grew up in the warmth of the nearby fire. From its fortuitous mixture of organic chemicals, this ossified nebula took its first of thousands of millions of years of missteps of evolution. With false starts, with haphazard leaps and lurches and failures, molecules climbed the steps of complexity, bubbling away in the primordial broth. The incomparable genius of random chemical interactions culminated in molecules that produce themselves: living objects arrived. These frustrating, random natural frolics began the stream of succession, the cycle of life and death, the process of birth and rebirth. We were rocked in the cradle of Earth's gentle orbit, and over eons and millennia of millennia of incubation, life itself grew: complexity upon complexity, towering, tottering, astonishing, implausible macro-structures roaming about for food, warmth and sex. Through to higher brain function, through to perception, through to understanding, through to consciousness, inch by painstaking, tragic inch, we reached the present summit - not, however, that it is necessarily the final summit. Human life evolved, through the ages, through our ancestors to the present day. We progressed towards the present, towards ourselves. And even the present age is only a passing phase, which will solidly progress as ever into the distant future, beyond the horizon of our brief individual existence and even the brief existence of the human race.

In our lives, if we are lucky, we travel from one side of the planet to the other, and think that we have traversed the whole of creation, such is our anthropocentric arrogance. We are conditioned, indeed genetically programmed, to maintain our significance beyond what any reasonable argument could support. As long as our vision remains so myopic and horizontal, we are factually in error, and we cripple our own thinking before we even begin. We consider our friends and lovers, but forget our neighbours; then we remember our neighbours, but forget our countrymen; then we remember our countrymen, but forget the unfortunate ones; then we remember them, but forget other nations; remembering them, even those whose manner of life we cannot imagine, we forget ecology and the natural environment; even if we remember all this, even with all this

laudable breadth of vision, even with all this sympathy for our fellow beings, as we remember, correctly, that we are all one planet, even then we forget that this is only one insignificant planet. We still forget the real world.

We, the children of this planet, stare out the portals of our itinerant spaceship, and we wonder what it all means. We scan the skies for meaning, we invest the planets with godly powers, we invest the stars with our destiny - but this is wrong. We here in the sublunary sphere have such difficulty in understanding the magnitudes of distances and times involved! Our minds have not evolved any intuition for astronomy, but they have evolved the capacity to understand it, and to understand our own origins. Our thoughts recently conquered our fears, and we followed them, however they led: thoughts are subversive and revolutionary, they destroyed our comfortable mythologies and cosmogonies. Now we know the scale of things. Mathematics pushed the age of the universe and the distance scale of the cosmos further and further back - so distantly far away, and always further distant still! - and now we can look out to see thirteen thousand seven hundred million light years away, to the frontier of the observable world, and we can see the fading glow of the primordial cataclysm that detonated our universe.

We see all this, and we reel with the information. We redound to the earth, disoriented, overwhelmed, and profoundly humbled. We may reply with many possible emotions: awe; terror; confusion; compassion; pity; sadness; anger; resignation; desperation; or love. Each of these is a reasonable reaction. But we are now informed, our understanding has grown, and we can no longer mildly go about the same business as ever, serious, important, businesslike, as it is. No, we live in the real world: can we really take ourselves so seriously? We must do so with a sense of irony. We know how small and insignificant we are, and yet we are all puffed up with our egos, with our careers, with our mortgages, with our national pride, with our rat races and traffic jams and television shows; our leaders are all puffed up with power; our nations are all puffed up with sovereignty; yet most of the world is not puffed up at all, but impoverished, unhealthy, and uneducated. The huddled masses of the earth alone retain the proper cosmic humility.

When we look upon the broad contours of human activity today, with some sense of perspective and distance, we may feel that perhaps it is rather strange. Perhaps, even, ridiculous - painfully ridiculous. Placing our feet once more upon solid ground from cosmic imaginings, we still see the earth, we see a community of bipeds roaming the surface of a sphere. But they are not merely feeding and reproducing; not merely contemplating and progressing in knowledge, the glorious possibility unique to intelligent species; not merely building and progressing in material comforts; no, much more than our mere needs and conveniences as a species. Much of our efforts - or rather, usually our neglect, and often our positively malicious efforts - are applied to the industry of human suffering, and to the maintenance of ritual absurdities.

Well can we ask: why are those people killing themselves again? What do these, or do those - indistinguishable from afar - not relent in the wanton infliction of pain and injury? Why do they on one side of the sphere live comfortably,

and on the other side struggle for survival? There is no difference; they are all crew on the same ship. Why do they on one side produce much more than they need and grow fat, while those on the other die from lack of nutrition? Why do these and those various portions of the species partition themselves off into the neat little areas called nations? Why cannot we cross between them? Why do they fight each other? These are only a fraction of the absurdities of the earth, viewed with perspective - perspective is something all of us need.

In the earth, we set all our hopes for our children, for our children's children, for the future. In the earth, we celebrate our togetherness, and our common descent. In its people, we aim at happiness, and we grow from the happiness of others. In their suffering, we rail and gasp with intolerable pity. In our reason, we cannot abide the ludicrousness of the present situation, we cannot abide the domination of hunger, of political absurdity, of inequality to the point of death. In our collective conscience, we see the possibility of a properly so-called human society, one which fulfils its essential material requirements: food and shelter, community and stability, the social fundamentals which we yet lack. In our dreams, but just as real, we see harmony and peace, justice and freedom - we see the insignificance, and the significance, of our species, mutually understood, with all the revolutionary consequences that entails. We see glimpses of our dreams then today, from time to time, and place to place. Sometimes we have to look hard; at other times it is obvious. It is better today than yesterday, or so it seems, perhaps we missed something out of sight. The dream is that tomorrow will improve upon today. Such are our hopes for this planet, such are the ambitions of humanity - universal, tightly held hopes of every human being.

Tomorrow, however, is a long time to wait for those in pain. The consciousness of suffering demands more. Gnawing at us, petulant impatience impassions us that tomorrow be here today. We leap to action, and then do - what, exactly?

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We want to increase our understanding of the world. This is based on the assumption that in the present day many people are possessed of inadequate or incomplete knowledge, and know or feel that they are missing something. Adequate widespread knowledge is necessary for the further development of human society. Our common, universal hopes, and their urgency, demand that we attempt to obtain a fuller understanding of the present situation. It is crucial, but it is not extremely difficult. It is true, at least in my opinion, that there are facts which are indisputable, amazing, surprising, but which are not widely known. Not only things which we know but habitually forget, such as the foregoing; there is much more human, and much more earthly knowledge. To know these facts, and all of their consequences, and why they are not known, is a major step. But apart from access to the requisite facts, it is not difficult. It seems that most of this understanding simply requires a little clear thinking, a willingness to ask questions and not to be afraid of answering them, and, of course - perspective. But that is nothing more than common sense. We are afraid of answering difficult questions: reason, when taken to its logical conclusion, may shatter all of our cherished, comforting illusions. We therefore need courage, along with common sense. We need a little courage, to refuse

to cling adamantly to a quiescent life in the soporific shadows of ignorance, propaganda and superstition. That will take us to a far, far better place: not because it is more comfortable, but because it is in accordance with reality, and therefore it may be true.

We want to understand the world. By the world, usually, I will mean the world of human society; the world in which the human species organises itself and lives today. But such a project requires us to begin with our sights set more broadly. Our lives are devoted to this particular world, this particular planet; but this is a very narrow devotion. We must begin somewhere, but for perspective, the somewhere is not to be found on earth. For planet earth is just an insignificant, laughable, recalcitrant, miniscule, infinitesimal speck. In the scale of anything real, everything that the human race has ever achieved, and will ever achieve, is not distinguishable from zero. We are nothing, we can never be anything, and that we must accept. But if we do accept this, what should we do next? Why should we care? Where do we begin?

Sober, uncomfortably lucid, and dizzily aware, humankind has arrived at a point in its history where it can understand its place in the universe, observe it, and - in contrast to all earlier times - grow in the process. We have some knowledge, though not much. We have some learning, though not much. We have some peace, and some freedom, and some liberty in which to ponder these thoughts - or rather, some of us do. We have technology, we have all of our intellects, our senses of humour, and our conscience.

Look at the night sky, and observe, like a child. Remember the distances between the stars, the sizes of stellar and galactic objects, relative to the earth, relative to yourself. It is division by zero, it boggles the human mind, a mind in many ways unadapted to the position in which it finds itself. But we can learn, and we will.

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We want to understand the world, and how it could, perhaps should, operate. In particular, it is about understanding how much of the present-day operation of the world, which we take for granted, as a given, is actually arbitrary and coincidental. How much of what we see today is necessary, unalterable fact, as if handed down to us from above? How much of the suffering we, vicariously or personally, suffer, is simply part of nature, and how much can we alleviate it? The institutions which make up our social organisation - some steeped in tradition, some recent innovations - to what extent were they meant to be, to what extent were they consciously chosen, and to what extent are they subject to revision? The information we have about our society, which we know to be woefully inadequate, why do we not have more? The death at human hands, the killing by human hands, the organised slaughter organised by various criminals - how did it ever start, why did it ever happen, and why has it never stopped? All of the aspects of human life - economic, political, military, cultural, sexual, familial, artistic, spiritual - all of them are open to question.

For the scientist, for the philosopher, for the artist, for the faithful, for the social commentator, for the scholar, the feeling is the same. Those who seek understanding of the underlying basis of some aspect of their lives stoke a deep

and enduring human passion for knowledge. They stand, dazzled, before the outside world and wonder what it is, why it is, and how it works. They inspect, incredulously, the edifice of the universe which nature has presented to them, and they refuse to believe that it is beyond the pall of human understanding. They inquire, relentlessly, into the causes of events and actions - ongoing, ever-present, ubiquitous - which they do not understand. They glare, indignantly, into the blank face of Ignorance, see his blinking gaze, and return, infuriated, to the fray of the eternal puzzle. They search and search and think and act in an ongoing quest, a quest which will never end until so does the species - which it will. Confronted with the mystifying spectacle of existence, mankind shakes her fist with rage at the universe and will not rest until it offers up its secrets, and she too offers up her secrets to herself. For she is part enough of nature, and nature is part enough of her.

That is the quest to understand the world.

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I do not concern myself with understanding the whole world, nor even with properly understanding one part of it. This is a much smaller mission, and a much easier task: simply to lay some foundations for the understanding of some of the organisation of human society on planet earth. But this perspective is necessary, if we are to understand what we are doing, and where it lies in the scheme of things.

If we are to set about our task of understanding the possibilities, the potentials, and the parameters of human social life, we must have a firm grasp on where that social life springs from - physical, unbelievable, beautiful, senseless, incomprehensible, comprehensible, reality. There are imperatives that spring immediately from a proper appreciation of this fundamental basis, to which we will soon turn: a proper moral outlook; a realistic physical outlook; a healthy sense of awe; an inspiration to action for the good; and a modern version of (or substitute for, depending on your point of view) religious and spiritual thought which in past ages has been supplemented or supplanted by superstition. But it is not only for strategic purposes - as a springboard to other discussions - that we stress the point here. It really is the basis of thinking about human society. What distinguishes the human from the rest of the universe is her capacity to know that she exists, and the consequences of this proposition are enormous. There is a depth to the notion of existence - existence in this universe - which we must examine.

The universe is vaster than any physical object we can imagine, simply as a matter of definition. Analogy is possible but it is difficult to fully grasp its import. Try to imagine how large a million is, and then a billion. Hold that thought in mind. Then there are the billions upon billions of superclusters, each with billions upon billions of galaxies, each with billions upon billions of stars, each star godlike in its dimensions and in power.

Even more amazing, to my mind, than these safely unimaginable statistics, is the fact that the universe exists. Why ought anything go to the bother of existing at all? Well, of course we exist, and we could not exist without a universe to exist in, so the question is almost silly. But still, if we attempt to

think outside ourselves for the moment, why should that occur? It is a question that probably cannot be answered. Theology used to posit a first cause, God: but then why should there exist a God? Why that God? It is possible that physics will one day develop equations whose solution implies that only one possible set of laws could produce anything that could meaningfully be termed "universe", and that ours will pop out as a side effect - but present indications are not promising. And why should a universe have laws anyway? Why should motions be predictable, and actions in accordance with simple mathematical descriptions of them? Why not something purely wild and chaotic? Even given that a universe exists, why should it be understandable?

The concept of existence will probably forever remain a mystery to us.

What is existence to us, but the time period for which we live? In one sense we have plenty of experience with non-existence: we have known it throughout the entire age of the universe until the time we were born. But we know such considerations are silly; we were not really constituted, not conceived, before a certain time, and had no capacity for consciousness or memory until a certain stage of development.

No, all of us at some stage have come to terms with the fact - although it never can be proved, we take it as fact - that there is an objective reality beyond ourselves. We reject solipsism as an accurate picture of reality. Our mind - though it is our entire universe - is not the entire universe. There are objects and actions we cannot control, and even when we are asleep, or not thinking about things, or have our eyes closed, they go on existing, and going about their natural course. Somehow, there is one objective universe, which works according to physical laws, and which we see and from experience we know exists. But equally, we know that we, our self, exists, our thought exists - but what is a thought? What is a memory? Surely it exists, we know it exists, just as we know exterior objects exist. It is not something that has yet found any adequate scientific solution, nor even a philosophical resolution. Even if physicists or chemists or biologists were to find certain streams of chemicals in our brain corresponding to single 'thoughts' - indeed even if they could explain the entire mechanism of mind - in explaining how you and I, as selves, seem to exist independently, and exist in and of ourselves, with the sensation of consciousness, we have made no progress whatsoever. Somewhere, in every conscious, sentient mind, is the spark of an entire universe.

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The consequences are stupendous. They are stupendous enough to counterbalance our insignificance. For we are certainly small, but we exist - we know that, with more certainty than we know anything else. It is an amazing thing, life, it is awe-inspiring just to know that you exist - but others do, too! Sovereign, independent, thinking, feeling beings! The universe's epochal machinations - and finally, beings to observe it, from within itself! They can move about, plan and will actions, and then perform and achieve them! It is the most awesome power imaginable: matter - senseless, cold, dead matter, the same matter as in lifeless stars and galaxies throughout the universe - transmuted, with some mysterious alchemy, feeding back upon itself to create a consciousness

existing independently! Software, in matter! Self-reflecting, seemingly impossible, paradoxical, self-understanding, matter! It seems totally implausible, how could we possibly believe it? But we are here, and we know it; there is no dispute. The mystery continues.

The awe in itself is a powerful enough force. But we should be careful to distinguish between awe and superstition. The existence of self-aware minds is awe-inspiring; but this is not just so because we have no understanding of how they work. It may or may not be that one day we will attain the ultimate in self-understanding, the ultimate paradox of self-reference: the mind, understanding the mind; existence, explaining existence; and being, unravelling being. At present we have no clues in this puzzle. If we did, some of its mystique might recede; but the sense of awe should not. Indeed, full knowledge, if possible, would make most clear of all the wonder of existence.

Somehow, matter reflects back upon itself and rises, a thinking organism. In its turn, the mind reflects back upon itself, and emerges, convinced, if a little dazed, of its awesome peculiarity and cosmically unique position. Staring open-mouthed into the eyes of his friend, he sees the spark there too. That spark - the greatest creation, or serendipity, or evolution, in the universe - flares. He sees in it the ultimate meaning of the universe, a new universe. He sees in it existence beyond the existence of objective reality. And so, he pays it ultimate respect - he loves it. The mind strives, first of all, to preserve this elevation of matter, this gateway beyond the world of mere particles and radiation. In its distress, he sees the spark dampened. In its delight, he sees the blossoming of new worlds. And in its death, he sees cosmic annihilation.

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For it is all disturbingly finite. The sensation of constancy in existence is an illusion, and the march of science has shattered, in succession, each of our cherished comforts in eternity. But also, we are finite, extremely finite. Our cardinality is precisely the number one. We may have the spark of existence, but we cannot leave the confines of our own particular manifestation of it. We can never know another mind. We can never know another person. Our existence is of necessity confined to knowledge of others solely through the hopelessly inadequate media of language, observation, through the action of the biological senses. We try our hardest, if we are so inclined, to imagine the sensations of another mind, to feel like them, to understand them. But it is a hopelessly inadequate, futile exercise. Existence is confined to a single cell, imprisoned within a single mind. It is unbearably alone, and helpless.

Surely enough, there are partial remedies. In the feeling of mutual sympathy with others, there is solace. There is always the retreat into superstition, which is perhaps the greatest comfort of all. In the imperfect understandings of our friends and family, colleagues and lovers, we obtain some real knowledge of their personalities - indeed it is probably the source of almost all the knowledge we possess. Bonds of friendship and love bring minds a little closer. And in the sexual act, the ritual of procreation, we see the striving for integration of existence in its closest physical form, one body literally entering another body, and the offspring a separate mind - in a sense, achieving the mystical union.

But they are only partial, and true knowledge is never found.

We must conclude - forgetting for the moment all the other problems of the world: economic suffering, of poverty, of race relations, of political persecution, of military aggression, indeed any artificial evil or natural disaster - that the human has problems enough, merely by existing. In the difficulties of simply living, and the knowledge that each other one of us has to do the same, we experience a profound sympathy. There are burdens we must carry; made lighter by forgetting them, surely, but they will ever remain. Underlying any wondering about purpose, or meaning, is the great existential drama.

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Everything is finite. We have always known that the human lifespan is finite. But we could content ourselves that the world would go on, or that it had always existed. Or, affording a more abstract sense of solace, the idea that, regardless of the fate of the humans, the stars and planets would continue their motions for eternity. Barely a shred of evidence remains for any of these claims.

No, the outlook of science on these matters is clear, and to the extent we believe in an objective reality obeying basic, understandable physical laws, it is ironclad fact. The human race may destroy itself through its own insanity, through war or nuclear disaster. The human race may die out once it has depleted the resources of its planet. It may drown under rising seas, choke in carbon dioxide, or face cataclysm from a meteorite. It has no shortage of pressing present problems. But even if all these are solved, and a harmonious and sustainable civilisation arises, though it can last for a long time into the future it will not last forever. The sun is finite in its fuel; it will run the course of stellar evolution as do all others; and as it grows large and red the earth will become uninhabitable. Eventually it will explode, taking with it all the planets, the entire solar system. Even if we escaped to an inhabitable planet orbiting a different star, that star too will soon enough be finished. And so on, until there is no energy left to burn, no order to provide low entropy, simply chaos, and the end. There is no escape. That is simply a fact, and if we are concerned with understanding the world, we must locate ourselves amongst the facts of the universe we live in.

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Philosophising about existence largely centres on topics of misery; thankfully, the mind has evolved the mechanism of humour. In response to this bizarre and ridiculous situation, we can all sit in tears, stoic contemplation, or absurdist laughter. Each has its place. It is a fair response to laugh at the absurdity of the universe, let alone the situation on Earth, it does almost seem like a joke. There is plenty of cause to cry, quite without the consideration of human suffering, which could well tears enough to quench the thirst of the world. It is easy to ignore the whole discussion, since it is so far removed from our everyday lives, not to mention potentially depressing. But that is a mistake: underlying every action, underlying every thought, underlying every thing, is the basis of the world in which we live. We ignore that at our peril.

There is, I think, one common thread that runs through all actions that sadden us, all the unfortunate, or misguided, or rash, or instinctive actions

which we later regret - whether we committed them or somebody else did. From the smallest rudeness to a friend, to the cruelty expressed to the despised, to the hurt of a bitter wrong, to the callousness of deliberate injury, to the cynicism of statecraft, to the horrors of consciously executed warfare, there is a theme that permeates all of them, regardless of our opinion on the matter. It is this: that we regard ourselves - our personal selves - as significant, as important. And, ourselves more so than others. We recognise, after the passion of wrongdoing has passed, that we are not actually more important than anyone else. But we still regard ourselves as important, as significant.

And plainly, we are not. We are not significant at all. In this we are factually in error, and it is necessary to dispel the notion. While we will have plenty to say on the dignity and respect that every person deserves, it does not diminish the point: to the cosmos, we are nothing, and perhaps even a well-intentioned god would not yet have noticed us.

It is very difficult to give up your self-privileging perspective. How do you understand the world, but through yourself? You, by virtue of being "you", have your own consciousness, and that is the sole interpreter of reality to you - you have no other means, and you guard it with your life - it is your life, literally. You can try to put yourself in the place of others, and it is useful to perform this exercise regularly, but you will never escape the confines of one brain, one mind, and its reality. That is a measure of insignificance, and it is all we have to go on.

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And so we look. We see the full panoply of the universe, we see swirling galaxies, nebulae, clusters, comets and planets, a breathtaking spectacle. We see ourselves, lonely, absurd, insignificant, and vulnerable. But we also see ourselves, an island of consciousness in an unfeeling, hazardous, tumultuous universe. We are a revolutionary breakaway of liberated matter, self-conscious, self-aware matter, striving for our freedom. We may even succeed in this mission - every human being desperately hopes that we do - for a time. We want to understand the world, in all of its glory and all its agony. It is impossible, but by the earth we will try.

We are led, therefore, to two propositions, at first glance in conflict with each other. But they are not, and if we can reconcile them, I think, we may obtain some balance in our existential crisis with the cosmos. All of the foregoing, in as far as it applies to understanding human society on earth, and the proper approach to it, is contained in these two propositions. There are many philosophical, religious and scientific niceties I have consciously avoided, because the point is what follows: you are insignificant; but you are significant enough.

First is the completeness of human insignificance. We are nothing, we know nothing, we are hopeless, we can never achieve anything, of any great importance. We will not last long. You are not important, even if you are the most powerful person ever to live. It is an uncomfortable thought, but rational considerations compel us to accept, however reluctantly. It is the only realistic position to take, and as we will see, it is not without incidental benefits. It provides us with perspective; a terrifying degree of perspective perhaps, but factually sat-

isfactory. We see how so much of this activity of macroscopic bipeds on the surface of a sphere is utterly ludicrous. In regarding so much of what makes up our lives as important and significant - including ourselves - we miss the point, we miss an essential possibility. The possibility is that almost the entire edifice of human social life could be arbitrary and coincidental. The possibility is that if we were concerned to organise human society more effectively, almost every structure would be up for revision. If we were concerned to question and to revise the structure of our social institutions, and really ask how necessary every existing structure were, and weigh them against all the alternatives, then nothing should escape our questioning, not even our most sacred traditional rites - indeed perhaps these are most in need of examination. The proper approach to take, if at all possible, in considering aspects of human society, is: how would an extraterrestrial view it? Does it make external sense? If it were not taken for granted, could it be explained? Without extraterrestrials to ask, we must do our best for ourselves. That is a major task for each of us.

Contemplating insignificance may be a short road to helplessness and despair. On the other hand it is a source of urgency and action. Certainly a sense of awe at the scale of existence is very humbling, and spurs us to ask searching questions. We will see more of its positive implications soon. For now let us be content to require that all our discussion of human life be grounded firmly in physical fact. The facts are important, and they are not so depressing.

The second proposition is less difficult to appreciate, but equally awe-inspiring: the magic of self-awareness. I have tried to explain my awe at this sensation above; but it is something for any person to experience themselves, by reflection and introspection. What are the chances? If you know anything about the way objects - external, objective objects - behave, why are you so very different from them? In any case, the ability to perceive other objects, and to perceive oneself, is a world-making event, literally. Therefore, in each of us it commands ultimate respect, and since others are possessed of the same magical properties, they command ultimate respect too. To exist, and to know it: that, in itself, apart from any other considerations, is the basis of our sympathy and our protection, and nurturing, and love, of others. That each person has his or her own dignity, his or her own identity, and is deserving of our respect, is then obvious. There is no reason on any of the irrational, ridiculous grounds people have made through their more embarrassing episodes, for regarding any subset as lesser than any other: gender, race, sexuality, religion, belief, age or location. All possess the amazing and intriguing creative, linguistic, and analytic powers that are intrinsic to self-awareness. This is the basis of human rights. This is the basis of essential human dignity, and the entitlement to, and expectation of life, liberty, equality, love, and happiness. There is nothing human about human rights. They apply to us because we exist and know that we exist, and that is all. No further justification is necessary. That is the fundamental grounding in society that each person receives simply by right of birth: by right of existing, alone. And that realisation is enough for us to say: despite our position in the universe, we are something, we are something worth understanding, we are worth thinking about, we are worth fighting for.

We are insignificant, poor, hopeless, and lonely; but we are unique. We are spineless, depraved, horrible beings; but we all deserve to live. We are useless, hopeless, a cancer on our planet, strangling it with our progress; but nobody deserves to suffer. We are selfish, nasty, greedy, egoistic, hypocritical buffoons; but none of this is any offence before the roll of our freedoms and entitlements. We are caught up in our own petty, ridiculous, absurd little worlds, we are little, little animals going about our routines; but the possibilities within us are enough. And after all, every day we see the possibilities and the potentials of our species caught out - embarrassed! - in a world where they are often suppressed: altruism, selflessness, caring, respect, discussion, mutual thought, and above all, love. And, we all more or less agree on what good or bad actions are in many circumstances - various controversial issues aside - and we further agree that we ought to do good, and not bad. Then, we are compelled: just as severely as the injunctions for human rights spring from the nature of existence, so too from the fact that we must all live together, we are compelled to organise our society in such a way as to promote the good, and to retard and diminish the bad, as far as possible.

Various people have asked these questions through the ages of human society. But never - never ever! - has a society yet thought through the possibilities and alternatives for their organisation, and attempted to implement them, on any thoroughgoing and democratic basis. There have been revolutions, and there have been reforms: but the revolutions have been authoritarian, terrifying and in aid of social systems we now know to be inadequate; and the reforms have been piecemeal, sometimes beneficial, but limited and often vulnerable. The necessary thinking about alternatives has, to an unfortunately large degree, been the object of derision, best left to those who can safely be branded "dreamers" or "idealists". But that is not the case. That is not the case at all. Humans being so insignificant in the scale of anything - and yet, possessed of all the wonderful, beautiful properties of thinking beings - deserve, and demand, the right to live in a society organised rationally so as to promote their potentials. Those potentials are high. And it should not be thought that any human structure is immovable. There is a tendency to think that institutions which have stood for a hundred years will be with us forever; but the briefest examination of human history tells us that they, too, will pass shortly enough. One hundred revolutions of a small planet about a small star is not very much. In the scale of anything, these institutions are not much. They will put up resistance, and to be revised they must be fought; but they can be revised. They can be remade. They can be remodelled however we should like. We are nothing, but we deserve something, and we deserve everything that we can do for ourselves.

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Humanity looks outwards and sees an infinity of nothingness. She cries out with all the collective suffering, the accumulated damage of the history of the world - but there is no response. The universe does not answer; physical laws know no sympathy nor compassion; there is no rescue, no compromise, no concession, and there is no respite. She is wandering in aimless orbits; she is drifting; she is marooned. She buries her head in her hands; she weeps with

the sorrow of every grieving mother, every victim of war, every unfulfilled soul, every groan of toil, every shiver, every shudder, every convulsion of the struggle for existence and for justice - she screams with all the anguish of ten thousand million broken souls and a hundred thousand years of trauma. Her sorrow engulfs dead planets, empty galaxies, and interstellar nothingness. It radiates forever outward, a tragic broadcast to the cosmos of the pathos of existing, of living.

But she turns inward - and she is surprised! What is this?! She can see only smiles, and joy: she is dancing; she cannot take herself so seriously; she cannot stop herself laughing. She is evolved to laugh: laughter is her defence mechanism, and her crowning glory. She laughs the laugh of knowledge, the laugh of understanding the cosmic joke the universe has played on her, the absurdity of reality and the happenstance of physical law. While she is laughing, she revolts, she rejects the edicts of physics: a fruitless, impossible revolt, but that does not matter; laughter works. She sees no fear, and no reason for it; for she is free. She brings herself together; she turns upwards once more. She is still smiling - she is glorious and beautiful. She is humbled - she understands; she is crying. But she is calm and assured - she exists, after all.

Huddle together, she says! Gather around this sphere, and orient yourselves outward! Look to the skies, and feel the earth! Envisage the galaxy, envisage the subatomic quantum; and feel your consciousness, feel your solidarity with all of us thinking, joking, suffering beings! See in this - see in this mystery, this puzzle, this bizarre mindscape - the eternal conundrum, the eternal nonsense of it all! Take courage, my friends, alone as we seem under the penumbra of the universe! We are free agents, and we will do as we please - spontaneously, miraculously, courteously, compassionately! We have nothing to fear but fear itself; so forget the tangles of your self-referential existential dread! We have nothing to hold but ourselves; so hold on tight, and never let go! We have nothing to lose, but the remaining chains holding us back! Nothing to gain, except knowledge, our freedom, our dignity, and our happiness - in a word, nothing short of our complete fulfilment! And we have nothing to go on, my friends, but our selves!

Let us take shelter, then, under each other's breast - let us embrace, my brothers and sisters! - and let us resolve: we shall create the greatest monument we can to the decency each of us deserves. The obligation that we, humanity, owe most to ourselves is the promise of a good society.