Everything is infinite or is not.

Infinitism

How to Make Infinity Your Philosophy for Life

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Foreword

In a world with complex and overwhelming issues a sociologist is pulled between two options: either staying in his narrow field of specialty and providing more technical knowledge on one aspect of a whole thing, or attempting to broaden his views in order to see how that thing or idea in question can be understood—and possibly improved. This book is a result of the second choice.

But the question remains on how a sociologist can go beyond his discipline while keeping to his endeavor in a methodologically objective manner. This procedural challenge was central when I began work on this book. How do we stay in a circumscribed framework when we have to talk about broader fields like cosmology or philosophy? Things didn't look easy at the outset. What could help us, before doing anything else, was the practical purpose of the work itself: the goal of building a better life. In other words, philosophy.

But why philosophy for this mission and not something else? It's a good question.

The reason is due to the awareness of an ontological weakness for each specific discipline within the broader sciences. Sociology, for example, has its own burden because its specialization acts as a kind of partition from an interconnected reality with the result that it cannot see the forest beyond the tree of its itemized field.

Philosophy—as the mother of human sciences—is still the only refuge because the social scientist can elaborate a vision that doesn't suffer from a lack of perspective or from its specialized sphere of academic knowledge. Philosophy can offer a broader view that the sociologist needs in order to see how social knowledge could be in the service of change, movement, and improvement.

We knew that by applying philosophy in sociology we would get a vision of the world, called here commonly, a *worldview*: helping people to orientate themselves in an increasingly changing and multifaceted world, full of deceptions, shams, self-destructive attitudes, all along with sacrifices, goodness, and humanistic endeavors. Events like the Covid-19 pandemic add themselves to this hectic state of affairs, reminding us of the necessity of such an undertaking. The objective of this work is then to present a worldview that could help the reader to deal better with the major problems of today's world. As we don't have any universal criterion to assess academically or scientifically such an intellectual attempt, the success of this book will be measured by those who will read this book and find it useful. And for the writer there is no claim of accomplishment beyond that of the reader's verdict!

The main motivation to write this book was the observation of a vicious circle developing, where one could see that people got used to accepting the bad in order to avoid the worse, and this, in an almost conscious mode, came from an attitude of lassitude and frustration. At any given moment, one could ask what people are

looking for by these multiple wrongful individual and collective decisions that don't do anything but accelerate and intensify the perilous nose-dive of humanity. After considering this and looking for the answer, it seems to me that a bitter spreading consisting of a lack of individual and collective wise decision-making would result in *an absence of a worldview*. The limitedness of our view—due to the Milgram-like case of overspecialization,[1] media shallowness, and social life's breakdown—encourages people to indulge in cursory self-destructive and short-term choices; the latter items are based on the emotions that don't leave any room for genuine and profound individual reflection nor for a collective deep examination of our past and present.

As a sociologist who's aware of the trivial nature of some people's socialization and acculturation, I find it to be an ethical responsibility—and nothing prophetic beyond that—to see if philosophy could come to our help, since the social sciences in themselves don't have any comprehensiveness or capability to serve as a guide. But even pure philosophy and its conceptual tools can't always be seen as the ultimate saver of a perhaps already lost humanity that has gotten used to a horrible plainness and unadventurousness habit of mind. It seemed necessary to conceive a theoretical framework where the noblest philosophical ideas could skillfully marry the scientific facts and all of this comes with the sociological realities of people's daily lives. The goal is to turn an

intellectual cocktail into an aesthetic and understandable presentation. Hard task, isn't it?

Actually, it is. This quest could fail or succeed but barely imaginable as something between. The reason why I emphasize this strict dichotomy is not to unconsciously obey a black and white vision of the things, but because the theoretical structure, presented in this book, follows a logic that either works and then acts as a useful and practical worldview, or it lacks relevancy or attraction and cannot attain its stated purpose. So I humbly hope that this book could provide the premises of a *philosophy of life*.

Let's proceed.

Note:

This book is a first step of a greater and multilingual[i] undertaking of the writer to establish a new philosophical theory called *Infinitism,*[ii] which is concerned with finding and exploring the infinite sources of the universe. It is based on the multidisciplinary field of *Infinitylogy*[iii] that the author is instituting as a new arena of research and development combining philosophy, science, and technology.

Interested readers are invited to visit continuously the related websites presented below in order to update how this undertaking is moving forward: www.infinitism.info www.infinitylogy.com

[i] The author has already published a Persian version of this theory of *Infinitism* in two volumes (1018 pages): "*Infinitism: The philosophical theory for change*, published in December 2020 by the ILCP Publishing House: www.ilcpbook.com

[ii] In order to know more about the new publications on Infinitism please visit: www.infinitism.info

[iii] For more information on this new field of activity please visit: www.infinitylogy.com

Infinity is not a thing but an action.

Chapter 1

A gloomy late afternoon in autumn. The little city park was nearly empty. A few bystanders, bundled in their clothes to hide themselves from the cold breeze, in haste to pass anonymously through the pathways that looked as if they led to nowhere. The benches were almost unoccupied and the cries of crows were ubiquitous.

John was walking aimlessly through the alleys that seemed lengthy and ceaseless. To him, everything had started to appear hollow, shallow, and futile.

“What the hell I’m doing here?” he asked himself. “Why am I in this dreadful park? Why should I end up in this miserable place at this awful sunset, wandering?”

Drained and lost, he threw his body on a bench in a quiet corner of the park and gazed at the soil. An ant was using the last sunbeam to drift ridiculously left and right, reminding him of the wretched state he was in.

He closed his eyes and saw nothing clear in his murky thoughts, just a row of disturbed and entangled imageries of his running day. All the little events that were supposed to shape the uniqueness of his life were not beyond the analogous miserable things and events from any other day.

When he opens his eyes he mechanically soliloquized: “I’m so exhausted.”

He remembered that he had started to overuse this latest word for a while. This was strange since he was quite young and apparently in a good physical shape with an outward happy life. “So, why should I find myself exhausted so much? And exhausted by what, exactly?” he asked himself.

He began to ponder this question. “Am I tired of my job? Am I fed up with my little apartment? Am I afraid that I might fall into a numb relationship with my girlfriend? Am I disgusted by what is going on in the world? Is it Facebook and Instagram and all the nonsense and atrocities they disgorge that upset me? Is it because I find the uninteresting little chats with my friends and colleagues to be a drain and a drag on my well-being? Is it the general depressing future of the world, waiting for me and my generation, that’s pissing me off?”

He couldn’t bear these nonstop unanswered questions anymore and shook his head, followed by a very long sigh. He doesn’t know why the sky got swiftly darker. Maybe it was due to all these weird queries that were blurring his mind! He wanted to stand up and walk away, but oddly, he felt no energy. He felt dried out and paralyzed.

For minutes he stayed there as a lifeless bulk, as someone who had died a few hours ago without realizing it yet. That was for the first time he experienced this deep foggy and awful sensation of faintness. He had had his blue moments on other occasions but was never affected so profoundly and intensely as it did this time.

Minutes passed. He was staring nowhere into the distance. Time had stopped for him and he could realize the depth of his blankness. For the first time in his life this odd question emerged in his mind: "Why should I keep living?"

Once this question was posed, he badly surprised himself with this awkward thought. The advent of this idea terrified him, and he started to wobble and a dry mouth came on.

He remembered having read somewhere that suicidal feelings often surface with unprecedented self-interrogations like the one he had just experienced. And what doubled his anxiety was that that question erupted in his mind so spontaneously that it was impossible to deny the authenticity of it. This recognition frightened him even further.

John remembered that he had wandered into the park and now he was there, under a tough psychosomatic shock that nobody inflicted on him but himself. This was quite a jolt and he didn't know how to cope with this realization, of what had befallen him. How is one to handle the first eruption of an idea that's visibly tied to a suicidal drift?

He was challenging himself with these interrogations when he realized suddenly that tears came up. He began crying uncontrollably. Once again, he surprised himself. Nothing came more to his mind but a desire for a cigarette. It would make him tranquil, at least for a bit. He brought his cigarette pack from his pocket and was surprised: no more left. "God damn it, when did I

finish that?" he said furiously. He needed a cigarette so much at that moment.

"Maybe I could ask someone to give me just one" he thought. Looking around for a soul, nobody was nearby. But, a little further away he saw a man on a bench, reading a book with the last natural light one could find. He walked mechanically toward him, hoping he would give him that so damned cigarette. His legs became heavy to move and arrived by a hair's breadth to the other bench.

"Excuse me, sir, do you have a cigarette?" he asked with a clouded voice.

"No, sorry, I don't smoke," the man answered kindly.

John could not keep standing and sit down abruptly on the same bench, beaten down.

"You okay?" the man asked.

John didn't have the physical power to turn to him and just murmured: "You tell me."

The man got closer without touching him. "Can I help you otherwise? Sorry for the cigarette," he said.

This time John turned back around to him and saw a middle-age man with a pleasing face. "I don't know who the hell can help me on the earth at this very moment," he said. "I have just had some terrible thoughts that shattered me," he added.

"I'm so sorry to hear that," said the man." We have all the blues in our life."

"Do we?"

“Of course. Who doesn’t?” the man answered.

John took a glance at him and sighed, “I don’t know.”

The man got closer to him and forwarded his hand to introduce himself: “Hi. I’m Peter.” John did not have energy to shake his hand but said, “John, my name is John, but it doesn’t mean anything, it could be Gustave or George or whatever.”

Peter said: “Nice to meet you, John. Your name means certainly a lot for those who know you.”

“You think so? “John asked.

Peter answered, “Yes, for sure. Each name represents a unique person and this uniqueness is all through which we built our world.”

Unexpectedly John realized that this last phrase hit his brain and it had a positive effect on him. “You speak well Peter,” he said.

Peter replied, “Thank you, I’m glad that you listened to what I said.”

John felt a little excited by hearing something that could touch him nearly as a good dose of nicotine. A hormonal surge? Maybe. He then asked, “Could you answer a question?”

Peter said, “With pleasure, if I know the response.”

John didn’t need time to search his mind to decide which one of his multiple questions of that evening deserved to be put forward. Without hesitation he asked the one that had emotionally turned him upside down so intensely: “Why shouldn’t I put an end to my life?”

Peter, a little shocked by the gravity of the question, looked directly to John and then brought his sight to the sky and said: “Ah,

dear! This question is as old as human history and as you can see, the presence of billions of individuals on earth shows that people have found often some good answers for it, otherwise you could imagine that our species would have disappeared from the surface of earth long time ago."

The intriguing way of answering to his question attracted John even more. "Maybe you could help me to keep myself on the surface of the earth, at least for tonight," he said.

Peter, laughing, answered, "Ah! This, I will be delighted to do so."

Peter then looked around and kept his coat closer to his neck. He said: "Listen John, it's getting dark and cold here, why we don't go somewhere cozier to chat a little about all of this?"

"I know a comfortable little restaurant around here," said John. We could go there if you accept my invitation."

Peter said: "With pleasure. This is so kind of you."

"The pleasure is mine," said John. I will let my girlfriend know." At the same time Peter likewise his wife Sara to inform her.

While they were walking toward the restaurant John gave Peter some more details about himself: "By the way, I'm a computer programmer and have an MBA. I've worked for a tech company now for almost three years."

Peter also made himself known to John: "I teach Humanities at a college. I'm also researcher in philosophy and I write articles for some publications."

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They arrived at the restaurant. There were a few customers inside. They chose a quiet corner and ordered some food. After chatting about some everyday subjects, the time came for Peter to return to John's question.

Peter: Well, John. You asked me why you should stay alive and avoid ending to your life. Am I right?

John: Yes, that was my question.

Peter: There are lots of things that could help you circumvent doing such a horrible thing. But they won't be efficient if you've already made your decision.

John: But I haven't made my decision yet.

Peter: Is it for sure?

John: Yes, you can be sure about that.

Peter: That's wonderful news. This gives us some room for our discussion. Well, I'll start with my argument. Stop me at any moment or put any question if you have one.

John: Will do.

Peter: You know, most people in this kind of situation start with a very famous cliché.

John: Which is that you should have a purpose in your life or something like that.

Peter: You bet! They say something like a philosophy, or faith in something. Anyway, they usually suggest this because they heard it so often in the similar situations here and there.

John: But you don't want to suggest me to furnish my life with a philosophy or religious faith?

Peter: Not really, because, what is finally a philosophy?

John: A goal in our life?

Peter: Yes, something like that, but at the end of the day, those who recommend us to get a philosophy in our life end up recommending us a kind of ideological package.

John: I heard that ideology is not something very funny.

Peter: It's not question of being funny or not. The point that I want to underline is that an ideology contains the answers shaped and made by other brains.

John: Sure, by the great thinkers and philosophers, right?

Peter: Yes, by them and many other folks who've had something to say.

John started to show a curiosity for why the famous answers, made by the great names, would not be seen as a useful tool or solution by Peter. That's why he reformulated his question.

John: So, Peter! Why we should not use this package of answers as is, I mean the ideology, and take it as such? And especially if it could prevent us from hanging ourselves?

Peter: Good question! After all, these answers are shaped habitually by the extraordinary minds of the human history and we know that this isn't something that every average Joe could make every Sunday.

John: Exactly. So, why be reluctant when it comes to ideologies?

Peter put his glass of wine on the table.

Peter: So, one could ask, if these packages of ideology, these ready-to-use philosophies, were so great, why, after having been adopted by millions across the world, do we still have all these issues and challenges and crises at a global level?

John: Isn't it because we don't apply them enough or properly at all?

Peter: Could be! But one could also suggest that it could be, contrary to what you said, precisely that we had used and applied these ideologies.

John: So then we still have all these issues and problems afterward?

Peter: Yes. This is just an interrogation, but it's not uninteresting.

John was perplexed by all of this.

John: So, you suggest that we shouldn't use these ideological packages, right?

Peter: Well, what I say is that we shouldn't be in such a hurry to be satisfied with only them.

John: So, what else then? What do we have to take to go beyond these known ideologies and eminent philosophies to frame our life with direction, guidelines, meaningfulness, and purpose? Peter, you said yourself that it's not in anybody's ability to invent a philosophy or an ideology every other day.

Peter: So true! But this isn't what I'm suggesting.

John: Now I'm eager to know what is on your mind.

Peter took another sip of wine.

Peter: Listen, I'm happy that you're already interested in what could be an alternative for current ideologies and known philosophies.

John: Yes, I'm actually curious to hear about them.

Peter: Is your curiosity great enough to keep you safe from any suicidal attempt tonight?

John laughs.

John: Yes! You can be sure about that. I feel much better now than I did an hour ago.

Peter was happy to see that John was excited.

Peter: You see, John. This curiosity that resides in you at present is about knowing what we could have beyond just adopting the old philosophies. Just this little interest itself is one of those millions of reasons I point to that keeps us alive and eager to survive.

John was amazed. He didn't realize how he had been enjoined in this tricky intellectual game that had already made him forget the fuzzy idea of suicide.

John: You somehow deceived me! I mean in a positive sense of the term. You brought me in a field that is so interesting to me and now I'm so excited that I would like to survive to see what this alternative of philosophy and ideology would be.

Peter finished his wine.

Peter: Yes, this is the magic of life. It is so rich, mysterious, and deep that you could always find a reason to avoid destroying yourself or harming anyone by any detrimental action.

Having heard that, John found an important question to ask.

John: But wait a minute! If these aspects of living keep us alive, why do some people go on to kill themselves? It wouldn't be my case but it is for thousands of others almost every day or every week.

Peter: Good question! Life could keep us alive if we want to. When we don't want that, nothing could be useful.

John felt that he was missing a point in this argument.

John: Peter, I'm a little confused now. On the one hand, you said that life could keep us thriving and on the other hand, you say that some could not be kept alive by life's fascination. And why? You said because these people don't want to stay alive. So, we're back to square one. The question is why these suicidal people cannot be influenced by all that the beautifulness of life could offer. Isn't it a little vicious circle argument?

Now it was Peter's turn to be excited by the cleverness of his interlocutor.

Peter: I like your smart view on the subject. You detected an egg-and-chicken argument in what has been said.

John: It's obvious, isn't it?

Peter: Could be. Let me explain that.

Peter lay back on his chair.

Peter: Life is an organic phenomenon, right?

John: You mean like an alive and dynamic system.

Peter: Yes. Its dynamism comes from interaction. It interacts with thriving and living things.

John: Like human beings and animals and plants together.

Peter: Yes. From the interactions between these categories we have an ecosystem of nature and life.

John listened attentively to Peter.

Peter: All these things that materialize life by their interactions are alive and responding.

John: True, they act and react to each other incessantly.

Peter: Now imagine that one of these things acts on the other one and this latter doesn't react dynamically, or positively. What happens?

John: The life cycle is cut, interrupted.

Peter: And this is exactly what happens when an individual doesn't answer to all the reasons that life is displaying to keep us alive and away from destruction. He or she acts like he is already dead, with no answer.

John: You mean because some people don't react to the signs and messages sent by life, they don't find any reason to survive. Is that what you mean?

Peter: Yes, we should not forget that when we are talking about an individual, we allude to both his physical reality, interacting with life through essentially the instinctive capabilities like breathing, and also, to his psychological side, which doesn't come anymore

from an automatic system, but it's mainly a result of his very willpower, his choices and his intellectual goings on.

John began to see the importance of the definition for the notions that Peter was using.

John: So, the interaction between life and man is both physical and intellectual.

Peter: Yes, and when the intellectual part starts stagnating and is taciturn we don't have any reason not to put an end to the physical one. Especially when we are under pressure.

John: Suicide!

Peter: And not only that. A lot of non-accidental deaths that happen are of the same stripe. These are the deaths that spring from the same pattern of suicidal-like attitude.

John could not be sure that he got the exact meaning of this last point. That's why he stopped Peter for a moment to put a question.

John: Wait, Peter! There's something big and serious in what you have just said.

Peter: Is there?

John: Yes, you are telling me that even when we don't put an end to our life, we could be a victim of a latent suicidal attitude. Did I get the point right?

Peter: Yes, that's one way to put that.

Now John was seeing a new dimension of a suicidal tendency that he was ignoring up to that moment. He had always seen suicide in its classic definition: that someone finds a way, often violent, to

brutally kill themselves. Now, with the new facet Peter was drawing, he realized that suicidal attempts could be much subtle, implicit, and elusive. He immediately thought of another question.

John: In this sort of self-elimination state, is the person himself aware of his attitude or not?

Peter took his time to answer.

Peter: We couldn't say that this person is actively aware of what he or she is doing, but we cannot neither ignore that they have a degree of mindfulness on the risk that their behavior is causing them, bringing obviously death closer than what would be its normal timing.

Now John is completely perplexed. If these persons have some degree of consciousness about risky habits, as Peter stated, why they don't stop these bad conducts to avoid the damage and to live longer and healthier? The answer Peter was going to give him dumbfounded John even more.

Peter: They don't stop these damaging habits, regardless of some degree of awareness of it, because they prefer faintly close but unknown thrilling meeting with death than a known, dull behavior that secures a longer survival. It's the risk that entices them. They know driving too fast is dangerous but some will do it anyway. It's a subtle flirtation with death.

John, after having heard this, was so agitated that he couldn't stay in his seat. He was astonished by this saying and had to stand up for a moment. Once he realized that other people in the restaurant

were watching him and thinking he was acting strange, he sat down again.

John: Wait, Peter! You're now going too far, at least for me. I don't follow you.

Peter: Tell me what isn't clear.

John: You are telling me that some ordinary people do know that their habits and behaviors are diminishing the length of their life and nonetheless they welcome it and continue to perpetuate those harmful routines?

Peter: Correct, in some way.

John: But why, if ordinary people who are not looking for suicide, properly speaking, are doing so?

Peter pondered on his answer.

Peter: Because these people don't dare to think about plan of action to kill themselves. They don't have courage to follow through on the supposed intention.

John: Though some do.

Peter: Yes, some will put an immediate end to their life. But these people represent a tiny minority of those who subliminally prefer not to live long.

John: A minority?

Peter: Yes, a little percent. The gross majority of those who welcome an early death prefer to linger their attempt in a scope of years or decades.

John: You mean during all these years or decades they are committing, as you say, a kind of little, gradual, and silent suicide? Like someone who smokes a lot with the knowledge that the smoking could be risky for his life?

Peter: We can say so. At the end of day, they are doing what that slight minority does brutally and without delay, once they are quite decided.

John still is interested in knowing why some people should be in a suicidal process for years or decades. That's why he rephrased his question.

John: And why is it that these suicidal people can't use all these long scopes of time to change their mind and decide to stop their slow, desperate attempts?

Peter knew that they arrived to the core of their discussion and wanted to use this opening to prolong his contact with John.

Peter: Well, John. I know that you are now keen to hear the answer to this crucial question. But it's late and you had a hard day.

John: Yes, I know, and I took a lot of your time. I really appreciate it.

Peter: Don't mention it. It's a pleasure to discuss these topics with someone like you. That's why I would like to invite you to keep going on this discussion at a later time. We can take this further and talk about how this latent suicidal attitude can sometimes be identified as a trend, so to speak, at a collective level.

John: You mean in the level of large population in the society.

Peter: Indeed, and even more. Why not a civilizational suicidal attitude? The subject is delicate and complex. We will surely need more time to ponder than a few minutes to clarify this point.

John: This is for sure.

Peter: So, would you like to prolong this discussion?

John: Absolutely!

John was delighted by this offer and accepted it immediately. They left the restaurant after having exchanged their phone numbers.

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Chapter 2

John was happy that he had found his usual energy again and was pleased to get acquainted with whomever he could have discussions on such matters.

That was a Tuesday when they met for the first time. Three days later Peter called John and suggested a meeting at his place, on Saturday evening. John asked if he could come with his girlfriend. Peter said the invitation was of course for both of them and that he and his wife would be pleased to welcome them. The meeting was set.

John was impatient for Saturday. With his girlfriend Liza, they took a good bottle of wine as a gift and some beautiful flowers before going to Peter's home.

The house was small but beautifully decorated. The place consisted of a welcoming two bedrooms with a living room ornamented by the well-organized bookshelves that held tons of books.

Sara and Lisa connected immediately and after some introductory chats, the time came for them to start the main discussion.

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John: We ended our previous conversation on an essential question: Why is that people who have bad habits don't stop them

in spite of the fact that they know these habits are detrimental to their health and can contribute to a shortened lifespan?

This subject quite intrigued Sara and Liza as well.

Sara: It is an interesting dilemma!

Liza: I'm eager to understand why.

John: Peter, everybody is now curious to have your thoughts on that.

Peter lay back on the couch and started.

Peter: Well, in order to answer to this question we should know how these habits are shaped, bit by bit, and installed in one's mind and embedded in a person's character.

John: This isn't something they have initially. They acquire these habits later in life, right?

Peter: Of course, and knowing how they acquire them could also help us understand why they keep doing what they know is bad for them.

Sara needed more precision on this point before Peter continued.

Sara: We are talking about habits like eating too much, consuming alcohol excessively, and using drugs and so on, right?

Peter: Yes, but the list doesn't stop there. We can include all the behavioral issues that make life bitter and can lead to life's conflicts and self-created miseries. We can consider anything and everything that harms us physically and mentally.

Liza: For instance?

Peter: Lying, not reading good books, committing violence against other people, abusing children, watching too much TV, gossiping, exaggerating in sexual activities, harming the environment, being indifferent to homeless people, doing nothing for abused animals, avoiding exercise or physical activity, ignoring our lonely parents, and so on.

John was listening attentively and the examples Peter presented left him perplexed.

John: But Peter! How could we say that smoking, or as Sara said, drinking too much alcohol, could be as harmful as watching too much TV or gossiping?

Liza: Good question. I was wondering about that too.

Peter put his glass on the table.

Peter: Look, all these activities happen to some extent consciously. I mean, there is a subtle degree of damage in all these examples and more.

Sara: Like?

Peter: When you lie, you know you are lying. This awareness, on the bad nature of your deed, triggers an internal bitterness as little and unimportant as it may seem at the time. It disturbs your inner peace and makes you uncomfortable, physically and mentally.

Liza: This is true. Lying is never easy.

Peter wanted to give another example drawn from his list.

Peter: You see the crowds of homeless tents by the side of the road and you pass, thinking that it doesn't concern you until one of these people, exhausted and depressed by unbearable misery, attempts to hurt you in the middle of a night during one of your routine walks in your neighborhood. When you don't read books, you ignore lots of things that could reward you with a happier or better life—or maybe an easier one. You remain aware of this and yet you instead prefer to watch nonsense on TV. By engaging in this level of laziness, you initiate and then get used to a low-quality life.

John: But I heard the more our brain works the easier it undergoes difficult situations.

Peter: Absolutely. Or when you don't manage your anger, it harms your body, your brain and your relationships.

Sara: That's a fact.

Peter kept going with his list.

Peter: When you pass hours and hours on the couch with some popcorn and beers watching TV, you are supposed to enjoy it, but in fact you are harming your kidney, your stomach and, depending on what you are watching, even your mental health.

John: Because what we watch on TV is important to our brain.

Peter: Of course. Every single image, every single sound will affect us whether we know it or not. The violence will push us toward violence or its acceptance. It makes deaths and crimes an ordinary action and the atrocity a commonplace occurrence.

Liza: And you said even gossiping is harmful.

Peter: Yes. It is because you know that you are committing an unethical act while nattering on the back of other people. It's a form of cowardice.

John: And this will make us prickly internally.

Peter: Certainly, because somewhere, in your mind, you know that talking negatively about people isn't a good act. It's dishonest. And when you do that, you repress your awareness and your decent judgment.

Sara: And this repression is injurious.

Peter: Mentally and physically. Because it's something negative that you are adding to your personality, or should I say, imposing on yourself.

John wanted to draw a conclusion from this part of discussion.

John: We could say that as soon as we are knowingly doing something bad we are hurting ourselves somehow and to some extent.

Peter: Cerebrally and bodily, with always some little or big durable bad effects.

Liza: Mind and body are anyhow interrelated.

Peter: This is the key. Some of us think that if some behaviors don't harm us physically, in a visible and direct way, they are not harmful at all.

Sara: But you say that they are.

Peter: Yes, in a delicate way. It's true that our more-or-less desired and programmed ignorance tries to hide the profound reality in order to make us believe in the contrary, but the truth is that the mind touches the body constantly and vice versa.

John wanted to go back to the core of his question.

John: So, if the ignorance is there, whatever its extension is, how you can say that these people know what they are doing to themselves and label their behavior as a suicidal attitude?

Liza: Well, this is a good observation.

Peter fills his glass with more wine and continues.

Peter: This question brings us to a subtle point.

Sara: Which is?

Peter: Which is that we could observe, almost at all times, a spectrum of knowledge and ignorance in people.

Liza: Could you develop that please?

Peter: What I mean is that the people know about some things very well and about some other things less so, and for others, not at all. In brief, knowledge and ignorance are both mostly relative.

John is confused and asks for a precision.

John: Do you mean that there is no an utter ignorance?

Peter: Well, for some strange or unknown topics, there would certainly be, but we are talking about the things that are not totally unfamiliar to our common sense or to an average individual's acquaintance or social experience.

Liza: But there are always a few exceptions.

Peter: Of course. However, they cannot invalidate the general rules.

John: OK, we're not talking about the exceptions.

Peter: Not really, because we know that this trend of perpetuating harmful actions happens among millions and millions of people. Some of them are well educated. Imagine a doctor who is also a big smoker or an environmental engineer who buys a huge, pollution-creating car.

John: But why do these people who know that their bad practices reduce their lifespans keep doing them?

Before Peter could attack this question Sara announced that the dinner was ready. Once they arrived at the table and dinner was served the conversation restarted.

Peter: You know, these people who follow a suicidal attitude, at a large scale of the population, are in fact revealing a social phenomenon that's more than just an individual issue.

John: Ah! I thought that we were talking about a psychological fact or an individual attitude, but now you're suggesting this is actually a sociological thing.

Sara: And what is exactly the difference?

Peter invited them to enjoy the meal as he explained the issue.

Peter: The phenomenon itself happens, of course, at an individual level, in a person's behaviors or decisions. For that, this is true; it's a psychological fact. But when the same things massively

spread among the population, we are faced with a social issue as well. This is a sociological reality.

John: So it's because of statistics?

Peter: Not only that. The dimension suggests to us that the phenomenon has some common roots that work among the masses and generate huge similar effects here and there.

Sara, who was coming and going between the kitchen and the table to serve her guests, chimed in.

Sara: You mean because we have multitude individual cases we could guess that there are some collective conditions that bring these similar cases about, some conjoint roots that produce these behavioral attitudes. Is that it?

Peter: Well said honey. And what's more interesting in our discussion is actually the social dimension of the subject.

John: Otherwise is it true that the individual samples could not really be understood?

Peter wanted to bring more precision to the discussion.

Peter: Look, when you're studying the suicidal attitude of one individual, you pay attention to their story in order to apprehend the specificity of their life, to see how they had been finally brought to that harmful state. But when you see the second and third and a fourth case and even further, with some striking analogous features, you start to see some similarities, which gets your curiosity up and has you questioning the possible common causes of what's going on in these people's minds.

Liza: And from there you get the social dimension of the thing.

Peter: Yes, and you try to find an explanation that goes beyond the definite individual cases.

John was feeling a little embarrassed. On the one hand, the subject was related to his existential crisis of a few days before and on the other hand, he didn't want Liza, his girlfriend, to know exactly about what he had undergone, at least not right away. At that moment he wanted to know if understanding the social aspect of the issue could demystify his own personal mental misadventure or not. But he couldn't put this question straight, which is why he posed his question in an indirect way.

John: And how does this comprehension of the social dimension clarify individual cases?

While he was asking this question Peter was leaving the table to fetch a new bottle of wine. Soon he returned to the table and served wine to everybody. While doing so for John, and while Liza and Sara were occupied chatting with each other, Peter said to John, *sotto voce*, "Don't worry, I know what you would like to know."

John was assured that Peter got his point and would include it in his answer.

After having served everybody with wine, Peter sat down and retook the conversation.

Peter: When we understand the social causes of an individual's suicidal attitude, we could say how these trends have been shaped while offering a way for a person to face or to alter it.

Liza: Do you mean changing this attitude at the individual level, or are you speaking of altering the general state of society?

Peter: Both. You will see, once we develop our conversation, that these two aspects—the collective and the individual—are not completely unrelated.

John: I would like to see how they are linked.

Peter: Well, be patient John. We'll get there.

Dinner was over and Sara asked them to go to the living room to have a cake as a dessert. Once everyone was on the couch, the conversation continued.

Peter: We already know that there is an interaction between society and the individual.

Liza: A reciprocal bond.

Peter: Yes, and an organic one.

John: And by organic you mean dynamic.

Peter: Exactly, both are affecting and affected with each other continually.

John: And we want to know how these interactions shape the implicit suicidal attitudes in some people.

Peter: Yes, that's the objective of this part of conversation.

Sara served the cake and tea. Peter took his part and kept going.

Peter: We know that newborns don't have any idea about death, right? This is something we learn later on.

Sara: Same thing about social life and its rules and norms.

Peter: Yes, we learn them all. Society provides us the conceptual tools to produce meaning for all we do: going to school, getting married, going into the army, fighting for our country, finding a job, establishing a family, thinking about our retirement, and so on.

John: None of these is of course originally meaningful to us.

Peter: Not really. It's a matter of interpretation, and in order to interpret them we borrow concepts, outlooks, and values from society.

Liza: I remember in our course of sociology we called it the "socialization process."

Peter: And here we are. It shows that you listened attentively to that course.

John: You say that the meaning we experience at different times in our life comes from our socialization.

Peter: Partly, but we also said there is an interaction.

Sara: This means that we're also active in constructing these meanings.

Peter: Oh, absolutely. We always play a role in what society wants to instill in our mind. This individual part is so crucial that some sociologists even deny the influence that society has on what we become and what we do.

Liza: This is the individualism school.

Peter: Yes, in its overstated version though.

Peter asked his wife if he could have another tea. Sara started to serve everyone again with a delicious hot tea.

Peter: When we think that society teaches us what life, death and family mean we should know that these connotations also are all the products of both the collective life and the shared experiences of all the members of society through the past history and at present.

Liza: Is this how the interactions work between individuals and society?

Peter: Yes. From this interaction is born our social life and its byproducts.

John: Including suicidal attitudes?

Peter saw a good opportunity to elaborate on this point.

Peter: Let's put that like this. Except in the apocalyptic periods of the history, which are, furthermore, very rare, society pushes us toward valuing and cherishing the life.

John: So, why then do individuals not follow this direction but instead go down a road that takes them toward ending their life?

Peter: This is a conundrum. Ladies, what do you think?

Liza: I think it's because individuals don't and won't have to follow society's directives mechanically.

Sara: Nor automatically.

Peter: Indeed. This is the freedom margin that we have. And this autonomy is bigger in modern societies compared to older ones.

Liza: A French sociologist, Durkheim, talked about this difference between modern and traditional societies.

Peter: Indeed, Liza. It is very to the point regarding our main subject, suicide.

Sara: Did Durkheim talk about suicide?

Peter felt for a moment as if he were in his class with his students!

Peter: Yes, in his famous book that—guess what?—is titled *Suicide*. Durkheim stated that this destructive attitude is more widespread in modern societies where people have greater individual freedom compared to traditional societies that have more restrictions.

John: Is Durkheim saying that when people have more freedom the more they will lean toward self-elimination?

Peter: Yes, whereas there is more of a mechanical solidarity in traditional society.

Liza: I remember that this means that people tend to be closer in small communities like a village or in small town and support each other when they go through the hard moments in their life. Is that it, Peter?

Peter was happy that Liza assisted him with the sociological clarifications.

Peter: Yes Liza, thank you for helping me.

Liza: You are welcome.

John: Enough praising my girlfriend. Let's get back to the issue of mechanical solidarity, as Durkheim used to call it.

Peter: On the opposing side of this, there are modern societies.

Sara: Such as big towns and megacities.

Peter: Yes, there you can find what Durkheim calls an “organic solidarity,” as part of his two-part idea of mechanical solidarity and organic solidarity.

Peter pointed his look to Liza.

Liza: Yes! The “organic solidarity” is the one you could find in a society where the usual individual or family’s role yields to the official institutions. And people are bound to each other through some, let’s say, formal and institutional straits instead of inter-individual traditional links.

Peter found the Liza’s answer satisfying.

Peter: Right. In the big cities people use what Durkheim calls for “anomie” to vanish amid the population without attracting the attention of other people on their own discrete situations.

John: They stay anonymous and they could find it easier to kill themselves. Right?

Peter: Well, they are alone and if they can’t figure out why they are depressed and miserable, nobody is expected to come around to help them.

Liza: While in small communities the chances are better that one can be seen and receive support when one is emotionally down.

Peter: Yes, the familial network and a customary solidarity keeps people close and attentive to each other. They mutually support themselves, reducing the risks of social isolation.

John was thinking of his situation a few days ago when he was alone at the park without anybody coming to him, even though a multitude of bystanders were quickly passing by.

John: So. Now we could focus on the case of suicidal tendencies in the big cities.

Peter: Yes.

John: And this, as well for those whose consciously damaging behaviors bring on early death.

Peter: Exactly. And this part of discussion will be very interesting and, I warn you, a little complex.

Liza: Ah, really?

Peter: Yes, because we should go through what we have in our mind as an individual in an urban context of megacity like the one we are living in.

Sara: You mean this discussion involves the unconscious parts of our mind.

Peter: Literally, but not only that. The subject we will talk about is related to philosophy as well.

Liza started to feel tired and suggested to save this part of the discussion for a later time.

John: What about going over this conversation in a few days and this time at our place?

Peter: Why not. What do you think, honey?

Sara: I would love to.

John suggested Wednesday night, but Peter said he preferred another day since he has his class on Thursday and wanted to be fresh for his students.

The invitation was scheduled for Friday night at John's.

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Chapter 3

John was impatient to resume discussion. The week passed rapidly and Friday arrived. John got home as soon as he could to welcome his guests. He and Liza tidied up their apartment up and prepared some nibbles, wine, meal and desserts. At 7 p.m. Peter and Sara arrived.

After the expected rounds of greetings, they dove into the main conversation.

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John: So the question that could set off our tonight's discussion is why some people who live in big metropolises have explicit or implicit trends toward reducing their lifespan and meeting death sooner than what is expected to be a normal death deadline.

Liza: We are all ears, Peter.

Sara: Go ahead, professor.

Peter tasted his wine and started.

Peter: You remember we said there's the individual role in this matter as well as the influence of social causes. I would like to be precise tonight and talk only about this first item.

John: The individual role in suicidal behaviors?

Peter: Yes, we would like to know what process an individual undergoes to arrive at this final, dark conclusion that life is no longer worth living.

This was the main subject John was interested in and that's why he was listening very assiduously.

Peter: Each of us has time and some intellectual baggage to which we then elaborate a view of the world we live in.

Liza: The famous worldview.

Peter: Yes, which is different from ideology.

Sara: How it's different?

Peter: Well, ideology refers to a sophisticated and elaborated worldview, very well thought and purposely organized. By contrast, a worldview means the general understanding that everyone has of life, human, nature, and the world.

Sara: Do we all have one?

Peter: Almost every adult person, without a major mental handicap, has a worldview.

John was thinking about his. But it wasn't clear.

John: But how does one get a worldview?

Peter: It begins with a combination of cultural elements and social experiences we gather during our adolescence.

Sara: Do we gather these elements selectively? I mean intentionally?

Peter: Often, but not always. We actually pick them when they attract our attention, when they impress us greatly, or when we find

them useful and focus on them so much that we finally adopt them. They usually leave a lasting trace in our mind.

Liza: So, we don't follow any specific way to build up our worldview.

Peter: For most of people there is no specific procedure for building their worldview up. They make it out of the pieces of advice or thoughts that are available in their life.

Sara: By what is at hand.

Peter wanted to avoid any simplification on this matter.

Peter: Well, most of us gather what we know from the good books we read, the lessons we learned at school, the conversations we had with the knowledgeable people, the advice we've received from wise individuals, recommendations by our parents, interesting movies, or other sources of media or our mind-marking events and experiences of our own life.

John: So, the sources are ample and variable.

Peter: Oh yes, especially these days where we have access to lots of online sources.

If sources are so rich and vast, why is it that some people are unable to create a worldview that keeps them away from suicidal thoughts? This was the question that John put to Peter.

Peter: You know, it's not because our sources are multiple that we would pick the best of them.

Liza: So the nature of the selection counts.

Peter: Yes, for a lot. Basically the selection will determine the substance of a worldview.

John: If we ignore the good materials, then we would have a low-quality worldview.

Peter brought the discussion to a crucial point.

Peter: In reality, the most important thing in our worldview is not even its content but the way that we composed it.

Everybody gets curious on this point. And Liza asks the question that the others were thinking of.

Liza: Do you mean the method that we use for shaping a worldview is even more important than its substance?

Peter: Yes, not for the sake of technicality, but because of the outcome. I mean the importance of sharing a methodology can determine the strength of a person's worldview. By using a good methodology we assure that our worldview will be able to evolve with new materials and data. A good methodology helps to update a worldview and encourages people to stay practical in different situations, which can help people tackle life's varying realities.

John thought that Peter was pointing to a very important element in this discussion.

John: But why and how precisely does the methodology play a vital role when it's a question of worldview?

Sara: Yes, why? This is my question too. If, for instance, I know how to play the piano well, the way I learned to play piano should not be an important detail.

Peter: This is actually a good example, my dear. You could learn to play an instrument by different methods from different teachers. But this is probably only be true for some general level of performance.

Liza: You mean, not for all the cases that you have to handle?

Peter: Indeed. Some pieces are so complex to play that you should have a profound knowledge and the necessary skills together.

John: And in these situations if you had learned to play piano by a poor method you would have some difficulties.

Peter is happy that the John's conclusion is close to what he meant to suggest.

Peter: Yes, and in the same way, when you build your worldview up without a precise methodology, you might not be able to face all the challenges in your material or intellectual life.

Sara: You would not be quite ready to handle them, right?

Peter: Right, and then you become overwhelmed. You don't have the needed explanatory markers anymore. You lose confidence in your ability and feel vulnerable, lost and ready to fail.

John: This is what happens when you're not equipped with a worldview with a good methodology. Right?

Peter: Yes, and this is, among other reasons, why people resort to ideologies. I'm referring to prepared packages of answers that give you a pre-construed, ready-to-use worldview that's painless and stress-free. There you don't need to use any specific methodology. It's already all done and boxed for pick up.

Liza: Isn't it then better to use them and be safe instead of tempting to construct one's own worldview with a huge challenge for the methodological aspect you are talking about?

They started to look at each other while a silence came down among them. They had the impression of getting to an obvious conclusion. Was it the outcome of their long talk? That "ideologies are surer, easier and better than a hard hazardous personal effort of constructing one's own worldview"?

The silence lasted a long time and was becoming obviousness till Peter disturbed it.

Peter: A handmaid worldview is much better than a prefabricated ideology.

This was not a suggestion but a statement. It was a cold call for them. Should they leave the relief of their cool conclusion and return to the hot debate?

John: And why do you say that?

Peter reminded everyone of a discussion he had with John in the restaurant on ideology and philosophy.

Peter: Ideology is a product of other minds, not ours. You remember?

Liza: And is it bad?

Peter: No, but they could have the same trouble that we would have with a deficient worldview.

Sara: They can't answer all the questions and all the challenges we would face. Right?

Peter: Exactly, they are often outdated and don't apply to the newness of our new encounters.

John as a computer programmer got an idea there.

John: But we could update our ideology as we do it for software.

Peter: It's not that easy. You know better than me that some users can't update software by themselves. The updates are offered by the company or the people who made the software. True, John?

John: Yes.

Peter: In the same way you can't update an ideology that you didn't manufacture. You are just a user.

Liza: What about those who created the ideology? Could they make it up to date?

Peter: They could, if they're still alive and if they want to and if they could do it.

Sara: It's quite conditional.

Peter saw the opportunity good to state the importance of the methodology.

Peter: Yes, and if you use an ideology, your thoughts and understanding of the world will be conditioned as well. You don't have that intellectual freedom that we deserve as the owner of the most complex phenomenon of the known universe that everyone has been given for free.

Liza: Our brain?

Peter: Yes, our brain is a fantastic machine to explore the farthest physical or conceptual horizons that one can imagine.

Sara: And when we adopt an ideology we limit, in one way or another, this amazing machine in its best performance. Right?

Peter: Yes, because an ideology could also arrive as a stagnation that puts its survival at risk, but those who are taking advantage of it could try to maintain it as is by any means necessary for their benefit without seriously worrying about that ideology having fallen into disuse.

Liza: And in this case, this kind of ideology is cut from reality.

Peter: Noticeably.

Liza: If it's the case, why do so many people take refuge in known ideologies? Like religions?

Peter: Mainly for two reasons: one, because they don't know the unbounded capacity of their own mind and two, because being a free thinker has its own cost and hardship.

Sara: While adopting an ideology is fast, easy, and free.

John remembered the conversation they had in the restaurant that night about the ideology.

John: You say that we should prefer avoiding ideologies so that we can build our own worldview, right?

Peter: Indeed. But don't forget what we said about the importance of using a good methodology for doing it.

Liza: Wait a minute, please. I'm still doubtful about the benefit of accepting all the hardships of thinking, studying, analyzing, searching, measuring, and elaborating, just for the sake of shaping

our own worldview while the provided packages of ideology are ready out there to use right away.

Sara: Despite the fact that we're aware of the risk of not having an answer for some challenging questions.

Peter: I can understand your reluctance. But let's see the problem otherwise.

Liza: OK, but before you explain that I would like to invite you to the table. Dinner is served.

They went to the table and started to eat. Everybody was waiting for Peter's explanation on what would be another angle when it's a question of adopting an ideology or not.

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Peter: First of all, we should know that what you are recommending, Liza, is what hundreds of millions of people have already done.

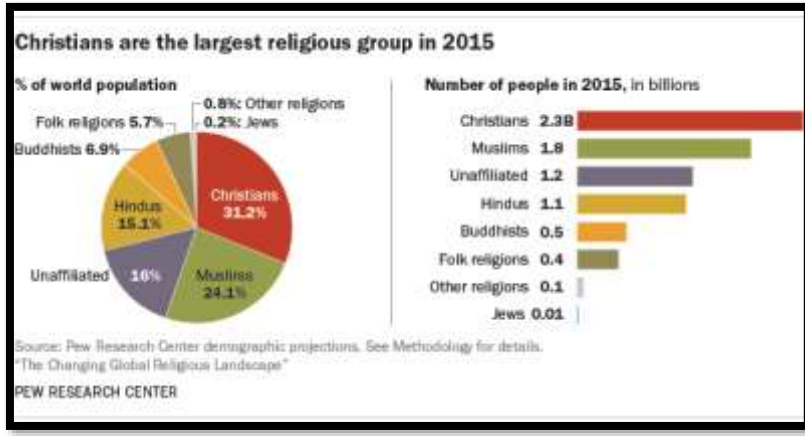

Figure 1

Liza: You mean having adopted one of these already elaborated ideologies?

Peter: Yes. As you know there are more than 2.3 billion Christians in the world, more than 1.8 billion Muslims as well. (Figure 1)

Sara: And we have more than 1 billion Hindus and so on.

Peter: Right. If these ideologies are good, why do we have so many global issues and miseries in the world at present? This is the conversation that I had already with John.

Liza: Were really these ideologies supposed to solve all our problems?

Peter: Not all of them, but these ideologies are said to be made-up packages of ideas to help people have a better life.

John: And we know that they are not despite the fact that for centuries most people from around the world have welcomed these ideologies.

Liza: Is this the fault of the ideologies?

Peter: Not only them. The causes are many, but they have had a perceptible role in increasing our problems rather than reducing them. For instance we've seen all the wars, massacres, persecutions and horrible acts related to these ideologies. We remember wars based on religious or ideological motivations. We saw the horrors of Auschwitz and the Gulag. We wasted billions of dollars during the Cold War on an ideological conflict. We saw the Vietnam War. We saw 9/11 and its aftermath with Al Qaida and ISIS. All, a total

waste for the humanity and all related to this or that religion or this or that ideology.

John asks Peter for some precision on this to be sure that he's not misunderstanding where the discussion was going.

John: Could you confirm that you mean these ideologies are harming us?

Peter: Listen, I don't want to offend anyone's beliefs. My critique of these ideologies, including religions, is one thing. The goal of our discussion is to know if the construction of one's worldview is better than someone else's.

Sara: We were talking about this last matter, I think.

Peter: Yes, and I don't want to divert the discussion toward never-ending criticisms of the traditional ideologies. We know their results: ecological disasters, the huge gap between haves and have-nots, and the potential for international conflicts. The Russians are developing a rocket with the capacity of carrying 10 nuclear warheads that are able to destroy a surface as big as the France in just one attack.

Liza: Is your insistence for focusing on constructing our own worldview related to the importance you give to the methodology?

Peter: In some ways yes, it is. We should follow a method in our discussion so that we attain some tangible outcomes.

John was happy that the conversation was following some order. As a computer programmer he understood the importance of having

a methodical track of discussed themes and issues to follow for obtaining results.

John: Let's get back to this methodology you talked about, Peter.

Liza: Yes, what kind of methodology should we use for building up our worldview?

Peter: We have now reached the core of our subject: a methodology by which we can generate a practical worldview for our life in such a way that it could, as much as possible, avert us away from embracing a suicidal attitude.

Everybody was waiting for the presentation of Peter on that methodology.

Peter: In order to do so, I will need to think of our conversation as a kind of class in school.

Sara: Ah, here we are with Mr. Professor.

Everybody laughed. Peter was not really embarrassed.

Peter: I know, but believe me it's not for showing off. I need really a board and a marker so I can present you some concepts and the associations between them.

John: I understand. I use it all the time at work.

Peter suggested that they start this part of their discussion later at his place where he could have a whiteboard. But in order to achieve the current course of the discussion, he wanted to complete a point while they were taking their desert and before leaving for John's place.

Peter: To return to the subject of ideologies we should know that they have been typically fashioned to answer the needs of their respective eras. Later on, the answers to the precise issues of their time were somehow sanctified and frozen in time. The world has evolved a lot since, but most of these ideologies and their timeworn ideas lag behind. In order to adapt them to new needs, like in the Greek myth of Procrustean bed,[iv] people started to manipulate these answers and fabricate new but odd ones. However, the fabrication and manipulation were so deliberate and volatile that these ideologies ended up losing, to some extent, their coherence and consistency. Therefore, they aren't even useful anymore as they were at their original time of fabrication and early development.

Liza: That's why it's hard to trust them to account for the challenges and issues of today's fast-changing world.

Peter: Yes. I will add that we don't need really these prepared answers since nowadays, with the democratization of knowledge and the easy access to almost any information, we need just motivation and a methodology to make our own ideology, or as we said, our own worldview. You might know that "according to IBM, the buildout of the "Internet Of Things" will lead to the doubling of knowledge every 12 hours."[2] This idea of momentum should serve

[iv] In the Greek myth, Procrustes was a son of Poseidon with a stronghold on Mount Korydallos at Erineus, on the sacred way between Athens and Eleusis. There he had a bed, in which he invited every passerby to spend the night, and where he set to work on them with his smith's hammer, to stretch them to fit. (wikipedia.org/wiki/Procrustes)

as a compass to help us navigate the tempestuous waters of the world.

John: So, a neat preference of methodology on ideology.

Peter: Yes, because an ideology only brings a few answers to us, while a methodology is a tool to produce answers.

Liza: And with the fluctuating world in which we are living now we do need more an answer-producing tool rather than some outdated answers.

Peter: Certainly. It's like the Chinese proverb that says "if you give a man a fish, you feed him for a day—if you teach him to fish, you feed him for many days."

The meeting ended with this last remark. Everybody needed time to digest all of these points and be prepared for the class-like meeting that was going to take place next Saturday afternoon. All of them wanted the discussion on the methodology to get started.

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Chapter 4

Peter was preparing himself for his presentation. As a professor, he had many courses and classes but none of them on a subject so original, so sensitive and innovative: a methodology usable for constructing a worldview with the objective of preventing people from adopting suicidal attitudes. Such a strange intellectual task!

He started by making a syllabus for himself. He knew by what topic to start, but he didn't know where exactly it would end up, so he decided to take the lead, so to speak, from his interlocutors: Sara, Liza and John.

While he was preparing the syllabus he identified some reference sources and prepared a few slides and schemes for his presentation. However, even though he had presented courses for many years in front of scores of students, he had some anxiety for this particular presentation despite the fact that it was a private one and only for his wife and his two new friends, John and Liza. He was asking himself "Why I'm a little worried about this friendly and open presentation?" After having thought about this for a while, he found some clues. He remembered that John had asked him for help. This was the trigger for this run of discussions and he considered it as his moral responsibility to bring it to John. He remembered that

he had to keep John far away from any idea about attempted suicide. So, it was so important to him to do his best in this undertaking.

That's why he was a little nervous for this presentation. All the discussions reached a crucial point where he was going to demonstrate that it's possible to make a functional worldview that would restrain a person, like John, from any idea of harming himself.

The task was twofold: he had identified, apart from John's expression of a suicidal tendency, a degree of excess in drinking alcohol in Liza. And based on the definition that he had presented to them about self-destruction behaviors, he saw, to some extent, not only John, but also Liza at risk, maybe not immediately but at least as a possibility down the road.

All of these speculations pushed Peter toward preparing a good and as much as possible convincing presentation for the next meeting.

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He arrived at the agreed-upon time for the next assembly: Saturday afternoon at Peter's. Sara prepared everything and John and Liza arrived, as planned, at 4 p.m. Unlike the preceding meetings this time John and Liza both had brought a workbook to take notes. John got even an audio-recorder to keep the session as a course on methodology. After they had a coffee and some sweet snacks they went to the room where Peter had staged his kind-of-

classroom at home: a board and markers, a few chairs, and even some blank paper to write the things down.

Everybody took a seat and Peter went to the board to start. He wrote on the board the title of his presentation: “A Methodology to Build our Worldview.”

Liza: Nice title, Peter.

Peter: Thank you. This is what we are going to talk about.

John activated his recorder.

Peter started his crash course then.

Peter: Before I set off talking about the subject itself, I would like to outline some introductory points.

They were all listening.

Peter: First, I would like to apologize for transforming our friendly get-togethers into a sort-of classroom. I’m doing it this way because the subject of methodology needs materials and some focus to be discussed properly.

Liza: I happen to like this classroom-like presentation.

John: Me too.

Peter: I’m glad to hear that. The second point is that what we’re going to discuss is a methodology to create a worldview in the manner to which I describe on the board. But you should know that such a methodology doesn’t really exist.

John: What? You said that this is what you are going to present to us.

Peter: I mean that we don't have it as such somewhere in the academic world or so as a defined one.

John: I see.

Peter: Nowhere you could find something called "methodology to build up a worldview."

Liza: So you invented it.

Peter: Not yet. We are actually going to do so collectively as an ongoing intellectual process. What we effectively have is methodology, as a general way to think logically and to study a subject based on a method. But what we are doing here is adjusting all this for shaping a worldview.

Sara saw the incredulity of John and Liza and felt the need to bring in more clarification.

Sara: I think what you are trying to tell us, Peter, is to see if this general methodology of social sciences, used in your academic tasks, could be in one way or another applied for the peculiar purpose of our weekly discussions, which is to see if a worldview could or would prevent people from adopting suicidal attitudes or not. Is my understanding correct?

Peter: Yes, very well said. We would like to make a collective trial to see if there is a way to shape a worldview to help us thwart explicit or implicit self-destructive behavior.

John: And this would mean that in the absence of such a worldview, people could be tempted by a suicidal tendency.

Peter: Not necessarily, but the indirect upshot of our attempt could appear to some people something like this.

Liza used the opportunity to put a sensitive question to Peter.

Liza: And why have you developed on this particular point?

Peter: Because I don't want to look like as a con artist.

John: What do you mean, Peter?

Peter: I mean what we are going to do collectively will be based on the idea that I suggested you.

Sara: Which is?

Peter: The idea that in order to understand desperate attitudes we should examine the role of absence of a worldview, consciously and purposely, erected by an individual.

Liza: Or more exactly by the members of a society when it comes to seeing suicidal behaviors as a social problem.

Peter: Well, a worldview, if objective and useful, could function for an individual and then its effects could go far beyond particular persons in the society.

Sara helped Peter to retake his sights.

Sara: You said that you don't want to seem like a con artist.

Peter: Ah, yes. As I suggested, the way we might want to study this question together would mean making this method credible from the first step and… by this, I mean myself.

John: I see. You are afraid that if we don't find a satisfying answer to our question at the end of the day, nobody blames you on the way you directed this discussion.

Peter: Yes. You know I teach humanities at university. There, we discuss how humans have been modeling various aspects of their civilizations—culture, arts, and history.

Liza: I loved humanities at college.

Peter: I mean I've never tried to use my knowledge to see if we could find a clear answer to a question so deep, so intimate, so peculiar…

Sara: Which is why people put an end to their life in a clear attempt of suicide or in an implicit manner of bringing their death closer.

Peter looked at them one after another to see if his cautious attitude was justified before starting his pilot presentation.

Peter: What I want you to know from this very first step is that what we are starting now is just an intellectual adventure and nothing more.

John: So, the keyword is adventure.

Peter: Yes, because in an academic frame you have a more or less strict methodological path, while, we are here talking about an intellectual odyssey where we know only vaguely the destination.

Liza: Even though we are using a methodology that the academics use, right?

Peter: Yes, correct.

Sara played once more her role of the clarifying voice.

Sara: So, we're going to start an intellectual elaboration that is greatly arbitrary, but we will try to bind ourselves to a defined methodological approach.

Peter: Sure. We want to make a trial that could be either a successful undertaking or a pure failure. Be ready for both.

John: Where do you see the danger of risk, Peter?

Peter: First, for my credibility in your regard. I mean, after having spent all this time that we will need to construe our worldview to see if it could act as an ideology's replacement and to see if it can keep us away from any morbid conduct or not.

Liza: And second?

Peter: Second, is that I don't want you to feel mislaid and disappointed if we lose our bet.

John: So, there is a risk of a psychological frustration in what we are going to start.

Peter: There is an effectively such a risk, yes.

Silence came over the room for a while. They were all thoughtful about what they were going to set off.

Liza: Is this risk such that we would be better off not doing so?

Peter: This is a question that everybody should ponder over and then we could even vote on that.

They stayed soundless again for a while, thinking about the seriousness of their intellectual enterprise. What was, at first, a simple and amusing discussion between them, became, at that moment, a stern matter.

Nobody was ready to take the initiative of saying the earliest word. They know somehow that if they fail in constructing a useful and functional worldview, the hindrance and disappointment could sink them into psychological depression or philosophical disarray. This would put their life at risk by dipping them in a kind of deep downheartedness

The silence continued until John broke it with a straightforward statement.

John: I recognize the risk, but I'm in.

After all, these discussions had started because of him trying to find an answer to his existential query: "Why should I put an end to my life?" This was the initial motivation that pushed him to be the first of the four to say that he was eager to trigger that highbrow adventure.

Liza joined him immediately, as she wanted to be an unquestionable support for her loving boyfriend.

Liza: Me too.

Sara and Peter looked each other for a while, but not for very long.

Sara: I'm curious too. I'm in.

Peter was the last one.

Peter: Very well. Now that we all four are aware of the relativity and, should I say, the delicateness of our undertaking, we are almost ready to begin our odyssey.

Liza: Almost? What else then?

Peter: The last point that I would like to point to is something beyond my role in this exploit.

Liza: And what is it?

Peter: We should be aware that the final product that we will have would not be but just one way of viewing the world and nothing more. We should never, at any stage of this journey, think that we would be discovering any absolute truth, since such a thing can only be found in a fanatic's ideology. A methodological approach finds the facts, analyzes them, draws conclusions from them, and then keeps plugging along.

Liza: So, our final outcome will be just one construction among many others that are possible.

Peter: Yes, another group of four people could have built a much different worldview after having spent the same efforts.

Sara suggested that they have a short break before Peter starts his crash-course on methodology.

They went to the living room where Sara served them coffee and snacks. Peter took advantage of the relaxed climate of the living room, where everybody was taking a drink, to summarize the debate they have just had.

Peter: I'm so happy that we have voted on it. Now we all know that what we are going to do is just a shared intellectual effort and nothing more. The answers and assertions we will formulate won't have any absolute objective certainty. Our outcome, whatever it will be, will not be the result of a scientific inquiry. Instead, it's just a

kind of philosophical speculation where we will have to shape our concepts and definitions and join them as logically as possible. A pure "speculative philosophy."[v]

Liza: But we are using science as much as we can, I imagine.

Peter: For sure, but we won't claim our final output "scientific" or something comparable.

John: It's a kind of artificial invention of concepts and their mixture without a rigid scientific objective.

Peter: Right. This is just to fabricate a worldview as we would like, not as it should be, since such a thing could not exist as an instructed rigid creation likening to ethics, religions, and so on.

Sara: Simply because any worldview is a personal construction, right?

Peter: Right, more than that, I will even say that every worldview would be finally just a customized one.

Liza: Everyone could make their own.

Peter: Yes, in some way. The only restricting condition that we will impose on ourselves for this theoretical construction is that it should follow a methodology.

John: Here we are, back to the methodology.

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[v] Speculative philosophy is generally understood as a systematic and comprehensive account of human existence and the universe that encompasses both the natural sciences of the organic and inorganic world as well as the human sciences of cognition, social life, and the domains of art, religion, and philosophy. (Source: www.dominicanu.ca)

Peter saw an opening to talk a little about the methodology before they returned to the class. Especially after Liza posed a related question.

Liza: But Peter! After all, what is a methodology?

John: And why do you insist so much on it?

Peter: A methodology is just a means to getting knowledge on something.

Liza: And a method itself is?

Peter: A logical way that had been thought, organized, experimented with, and shown to be successful in producing reliable knowledge on a subject.

Sara: Do we have one methodology or several?

Peter: Methodology differs according to the fields and subjects, but there are some principles that are common to all the scientific methods.

John: And what are these principles?

Peter: The first one is that every systematic effort to know a subject starts with an enquiry.

Liza: So, first we need an interrogation.

Peter: Yes, an initial question where we have a real unknown for which we look for an answer.

Sara: What else?

Peter: The second principle is admitting that we don't know the answer to this question beforehand, I mean before we go through a process of getting a methodical knowledge of it.

Sara: So, the question should be a real query and not a fake one to provide and advocate later an already preconceived answer.

Peter: Exactly. We don't pretend to have a question in order to deliver a pre-prepared response.

John: And then?

Peter: The third principle is that there are always some elementary pieces of a response to this question that we have to find and gather.

Liza: Which means that there is no question completely new and without any precedent. There are always the elements of answer somewhere.

Peter: Yes. And we should put time to collect and review these previously provided elements or earlier trials of answering to our initial question by other people.

Sara: It's because perhaps someone had already answered to our query and we won't need to redo the whole job. Right?

Peter: Yes, it cuts back on time and resources. We could then move forward to work on the implications of the question.

The discussion on what is a methodology was more welcomed than what Peter had expected; that's why he kept going.

Peter: The fourth principle is that if we did not find our response in the earlier efforts, we should suggest our hypothetical answer.

Sara: Hypothetical answer! Interesting expression.

Liza: Is it the same thing that hypothesis?

Peter: Yes, we suggest a hypothesis in which we present a likely answer that should be checked. This is a probable theory to be verified.

Sara: So, for a hypothesis we don't have yet the answer but we have an idea of it.

Peter: Indeed, but before I tell you what exactly the hypothesis is, let me talk a bit about the notion of causality.

Liza: Causality! Do you mean a cause and effect relationship?

Peter: Yes, this is the most fundamental basis of all scientific methodologies.

Sara: The causation?

Peter: Sure, this is simply the fact that everything, seen as an effect, has a cause.

Liza: Everything?

Peter: Yes.

John: Without any exception?

Peter: Well, when we touch on metaphysics later, we will see that it's not as easy as that to make the firm assertion, but for now, we consider the answer to your question as yes, no exception for having a cause for anything. Shall I put it like this: Everything has its cause.

John: Even God?

Peter: Here we are! I have just told you that the metaphysical subjects could reveal some delicate challenges. Regarding God, it

depends if you put this question to a believer or to a skeptic or, if you prefer, a positivist.

Liza: How is it different?

Peter: Well, the faithful man believes in what he had been told: that there is a god who created everything but himself had been created by nothing.

John: Yes, this is what the religions teach to their followers and they believe in that.

Peter: Sure, but a positivist scientific is the one that doesn't buy any idea or teaching before he checks it out.

Liza: Even the notion of God's existence?

Peter: Every single thing without exception.

John: So, for him, the scientific, even God would be an effect and there is a cause for.

Peter: Yes, because for the scientific, God is just a concept.

Liza: A concept? You mean just an idea?

Peter: Naturally! And as any other ideas, like any other concept, it has been created and formulated by some people through human history.

Sara: So, we know that an idea is an effect and there should be then a cause for it.

Peter: Yes, in a general way we could say that any phenomenon in the world has a cause.

Liza: Is this what we called causality?

Peter: Of course, the causativeness is the provable relationships between cause and effect.

The concept of causality having been familiarized, Peter returned to the definition of hypothesis as he left it before.

Peter: The hypothesis is then a possible causal relationship that we establish between at least two things: one as cause and the other one, as its effect.

Liza: And you said that we have to check our hypothesis out.

Peter: Yes, we should verify if the plausible relationships that we establish between these two phenomena, as cause and effect, would exist in the real world or if it is just happening in our mind.

John: And how do we check it out?

Peter: We should gather enough of the relevant and unbiased data and information, then analyze everything methodically to see if such a presupposed causal relationship is actually approved of or not.

Sara: And if not?

Peter: If the verified case doesn't confirm our hypothetical relationships, then we know that our hypothesis is wrong and we should look for another one.

Liza: It means another causal relationship?

Peter: Yes, perhaps another unknown or unnoticed cause is producing the studied effect.

Sara: So, the hypothesis is not necessarily to be confirmed?

Peter: Not at all, the hypothesis is just to be objectively checked.

After arriving at that point, Peter wanted to review once more the general principles of methodology.

Peter: We saw the technical principles that every objective methodology follows.

Liza: Let me review them. First, we start always with an inquiry.

Peter: This means that we have a real unknown at the beginning, in the form of a question.

Liza: Then we said we wouldn't consider a response to this question until we did the required research.

Peter: Yes, any previously constructed answer for the initial question nullifies the probing characteristic of the research and makes the inquiry irrelevant.

Liza: Third, we said there has always been some preceding efforts to answer our question.

Peter: Somehow, somewhere, yes, we have just to find them.

Liza: The fourth principle was that we formulate a hypothetical answer to the question.

Peter: Yes, if we don't find any precedent that satisfies as an answer to our initial question, we formulate a hypothesis that is an unchecked probable response to the question that we have to check out.

Liza: Fifth, we should gather the objective and the relevant data to check our hypothesis.

Peter: Indeed, the data gathering is a very important part of the methodology's course since the credibility of our theory will be at stake.

Liza: And finally, we said by analyzing the data attentively and methodically, we will know if our hypothesis would be correct in establishing such a relationship between a cause and an effect or not.

Peter: Yes, the analysis should be thorough and accurate so that we could know if our cause and effect are linked functionally as we elaborated it or not.

Peter found the summary of Liza very good and thanked her.

The break finished and they all returned to the space that Peter had transformed into a sort of classroom. There, Peter started the main part of their work.

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Peter: Now that we know what a methodological approach is, I would like to add that the methodology we will use for our query follows more or less the same principles, and you will then see the application of these codes in practice.

Liza: If I understand, we should start with a question.

Peter: Absolutely. We need a good initial question related to our subject.

Peter brought the discussion to the point where he could use some of the topics they had already treated.

Peter: Who remembers what we were about to discuss before the break?

John: Our initial question was why people have an explicit or implicit propensity toward suicide, correct?

Peter: Yes.

Liza: So, we applied the first principle of the research methodology. We have a real unknown there.

Peter: Indeed, we have. Now tell me, did we try to see what could be the possible answers to this question?

John: We did a little. For instance we reviewed briefly the work of the French sociologist… what was his name Liza?

Liza: Emile Durkheim.

John: Yes, Durkheim gave us some elements of answer to our question.

Peter: True, we could surely study more sources on that subject.

Sara: And we made our own hypothesis then.

Peter: Which was?

Sara: That in the absence of a worldview, people would espouse a trend toward a suicidal attitude.

Peter: Yes. Can someone tell me what the cause and effect is in our hypothesis and what kind of relationships we established there?

Liza: Let me try that. In our hypothesis, the suicidal inclination is the effect, and the absence of a worldview would be the cause.

Peter: Well done, Liza. We established that the absence of a worldview, as cause, would produce a self-elimination trend as an effect within some part of the population. A direct causal correlation.

John: So, now, as you said, we should check our hypothesis.

Peter: Yes, we should check to see if the absence of a worldview is causing the explicit or the implicit suicidal penchant.

John: But how we are going to gather the data to see if our hypothesis is good or not?

There, they reached an important point of their discussion and Peter took it to where it needed to go.

Peter: Well, at this stage we will choose a verification that is kind of experimental.

Liza: So what we do precisely to check our hypothesis?

Peter: We will try to design a worldview for ourselves and we will see whether this one would reduce our own suicidal tendency or not.

Sara: But are we supposed to have any behavior like this?

John: We have it, dear Sara! I have to confess that all these gatherings and discussions came about because recently I faced such a sudden and surprising inclination in myself and then I met Peter by accident and asked him for his help.

Liza: Jesus! It's good to know, darling.

Peter: We have the specific case of John that could help us a lot in checking our hypothesis. But I'm sure if we were to review our own behaviors we would probably find some grains of a suicidal tendency in our daily behavior.

Sara: Like what, Peter?

Peter: Like the fact that some of us smoke while knowing for sure that it's harmful to our health and can reduce our lifespan.

Sara: Yes, I can't deny it. I smoke and I know that it's harmful, that is a fact.

Liza: Or, I do know that alcohol is not that blameless for health but I don't drink a good deal anyway.

Peter was so happy by the honest and collaborative ambiance of the group.

Peter: This is really good. Because if you also add a lack of good diet despite knowing its long-term consequences, in our hypothesis we all four are somehow dealing with the phenomenon that we consider as the effect of a cause.

John: My case represents an explicit penchant toward suicide and the Liza's, an implicit one. Right?

Liza: This is a good study panel then.

Peter: Yes, for what we want to review it is perfect.

Sara: So, the real cases that we get in our group constitute an experimental verification of our theory. Right?

Peter: Yes. First, we will try to build up a worldview up. Once we have it, we would pause and take the opportunity to see if it would efficiently reduce our dangerous conduct or not. If that's the case, I mean, if we have a real dispassionate reduction of this tendency, then our hypothesis would be approved of. And if it's not the case, we could not confirm such a causal relationship between having a worldview and having a less suicidal trend.

Liza: But if we create a worldview for us, how we could measure it to see that it would reduce our suicidal tendency?

Sara: Ah, this is not hard. For instance, John would not think anymore about suicide, I could or would stop or at least noticeably reduce drinking, you would exhibit more control over your smoking—if you don't quit outright—and Peter would be more attentive regarding his diet.

John: Fair enough.

Peter: Yes, these are kind of the objective indications to assess the relevancy of our hypothesis. Otherwise, lacking a worldview would push us toward these explicit or implicit damaging activities.

Liza: Especially if these indications last for a long time or became permanent for us.

Sara suggested that they go to the table to have dinner and to continue there. At the table, Peter retook the discussion and put a simple question.

Peter: We are going to work on a worldview. We already talked about what it is and its difference with ideology and philosophy.

Liza: Yes, but, frankly, we don't know yet what exactly a worldview is.

Peter: You are right. And we could start by trying to be more precise while not forgetting that we are going to come up with our own definition.

Sara: I think a good starting point will be to ask what a worldview does.

Peter: It's not bad as a first approach because we could know a phenomena either by its substance or its function.

Liza: As for the worldview's function, we could expect something more or less similar that we expect from an ideology or philosophy, I think.

Peter: And what we expect from ideology or philosophy?

Liza: Well, we want them to guide us in our life, yes?

Sara: And that they provide us some meaning.

John: And also they support us when we are facing difficult moments in our life.

Peter: True. These are the functions of ideology or philosophy and they would be roughly the same for the worldview. So we want a worldview that clarifies things for us and gives us a kind of guidance so that we know how to use our life purposely and meaningfully.

Liza: The worldview should show us how we must set boundaries, red lines, and ethical borders for what we think, what we say, and what we do.

John: It should help us to find our place in the world.

Sara: And how to deal with others.

Peter found that the vision of the group on the nature of worldviews was quite exhaustive and deep. He then wanted to moderate it in more realistic terms.

Peter: A worldview is what determines and draws our relationship with several things: with ourselves, with others,

including society and humanity, with nature, I mean animals and environment, and finally, with the whole world and the universe.

John: So, the worldview is a multifunctional tool in our life.

Peter: Multifunctional and more precisely multidimensional. It should fulfill all our needs for knowing how to view others, nature, the universe, and ourselves.

Liza: This is a huge task that we are putting on the back of the worldview. Isn't it?

Peter: Indeed. That's why we previously said that its elaboration isn't simple. And on the other hand, we said that this is a homemade construction. We could charge or discharge it more or less as we would like.

Sara: Is it possible to be precise on what exactly a worldview should deal with?

Peter: There is no accurate answer to this question, Liza.

John: For we said that what we were going to do is not really scientific.

Peter: Yes, indeed. But don't forget that we said our approach would be methodical. And for it to be, we need to draw a hierarchy of phenomena to see what layers and functions a worldview should deal with.

Liza: Go ahead, Peter.

Peter: For that I need the whiteboard. If we're finished with dinner we could return back to our marvelous classroom to initiate this part.

They returned to the room that had been set as class where Peter began to use the board to sketch a hierarchy of the phenomena.

Peter: Let's imagine that the most general concept, which would include every single thing, is Existence.

Liza: And do we know exactly what this means?

Peter: Existence would refer to anything that exists.

John: And then?

Peter: Now, let's say that the part of existence that is materially available to us through our senses and our logical understanding is the Universe.

Sara: The universe is what we could see.

Peter: Well, there are known and unknown parts of the universe, so the universe is everything that is made of matter.

Liza: But anyway the universe could be progressively known.

Peter: Yes, I mean, we are talking about the parts of the existence that are either already known to us or, if they were still unknown, they would not be unknowable. We would finally take knowledge of this gradually and would suppose that there's no limit.

John: So, do we presuppose that the universe is an unlimited thing?

Peter: For now, only potentially. It's too early to talk about the absence of any limitedness. Not only is it too early, it also wouldn't be methodical to confirm any such a thing as infinity in the universe at this stage without having first checked it. But we will return to

this point later. For now we want just to create a hierarchy of categories.

Liza: What will be then in the third place after Existence and Universe?

Peter: We have World. This is, we can say, a part of the universe we can deal directly with.

Sara: Is it the earth?

Peter: No. It's also every part of the universe that we could get access and become a part of our world—according to our own deliberate definition of course. Don't forget that.

Liza: So, we call the world the accessible part of the universe, the part that could be materially available to us.

Peter: Yes, the reachable portion of the universe for us: human beings.

John: And after that?

Peter: We have Nature. Which is the immediate material part of the world surrounding us on Earth.

Liza: And we are a part of this.

Peter: Yes, with all other species and vegetation and the interactions between them.

John: What we have else?

Peter: For the sake of our purpose, we should talk also about Society.

Liza: The assembly of the individuals interacting with each other.

Peter: Well said. And finally, we have Humans.

Liza: Men and women.

Peter: Yes, even though we distinguish it here, we know that with other animals and plants we're all part of the nature.

Peter: Here's a hand-made hierarchy I've made that we can use to categorize these things.

Sara: Does this scheme include everything that we can imagine?

Peter: Yes, everything that we can imagine at the moment, but we don't know what will be there in five or twenty years.

John: What do you mean? Is there something that we are missing in this scheme?

Peter: We don't know. And that's the point. We don't know if humans will discover some new dimensions or original substances of existence beyond the material universe that we had never thought about, or even something further than that.

Liza: Would it be possible?

Peter: Of course. Even here and now some suggest that we shouldn't talk about the universe but a multiverse instead.

John: And what is it?

Peter: Precisely, we don't know. It's been argued that what we consider as the universe is just one fragment of existence. There would be other parallel universes that we are unaware of.

Sara: And why or how should we be unaware of them?

Peter: Either because we don't have the tools to perceive them, or because of the limitations of our conceptual understanding.

Liza: You mean we don't have the intellectual capacity to catch these parallel universes?

Peter: Something like that. Anyway, we don't have at present any serious method to test the idea that there would be other universes somewhere that we've been missing.

John: Or not!

Peter: Yes, we don't know. But the idea is already here, and there are people endeavoring to dig up more about it.

They all became taken in by their shared introspection and didn't realize how fast time was going. Peter wanted to go further in that discussion. But everybody was exhausted.

Peter: I think it would be better to dive in this scheme at our next meeting.

Liza: Ah. I love these sessions so much.

John: I really enjoy them too.

Sara: Me as well. We don't see how time flies during.

Peter: Yes, same here. We could set our meeting in a more regular way.

Liza: How so?

Peter: What about two regular sessions every week? One on Tuesday at John's and one on Saturday here.

John: It sounds great.

Liza: I would love it.

Sara: I'm in.

They were all happy that two regular meetings were fixed each week instead of only one.

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Chapter 5

Came Tuesday they found each other at John's. Liza was hosting them. Peter brought his whiteboard with his last meeting's scheme still on it.

Peter: We retake our scheme to recap that we categorized everything from Existence to Man.

Liza: Yes, I remember because I noted them.

Peter: Now, I would like to add that there are lots of other categorizations in philosophy or science.

John: With the same categories?

Peter: More or less. We would find some with more divisions or subdivisions, but we could imagine that substantially these are the topics you would want when you are building up an ideology.

Sara: If they use more or less the same concepts, why are the ideologies so different? Why do they sometimes conflict and oppose each other?

Peter: Good question! Things are more complicated than just sorting the categories and defining them.

Liza: Complicated how?

Peter: In the way they link and put these categories together to elaborate on an explicative system.

John: So the tricky part is the interrelationship between the categories.

Peter: Yes, and that's why we should be attentive from this very first step, where we just named these categories, to know what kind of relations we want to establish between them.

Liza: Does it depend on us?

Peter: Well, partially. We should be mostly attentive, objective, and honest observers.

Sara: You mean we should take into consideration what is outside of our mind, right?

Peter: Yes, honey. Exactly. We should not miss what the reality is showing to us.

John: And what precisely is reality showing us?

Peter found the moment suitable to develop another methodological precision.

Peter: Well, in order to answer to your question I have to return to the discussion that we had about cause-and-effect relations. Not only that, I would like to add two more technical points to that concept.

Sara: We're all ears.

Peter: The first one is called the Causal Chain.

Liza: Cause-effect sequence. Some call it chain of events too, I think.

Peter: Yes, if we can see that any effect would be the cause for another effect and also any cause is soundly the effect of a previous cause.

Sara: So the causal chain is where and when a phenomenon is as well cause as effect.

Peter: Or we could say the causal chain is when every single thing is as well cause as effect.

Liza: Everything?

Peter: Yes, provided that we could find and follow its other related elements of the chain.

John: So, in a causal chain it is possible to find the role of cause and at the same time, the character of effect for any element.

Peter: This is exactly what the causal chain means.

Liza: And how far we could go in a causal chain? I mean where we should stop for having found the last cause or the latest effect?

Peter: Well, hypothetically there would be no material frontier for any causal chain that you take in.

Liza: Really? You mean, there would be nowhere a causal chain would end.

Peter: I said hypothetically. This means theoretically any causal chain could be linked to other ones and it continues.

Sara: So, every causal chain is somehow unlimited.

Peter: Yes, again, theoretically every causal chain is endlessly moving, provided that we could find objectively the components of that chain of event in a consistent causal logic. Then we can say that there is an endless continuation in that cause-effect chain.

John: But we cannot go that far when we study a cause-effect relationship in a given real case. Could we?

Peter: No, you are absolutely right. Maybe one day we could invent a kind-of-tracking intelligent technology or a theoretical model that could go along with a causal chain and detect all the possible relationships that it's absorbing. But even in this case, we should admit that this technology would have to work endlessly and would never stop in its ongoing pursuit of following new links within the chain. Nonetheless, at present, for practical reasons, we cannot do it, even though we should know that this would be supposedly possible in an imagined future.

Liza: Or at least it's conceivable.

Peter: Correct, and we need the mind's eye as a part of our conceptual and methodological tools for the purpose of our job.

John: And our job is to build up a worldview and observe it from a psychological perspective afterwards. Right?

Peter: Yes. Our speculative philosophy needs this conceptual imagination all along. So we keep in our mind that every causal chain would be notionally endless.

Liza: Amazing!

Peter saw the opportunity to use this concept of the endless causal chain to open a window on their first philosophical concept of their discussion.

Peter: When we could imagine the endlessness of any causal chain, this would allow us to see the fallouts from it.

John: Which are?

Peter: The interrelatedness between the levels of categories that we have in our scheme.

Liza: You are pointing to the levels that we named: Existence, Universe, World, Nature, Society, and Man.

Peter: Yes, if a causal chain is supposedly endless, it goes far and surpasses its own level to reach another level.

Sara: Could you give us an example?

Liza: I could do it, Sara.

Peter: Go ahead, Liza!

Liza: For instance, we are studying an issues related to a specific individual.

Sara: Like a person having an issue with his anger.

Liza: Perfect example. If we see this particular case of a person's anger, as an effect, and look for the cause, or causes, we could see that he is angry, let's say, because of bad conditions at his workplace where he is under a high pressure.

John: And then?

Liza: Wait. Now, by seeing this cause itself, as an effect, we could ask why the workplace has such bad and stressful conditions.

Peter: And looking for its cause.

Liza: Yes, we can ask why these negative conditions had been formed.

Sara: Imagine that it comes from mismanagement by others.

Liza: Now, we see mismanagement as an effect and look for its cause.

John: I see and it keeps going.

Liza: Yes, it goes on until we arrive to the level of society.

Peter: You see, we already surpassed the level of man and his personal frame and are now in the level of society.

Liza: And I think we could go even beyond.

Peter: Yes, that's the idea.

Sara: Ah! So interesting. You mean if we keep digging, we would get to a level of society where we'd find something related to, for instance, the global economy.

Liza: Imagine we find that global warming is putting pressure on companies to make production in the seasons where it's less hot. So we're already at the level of nature after society. And then, we could look for the causes of global warming and through that, follow the causal chain in the level of the world and so on.

Peter is excited that his audience has absorbed the logic of his argument.

Peter: Isn't it marvelous to see how a causal chain can cross a level of our scheme to enter another one?

John: Wait a minute, Peter. You're saying that when we continue this chain of cause and effect in Liza's example, at a given moment we should go beyond the level of society and enter the level of nature?

Peter: This is what we saw in that example, didn't we?

Liza: Going from the level of man to society.

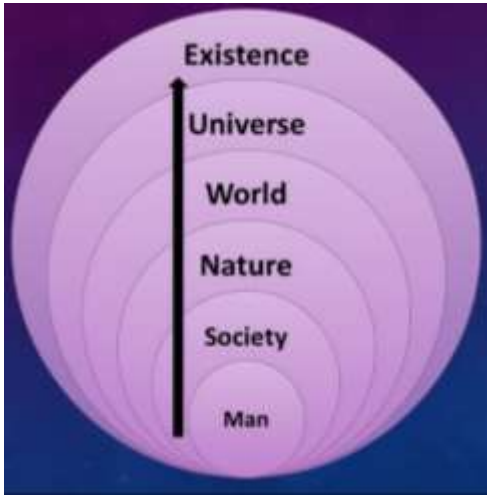
Sara: And after that, touching the level of nature.

Liza: Then the levels of world and maybe of the universe.

Peter: You got it.

Liza: This is amazing.

Peter: Well, we don't always know how such a path would run through concretely, but we would like, for now, to keep our mind open for such a scenario. We consider that every causal chain, in its endless voyage, could go beyond its own level of category.



This last point was a breathtaking point. They had impression that their brain is becoming more elastic thanks to the discussion they had just had. Peter went to the board and drew a long arrow going from man to existence.

Peter: These levels would be then interconnected in the frame of a given chain of events.

Liza: If we follow objectively any cause-and-effect case, we would find a chain of events that extends to all levels of this scheme, right?

Peter: Tentatively, yes. This is the idea that we keep from this part of the discussion and we will use it all along our work.

Sara: The core idea is the relatedness of all the levels from man to existence.

Peter: Materialized in the intertwined endless causal chains that can go in all directions, horizontally and vertically.

John: Great! But you said that you have two methodological points to add to our previous discussion on causality. The first one was the cause and effect roles for any phenomenon in a causal chain. What is the second one?

Peter: You are right. The chain character of causativeness was the first one and the second is called interchangeability of cause and effect.

Liza: Let me put it on the board.

Peter: I can do it.

Peter goes to the board and adds "interchangeability of cause and effect" beside "causal chain," which is already written there.

Sara: And what is this, Peter? "The interchangeability of the cause and the effect"?

Peter: It's simple. The cause and effect could change their places in a give-and-take relationship.

Liza: You mean what is the cause of something could also become an effect of this?

Peter: Yes. And what was the effect can convert into the cause of its own previous cause. Kind of a quid pro quo. This is anyhow what happens in some causative cases.

John: How is it possible?

Sara: Good question. Could you give an example, or should I ask Liza to give us one?

They all laugh.

Peter: Imagine you're ill because of a virus in your body. The virus is the cause. Your illness will reduce your activity, and lack of activity is the effect. Now, because of your physical inaction and the metabolism so created, having turned into the cause, the virus—that was the cause of the illness—becomes stronger and more aggressive, as an effect of the physical weakness.

Liza: Then, because of the emboldened virus we become even weaker and it can keep going.

Peter: Yes, consider another example. Imagine you're a violent person partly because of serious deficiencies in your education. Your violence brings you more difficulties that keeps you even further away from a good education.

Liza: And you become more aggressive and so on.

Peter: As you can see, there would be a possibility for some cases where the places of cause and effect could change.

Liza: Could we call it reciprocal causativeness?

Peter: Why not? We're talking about the interchangeability of cause and effect. Some call it dialectical relationships.

John: And how does this concept serve us?

Peter: Just remember the first point.

Sara: The causal chain?

Peter: Yes, most of the time when we say the causal chain, we imagine it as linear and unidirectional trail of events.

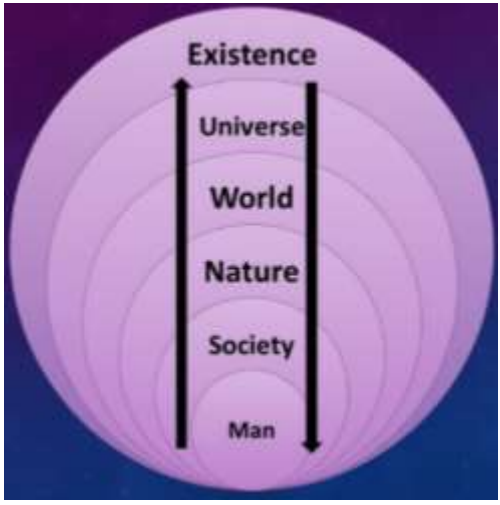
Liza: As you draw it within the scheme.

Peter: Yes. But, thanks to this second point, we see that this is not always a one-way direction.

Sara: It could be back and forth.

Peter: Yes, to and fro, it could and it would. That's why we should consider most causal chains as bidirectional chains of events where we get the conversion of effects into causes.

Liza: So, we have to add it to our scheme.



Peter goes to the board and adds a new arrow, this time from Existence to Man.

Peter: We should know also that we could have a countless number of multidirectional combinations through a linear or reciprocal cause-and-effect relationships in a given chain with, for instance, several instances of horizontal causativeness driven from the main causal chain. And these horizontal developments of causal chains are also reciprocal.

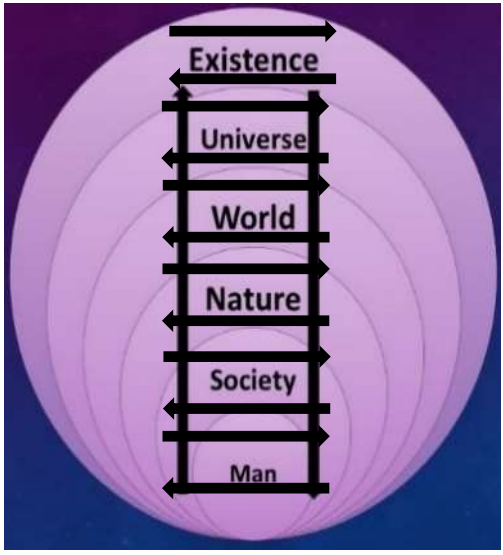
After Peter drew it, silence dominated the room. Everybody was looking at the whiteboard and pondering on what this scheme was

suggesting. They were all amazed, trying to imagine what could be the implication of such a hub of relatedness in their undertaking of forming a worldview.

Sara broke the silence.

Sara: Wow! How could I miss that point all my life long?

Liza: It's so interesting to see the world from that perspective.



John: A huge set of multidirectional interrelatedness is going on in a causal framework.

Peter: This is it. Now, imagine that you can find this multidirectional relatedness inside any level of our scheme.

Liza: You mean horizontally?

Peter: Yes, horizontally as well as vertically.

Sara: Are they all intertwined?

Peter: Yes. But for now we don't want to go through all the repercussions of such a view on the world.

John: Why not?

Peter: Because we have still some other tasks in our agenda.

Liza: Like what? What could be more exciting than digging in this possible whole relatedness of all the levels and discover much more?

Peter: I understand your excitement. And it's really thrilling, isn't it? We will certainly do it later. I promise. But for now we should keep going with our methodology. We need some more tools for elaborating later our worldview.

Liza: Ok, let's have our dinner and we will come back to work on that then.

They went all to the table while the enthusiasm was visible on everyone's face.

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It was a quick meal, and they soon returned to the discussion.

Peter: So, at present we have the basic materials for constructing the first part of our theoretical building.

Liza: This so-called building means a worldview we want to set up.

Peter: Yes, we already have some ingredients that we should list. We have the categories of beings:

- The concept of Existence
- The concept of Universe (made of matter)
- The concept of World
- The concept of Nature
- The concept of Society

- The concept of Man

And also we have some technical features used as the principles of a methodic work:

- The importance of the initial question,
- Avoiding any precontrived answers,
- Reviewing what has been provided as answers to our initial question; if not satisfying, suggest a hypothesis,
- Gathering the data,
- Analyzing the data and verifying our hypothetical answers/,

We talked also about the methodological principles related to causation:

- Everything is an effect.
- Every effect has a cause.
- Everything is, at a time, as well a cause as an effect.
- The cause could result in an exchange of places.
- The causal chain is present everywhere and would keep going endlessly.
- The causal chain could get any direction with multiple accompanying paths.

Liza: These are the foodstuffs.

Peter: They are.

John: Now, what are we going to do with all these matters and tools?

Peter: As any edifice construction, we need a plan to know where to start using these materials and how to build up a worldview.

Sara: What kind of plan do we need?

Peter: The plan of construction that leads to a worldview.

John: And how must it be designed?

Peter: Let's start with imitating the idea of the erection of a building.

Liza: You mean a real and material building, like a house or a skyscraper.

Peter: It's a metaphor but it could help. What do we need as a first part for each edifice when we begin building it?

John: A foundation.

Peter: So true, which means we need a solid foundation for our worldview's building as well.

Liza: And what would be the foundation of a worldview?

Peter: A few solid concepts that will allow us to build our assertions and basic arguments upon.

Sara: And what will be these concepts?

Peter: Well, we would need first something that is common in all the levels of our scheme.

Liza: You mean something shared between existence to man through universe, world, nature, society, and man?

Peter: Yes, we should find a universally shared quality between them.

They all were skeptical.

John: Is there anything that is common between them?

Peter: We need a foundation on which we could elaborate the interconnections we identify as moving causal chains between existence, universe, world, nature, society and man. And in order for this foundation to support them, it should be firmly and deeply construed.

John: So, we need something that is really and actually common between these categories.

Peter: Ah yes.

Liza: I'm curious to know what it could be.

They had reached a point where the things started to be hard to deliberate. Liza, Sara, and John looked at each other and were all thinking, but none of them had an idea of what the common denominator might be.

Liza turned to Peter.

Liza: And do you know what it is?

Peter: Ah! Not at all. But I can suggest a clue.

John: Go ahead. Give us a tip, please.

Peter: Well, we saw that the causal interrelations between the phenomena could go quite far.

Liza: Yes, we had guessed so and even said that the chain of events could surpass a given level to go to another.

Peter: Right, and we supposed that theoretically there is no boundary to follow a causal chain vertically nor horizontally.

Sara: By vertically you mean going from one level of category to another…

Liza: …Like going from Man to Society and from Society to Nature and so forth.

Peter: Right.

Sara: And by horizontally you mean that a causal chain could be followed and developed in one level of these categories.

Liza: For instance, in the level of Nature.

Peter: Correct. But we know that there would be lots of derivations in any causal chains at the horizontal path and we can imagine that some of them could go beyond that very level where they are acting initially.

Sara: So, for following a causal chain vertically we could imagine a kind of limitlessness through the levels. But now you are telling us that even for a horizontal causal chain it could also be boundless?

Peter: This is exactly what I mean.

A few seconds of silence was then broken by John.

John: But, how it could be possible? It's hard to believe that even at the level of one single category, like Nature or Society, an ordinary causal chain could be endless.

Peter: Let's take the example of a social issue: drug addiction, as a phenomenon at the level of society.

Liza: We take it as an effect.

Peter: We can. What is its cause or, should I say, what are its causes?

Sara: Poverty could be one of them.

Peter: Right, studies show that many people go toward drug abuse because they are economically poor and socially disadvantaged.

Liza: And then we can ask what is causing the poverty.

Peter: Yes, the economic, social, cultural and political causes of poverty. Each has, as far as they are concerned, their own causes and then their own chains of events.

Liza: For instance, the inequality of wealth produces poverty.

Peter: Yes, and what brings about the wealth inequality?

John: Unfair distribution.

Peter: And what about the cause of this issue of unfair wealth distribution?

Liza: The class society.

Peter: Right, more precisely the class stratification.

Sara: And now, we should find the causes that generated the class structure. I mean all the horizontal levels of causal explanations in the political, economic, social, and cultural fields.

Peter: Yes, and after that, you should go through social mankind's history to find the causes of these roots and so on.

Liza: But, even by doing so, wouldn't the chain stop at a given moment?

Peter: It doesn't, it just goes to another level.

Liza: It ends inside a given level, doesn't it?

Peter: It stops only if we take one single line of a chain. But if you consider that lots of phenomena have multiple causes, you have to continue that chain by its multiple causal derivations. We are talking about the interrelated causal chains.

John: And in this way, this search of the causes never stops even at the level of one single category.

Peter: Never. Instead of finding an end point, you see that it shapes a hub of causativeness, kind of a causality grid. One of the reasons for which we think that it will stop is because practically, when we follow a causal chain for a real case, we experience the limitation of our resources: time, money, information, and workforce.

Liza: We stop because of limited resources, while theoretically the causal chain goes on.

Peter: Yes, without any limit or end.

Now that it became clear that the causal chain could be hypothetically endless, it was time to use the idea as a clue. John stated as much.

John: So, Peter! Was your clue this one: that there's a limitedness of causal chains in all levels?

Peter: Yes, and what does it suggests to us?

For a few moments nobody had anything to say. Everybody was thinking about the clue.

Liza: I think what you are suggesting is that if we have a state or level of limitlessness in the relationships between things, these things themselves should be unconstrained. Isn't that correct?

Peter: Bravo. You got it, Liza.

John kissed his intelligent girlfriend.

Peter: Your deduction is essentially correct. What we need now as a common denominator, at all the levels of categories, is an understanding of limitlessness.

John: This is it? Everything is limitless?

Peter: Let's formulate it in a better way.

Sara: How?

Peter: Let's call it *infinity*.

Silence dominated the room.

Liza: You said infinity?

Peter: Yes, let's say that everywhere and for all levels, and for any phenomenon, there would be an ongoing causal process called infinity.

The discussion arrived at a point that they had to digest their first fundamental philosophical conception when undertaking the building of their worldview.

Liza: Infinity is then something that we can find in any level and for any category?

Peter: Yes.

Sara: Let's be clear. It means there is infinity in Man, in Society, in Nature, in World, in Universe, and in Existence. Am I right?

Peter: Correct.

John: And do we have a definition of infinity?

Peter: An obvious one: a definition that is in the word itself.

Liza: The infinity is something infinite. Something that does not have an end.

Peter: Infinity is the absent of finite. Infinity is when we could not conceive an end or limitation for something.

Sara: So, infinity is endlessness.

John: And is this what is common between everything?

Peter: Most probably! There would be infinity in everything. Infinity of matter and infinity of relationships of different levels of matter.

John: In this way, we have already gotten the foundation of our worldview building.

Peter: Yes, we have it. We will later develop the notion of infinity because it's very complex and vast. By infinity, I have in mind phenomena that can't be counted or measured.

Now that they found a pivotal concept for their basis, they can move forward.

Liza: OK Peter, how we are going to use this common denominator to build up a worldview?

Peter: Well, it won't be easy. But we could try and then progressively we will be more skillful as we go along.

Sara: From where or what are we setting off?

Peter: Based on our scheme, it could be either from top to down or from the bottom to the top.

Liza: You mean we can start looking for the presence of infinity in our scheme starting either from Man or from the Existence.

Peter: Yes.

Sara: What about starting from the most general to the most particular? I ask because it seems to me we will have a greater margin to find infinity in macro levels than in smaller scales.

Liza: It sounds good.

John: Yes, it seems logical.

Peter: Yes, but we should not forget that we have to examine this concept very meticulously at each level.

Liza: This means that we need a lot of information at each level.

Peter: Sure, the detailed and tangible information by which we could check and double-check our hypothesis, the presence of infinite chains of events for each category.

Sara: We want to see if there would be infinity in each level of our categories, Existence, Universe, World, Nature, Society, and Man. Correct?

Peter: Yes, that's why we might start by the level that is closest to us and subsequently more known to our experience.

John: Do you mean in the level of man?

Peter: Certainly. First, we could look for the concept of infinity in human beings. Once we have that we can turn to society. After

that, we can consider infinity in nature, then in the world, then in the universe, and at the end, in existence.

Sara: It sounds decent.

Liza: I think so too.

John: Let's do it.

Peter: We could start by applying the notion of infinity to human beings first.

Liza: Based on our methodology, we should then start with a question.

Peter: Here you are. The initial question is simple: Is man an infinite being?

The question was heavy and complex. They all needed a long break to refill their brain with resources so that they could tackle this question the next time they got together.

They set their next meeting time and then left for the day.

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Chapter 6

When they met each other again they all were excited to see how they would cope with their first serious methodological challenge. Could they answer their main initial question for this part: Is man infinite?

Peter started the discussion.

Peter: When we say man we mean human beings. And we would like to know if we could consider humans as an infinite being.

Liza: Are we talking about the physical dimension of man or the mental one?

Peter: Both, Liza. Don't forget the reciprocity of different levels and dimensions.

Sara: Yes, they are tightly interrelated.

Peter: Right, but we have to demonstrate that.

John: This means we shouldn't talk too much in a general way about relatedness.

Peter: Well, we keep that idea of relatedness as a whole concept, but later on we should show that it's been verified.

Liza: If we can display this supposed relatedness in an objective manner, it means that it exists outside our mind.

Peter: Exactly. We need to prove objectively what we say, otherwise that would be the creation of fancy.

Sara: Purely and simply.

John: And how we could demonstrate infinity of a human being?

Liza: We said that a human being is a combination of body and mind.

Sara: Let's start with the body.

John: Is a human being's body infinite?

Peter: More accurately, could we find an infinite ongoing process in the human being's body?

That question put them in front of a new situation they couldn't speculate on or envisage anymore. They now needed some concrete factual data in order to continue.

Sara: I'm a biologist, so I could try to find information about human physiology and then we could discuss about the presence or not of any infinite aspect in it.

Peter: Great, Liza! You are a psychologist, so you might want to work on the mental aspect of the question.

Liza: For sure. I never studied this topic of infinity, but I will give it some thought.

Peter: Great. And John, I think your computer programing skills would help us to get an explanatory model for a higher number of events.

John: Once we have data and information on how the different components of a system interact, I will try to see if we could have a model of interpretation of these chains of events and their components.

Peter: Yes, a model that could display the quantitative aspect of interactions, because what we need to know is if the amount of interactions in a phenomenon goes toward an infinite quantity or not.

John: So. Our focus will be on the mathematical dimension of interactions, right?

Peter: Yes, and later we could verify if the same model could be found in other levels and see whether there's an infinite amount of interactions in society, within nature, then in the world, inside the universe and finally, in existence. We will see what an example of infinity would be in each of these categories—that is, if there are any.

John: That would be great.

Sara: I think we made a good choice by starting from the most tangible level—human beings—since we have lots of information about them and can acquire more.

Peter: Yes, we will have scores of data. And we know that these data should be checked in order to verify our supposition. This data analysis should allow us to see if there would be an infinite number of events within the phenomenon we study or not.

Liza: We also will need analytical tools.

Peter: We will find them progressively. Let's see first what kind of information we have and later we'll try to set an analytical framework for each set.

At that moment, it was a good time to develop and emphasize the quantitative approach Peter wanted to implement in their query of infinity.

Peter: I have to be precise when I say that we can't analyze all the specific data without appropriate tools, knowledge, or concepts. Such a task needs a huge scientific team composed of hundreds of specialists for each part of this whole. We don't have such resources, right?

Sara: Visibly not.

Peter: That would be a task for a new field of study that we can call, for instance, *Infinitylogy*.

Liza: What a wonderful name: Infinitylogy!

Sara: I love it. It looks great.

John: But what it is exactly? Is it a new scientific discipline?

Peter: It would be something like that. For now it's just an idea about a field of study where philosophy as the mother of all sciences, the different branches of sciences, and also the technology gather and collaborate to know better the *infinity*.

Liza: Does Infinitylogy, as a field of study, exist?

Peter: Not really, but everyone interested in this topic could try to bring it about. For now let's return to our main discussion.

Sara: What could be a good frame of analysis for the data we will gather in order to check the presence of infinity in Man, Society, Nature, the World, the Universe, and Existence?

Peter: The ambition of our data analysis will limit itself to one general aspect of our observation: the quantitative aspect.

Liza: What do you mean by quantitative aspect? Do you mean quantification? The numbers?

Peter: Indeed. I mean we will be focused on how many interactions will be going on when a chain of events is followed in action. How many operations? How many components? How many exchanges? How many details? How much complexity?

Liza: So, just the quantity?

Peter: Yes, specifically, how many interactions result from the relatedness between the components of a phenomenon? Between how many components? What is the relational complexity of a causal chain?

John: For that part I could help. Creating quantitative models of analysis is the core of my job.

Peter: I'm happy that we have a multitude of specialties in our team.

Liza: This is a great coincidence.

Peter: Yes. Now let's dig into the resources to get information on how we could check the presence of infinity in the mind and the body of human beings.

Sara: This could be good starting point.

Peter: For sure. Because after that we can go through the individual actions created by this combination of physical and mental capabilities of men and women. This would lead us to the

level of society where we will follow the impact of these actions and see if this line of search would keep going to other levels, including nature, the world, and the universe.

John: If we discover such an endless line of interaction between phenomena in different levels, we will be somehow in an infinite existence.

Peter: Yes, but only if we go meticulously through all these levels and are able to show objectively that infinite structures and mechanisms are running in each of them.

Sara: Good. So we could start by what I will bring in the next session on the physical aspect of human beings.

Liza: Great! And I will bring a lot of data to the session on the mental aspect.

Peter: Great. We are set. Thank you. Let's move forward.

They left and the research started.

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Chapter 7

The meeting was going to start at Peter's. Sara was excited to be the main presenter. She had to accomplish a huge amount of work to explain the complexity of the human body. Will they find that man's organic complexity could include the notion of infinity?

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Peter: So, today we start the verification of our supposition on the presence of infinity in everything by checking first the human body. The facts that Sara is going to present should be analyzed and proved objectively to confirm if there is kind of infinite reality in our body or not.

John: And you told us that this verification is based on a quantitative analysis of data we review.

Peter: Yes, a quantitative approach in this case and other things we will study means precisely on how many details, components, structures, elements, actions, reactions, interactions, and other forms of involvedness are running there. If we observe the presence of an amount that goes beyond any possible calculations, we would conclude that there would be an infinite aspect in that reality.

Liza: So, we should not then have decided about it before we observe all of this.

Peter: Absolutely not. We should stay objective all along our study, if we want an unbiased to work out.

Then, Sara went to the whiteboard and started her demonstration.

Sara: Well, it's really hard to talk about human biology in general because it's so vast and complex. Nevertheless, I will try to take a quantitative approach first, and anytime there's a need to dig in, we can go through some details.

John had his iPad out to take notes and Liza her notebook.

Sara: We know that the human body is made of cells. If the quantitative aspect is interesting to us, the first thing is the number of the cells that we have in our body.

John: Before telling us the quantity, could you please give us a basic definition of cell?

Sara: Of course. A cell is the smallest structural and functional unit that you can find in an organism.

Peter: Is the cell really the smallest element that we can find in an organism?

Sara: Well, the cells are themselves composed of other slighter components that I would like to develop later.

Peter: Very good.

Sara went to her laptop and projected an image[3] on the board.

Sara: As you can see the human body is:

- A set of systems,
- Each system is composed of organs,
- Each organ has components, like tissues,

- Each component is composed of cells,
- Each cell is made of molecules and
- Each molecule is composed of atoms. (Figure 2)

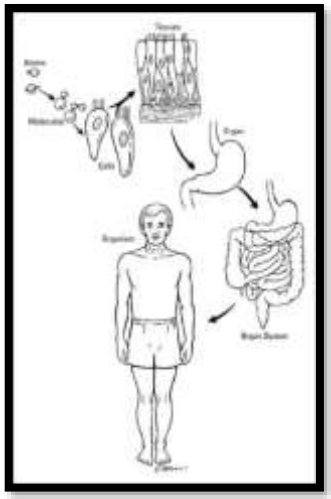

Figure 2

John: At the end of the hierarchy we have atoms that constitute the common element of any material thing.

Sara: Yes, our body is made of matter and all matter has atoms as its basic structure.

Liza: Do we have something smaller than atoms?

John: Yes! We have. Atoms themselves are made up of much smaller particles, called—wait for it—subatomic particles.

Liza: What are these subatomic particles?

John: Well, a subatomic particle refers to protons, neutrons, quarks, leptons and bosons, but the elementary particles are quarks, leptons, and bosons.[4]

Liza: I hope that's all.

John: Well, you know "elementary particles are particles whose substructure is unknown; we don't know yet if there is anything smaller than them."[5] But we will know later is the question.

Sara: Unknown yes, but not unknowable. So mysterious for the moment, for sure, but what about tomorrow? New technological and

theoretical implements would bring us to the smaller levels more and more.

Peter: For sure and imagine what? This will continue as long as man survives and continues to make headway in pursuit of knowledge and technology. We saw that in our body there are cells, that cells are made of molecules, and that a molecule is made of atoms, and the atoms are made of subatomic particles. But we are aware that it could go farther later.

Liza: It could never stop. I mean as long as human civilization survives.

Peter: We will see. But for now let's not divert from our data collecting regarding the human body. Sara!

Sara: Yes. Back to our cells. I would now like to present to you the amount of cells we have in our body.

Liza: It should be an impressive number.

Sara: It is so. We have some 15 to 70 trillion cells in our body.[6]

Liza: Amazing!

John: Why such large scope between 15 to 70 trillion?

Sara: It's because of different methods of calculation. So if you pick volume or weight, you get drastically different numbers. Making matters worse, our bodies are not packed with cells in a uniform way, like a jar full of jellybeans. Cells come in different sizes, and they grow in different densities. Look at a beaker of blood, for example, and you'll find that the red blood cells are packed tight. If you used their density to estimate the cells in a human body, you'd

come to a staggering 724 trillion cells. Skin cells, on the other hand, are so sparse that they'd give you a paltry estimate of 35 billion cells.[7]

John: Oh! I see where the difference comes from.

Sara: But recently, scientists have made a pretty good effort. Their current final count is… 37.2 trillion.[8]

John: How did we get this number? It's very far from 724 trillion you have mentioned.

Sara: Yes. They actually broke down the number of cells by organs and cell types, going through the literature available to come up with a detailed list of volumes and densities in everything from intestines to knees. So, for example, there are 50 billion fat cells in the average body, and 2 billion heart muscle cells. Adding all those up, they got 37.2 trillion.[9]

This number was impressive. Peter asked Sara if she could write this number on the board.

Sara: Oh my god! You are asking me the impossible mission.

Peter: Let me try that.

He went to the whiteboard and put 37.2 there.

Peter: John! Tell me how many zero I should put here to transform these digits in trillion.

Liza: I know that for one million we should put six zeros

Sara: And for a billion, nine zeros.

John. Right. A trillion needs then twelve zeros.

And Peter put twelve zero after 37.2 to get: 3.72,000,000,000,000.

Everybody was staring at the board.

Sara: Now I have another number to present. I don't know if it's a bad news or good news.

Liza: Another big numeral?

Sara: Well, it corresponds to the number of bacteria in our body.

Liza: Oh my god. I hope we don't have that much.

Sara: Well, the estimations say that we have between 1 to 10 times more bacteria in our body than the cells.[10]

John: What? You mean we have 10 times the number on the board of bacteria in our bodies?

Sara: Indeed.

Peter: Let's see how we could put it.

John: Oh! I think we would miss space on the board. Let's put just a little 10 above the last zero.

Peter: Like this?

Peter then wrote $3.72,000,000,000,000^{10}$ on the board.

Liza: And could we have a definition of bacteria?

John: And its components?

Sara: Yes, of course. Bacteria are microscopic living organisms, usually one-celled, that can be found everywhere.[11]

John: When you say that the bacteria are one-celled, it means that they don't have a multiple cells structure like other living organisms. Is that correct?

Sara: Yes, they are single-celled or non-cellular spherical or spiral or rod-shaped organisms.[12] But we should not forget that the bacterium, despite its apparent simplicity, contains a well-developed structure, which is responsible for some of its unique biological structures and pathogenicity.[13]

Liza: This means that even for the bacteria we should expect to have a complex structure with its components and interlinks between these components?

Sara: Relatively complex. Because compared to other living structures, like cells, they are simpler and basic.

Peter: So, before we go into the details of a bacteria's structure, I suggest we do it for the interrelatedness between cells, organs, and systems of the human body, and then we'll go back to the bacteria, if necessary.

It was hard for them to deal with all these increasing elements.

Peter: Sara, now that we have an idea on the volume of cells and bacteria, could you please tell us how the cells, organs, and systems work and how they are interrelated inside our body?

Sara: Sure thing. Let's start with the structure and components of a cell.

She presented an image on the board:[14]

Sara: We should know that a cell consists of three parts: the cell membrane, the nucleus, and, between the two, the cytoplasm.[15]

Liza: Cytoplasm! Interesting name!

Sara: What is more interesting is that within the cytoplasm lie intricate arrangements of fine fibers and hundreds or even thousands of miniscule but distinct structures called organelles.[16]

John: You are saying that just in one of the components of a cell we have thousands of the things called organelles?

Sara: Yes, and an organelle is itself a tiny cellular structure that performs specific functions within a cell.

Liza: Which specific functions?

Sara: Well, like controlling cell growth and producing energy.[17]

John: And what about the sub-components in the structure of an organelle?

Sara: It's a complex matter. Let me show you one of these organelles as an example.

Sara shows a picture: (Figure 3)

Figure 3

Sara: This is the image of cell's structure and the components. No. 5 and 8 are an organelle called Endoplasmic Reticulum.

Liza: Endoplasmic reticulum. That's a bizarre and long name.

Sara: Yes. But look at all the functions they assure for our cells: They

- form the skeletal framework of the cell,
- transport materials from one cell to other,
- provide a surface for the synthesis of material, and
- detoxify the harmful substances in the liver.

John: They do all of this?

Sara: And even more that I didn't mention.

John: So, we want to know if they have themselves a complex structure.

Sara: You are right. I was going to present this. In fact, the general structure of the endoplasmic reticulum is a network of membranes called cisternae.[18]

John: A network?

Peter: Ha-ha! Here's a thing that a computer programmer should be interested in.

John: What do you mean by a network of membranes?

Sara: Let me give you an image of cisterna. (Figure 4)

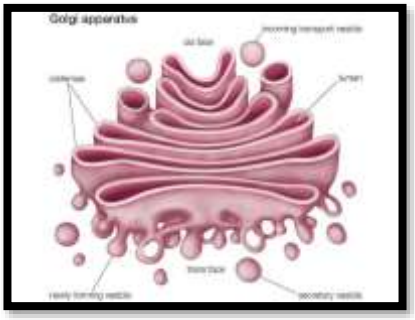

Figure 4

Sara: We know that they are made of enzyme and shape flattened membrane disks.[19]

Liza: I'm pretty sure if we keep going down we will find the substructure of these famous disks.

Sara: Certainly, with new technology we learn everyday more about the sub-components and sub-structures of these elementary particles of a cell.

Peter: I would like to clarify here that we get two concepts that are going to be present in all our discussions for studying the material phenomena.

Liza: Which concepts?

Peter: Substance and Structure.

Liza: What differentiates them?

Peter: I will remind you here that when we say a *component*, we are referring to the *substance* of something pertaining to its *structure*. The way that the substances are put together shapes the structure, but we can't forget that each substance is itself a sub-structure as well, and if we keep desiccating we find that it keeps going. We can say that the *substance* is, in reality, the same thing as the *structure*, and when we say structure, it is nothing else but substance. So what you have then is a sameness between substance and structure. The only barrier that stops us is technology and knowledge. And as for getting more of these two, it's just a matter of time.

Liza: But how can the structure be the same thing as the substance? I mean we always separate content from the container. We've always thought there's structure, like a recipient or container, and what's inside this recipient is the substance. Like a jar and water inside, right?

Peter: Yes, everywhere in our query we would like to find both. Nevertheless, when we pay close attention we find a logic that is running in the matter, so to speak, and this logic could differ from our conception of matter.

John: Like a hidden or mysterious logic?

Peter: Well, not really. The internal logic of matter we are talking about is not hidden or mysterious. It is just what it is.

Sara: And what is this logic?

Peter: It looks in the way you described the structure of cells, without you knowing beforehand about this logic.

Liza: And how do you formulate it?

Peter; In order to do so, we need to put aside our profoundly anthropocentric view on the matter.

John: What do you mean by anthropocentric view?

Peter: Well, during his long history, man followed unconsciously what had been dictated by his physical specificity. His primitive brain structure is quite reflected in his perception of the world.

Sara: By physical specificity you mean his sensory limitations?

Peter: Yes and also the patterns that had been shaped, established and lasting in his mind because of a more mechanical than intellectual relation with the immediate environment. These patterns became so anchored in his mind that he neglected corroborating their objectivity in the real world.

John: While it was not?

Peter: Not really, or should I say, not objectively.

Sara: But the paradoxical point is how we could know it if we are so taken by this historical and intellectual view of the material world.

Peter: Well, it's not easy but feasible. Our perception of the world goes hand in hand with our knowledge of it. When we cross a certain level in our progress of science and knowledge, we could have a dissimilar vision as well. At that stage we could see material reality differently and this time closer to what it is, instead of what we think that it is.

Liza: You are talking about kind of epistemological revolution.

Peter: Woo! Such a beautiful way to put it!

John: And how all of this is related to our discussion on the structure of a human body's cells?

Peter: It's directly related. Look, the components of a cell interact with each other and shape the structure.

Sara: Yes, affirmative.

Peter: And this structure, as a whole, constitutes what we called the substance of a bigger component.

Liza: Yes, that's why you said that the substance and the structure are the same.

Peter: Yes, any structure is not but the interaction of its substructures.

John: And here, any substructure is not but its interacting sub-substructures, right?

Peter: Precisely, and this goes on from a micro level to macro levels or from macro-level to a micro-level.

Sara: So, the matter would be seen more objectively if we consider it as interacting structures?

Peter: Yes, indeed. And the crucial point is that we should not look for anything in the matter but interaction.

Liza: And not the structure anymore.

Peter: Well, by looking for interactions we are finding structures as well. Don't forget that the structure is nothing but an interaction of substructures.

Sara: Therefore, matter is interaction.

Peter: Here we are. You see, when we cross our intellectual routines, that pushes us for thousands of years to see matter as a structure or a substance, and we suddenly discover that matter is much better present and understood as it is, that is to say, only as interactions, and nothing else. Nothing is necessary to be added by us to matter to represent its reality. Action and reaction and their combination—interaction—is what the matter is made of.

John: So, this interaction is something that keeps going forever?

Peter: Well, generally speaking, yes but we don't know for sure yet. But it reminds what we said about causal chains and their vertical or horizontal moves. This is exactly what we are trying to investigate.

Sara: And if we find that it's true?

Peter: Then we have a proof of *infinity* in our case study.

They reached a crucial point where the first evidence of infinity within the human body was in sight. But the things were not yet complete.

Sara: Let's review once more what we said regarding the human body.

Liza: First, there is the *body* itself.

John: And it's composed of some *systems*.

Sara: To be exact, there are 12 systems that function in our body.

Liza: Twelve systems?

Sara: Yes, each system is composed of components and its systemic structure. Here are these twelve systems: (Figure 5)

1. the cardiovascular system,
2. the digestive system,
3. the endocrine system,
4. the immune system,
5. the integumentary system,
6. the lymphatic system,
7. the muscular system,
8. the nervous system,
9. the reproductive system,
10. the respiratory system,
11. the skeletal system, and
12. the urinary system.[20]

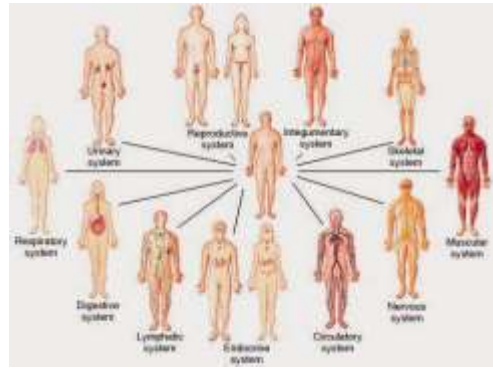

Figure 5

Peter: I think before we count other subdivisions, it wouldn't be a bad idea to remind everyone how these twelve systems interact.

Sara: Sure. I'll return to the interactions between them in a moment.

Liza: So, each of these twelve systems is composed of *organs*.

John: And each organ is made of *cells*.

Sara: Yes, and the cells are composed of components like the cell membrane, the nucleus and between them, the cytoplasm.

John: And each of these constituents has its own components.

Sara: Yes, for instance, the cytoplasm is composed of organelles.

Liza: And an organelle of cytoplasm has membranes like cisterna.

John: Which are made of enzymes.

Sara: And enzymes are themselves macromolecular biological catalysts that accelerate chemical reactions.[21]

And then she presents an image of enzymes. (Figure 6)

John: And what is the structure of an enzyme, Sara?

Sara: Well, enzymes are made up of amino acids which are linked together via amide bonds in a linear chain.[22]

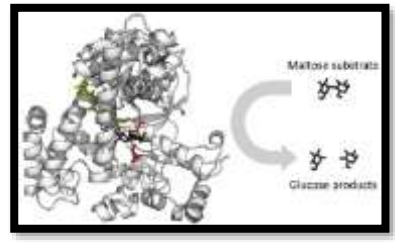

Figure 6

Peter: As you can see here in this image you have the components and the structure.

Liza: And are amino acids themselves composed of something else?

John: And what about amide bonds?

Sara: Well, an amino acid is an organic molecule that is made up of a basic amino group, an acidic carboxyl group and an organic R group (or side chain) that is unique to each amino acid.[23]

Liza: And each of these components has their own constituents.

Sara: Of course…

Peter: Well, well! I think we could keep going as much as we want, either now or in the future.

Liza: In fact we can go far, as you said, as much as science and technology are able to take us in this field—or any other, for that matter. It's a question of time and resources.

Peter: Indeed. There is nothing stopping us from knowing more and more details about the components of our body.

Sara: Yes. We can dive deep into the details of the molecular structure of enzymes, for instance.

Peter: Thanks to a view on this combination of components and elements we see somehow an endless path gradually forthcoming as we break down the human body.

Liza: You mean through the quantity of components that we could identify in these structures and sub-structures.

Peter: Yes, we said that the study of the infinity in the different levels of our scheme would be done through the quantity of the elements and the interactions between them. That's precisely why now, for understanding the notion of infinity, in the frame of the body, we need also to pay attention to another aspect.

John: Which is?

Peter: The interrelations between all these huge number of components and sub-components together.

Now that they had an idea on how far they could go far for the number of constituent substitutes, it was question now of discovering how numerous the interactions and dealings between these elements are.

Sara: We could study the interrelations inside of our body in several levels:

- between the systems,
- between the organs,
- between the cells,
- between the components of cells,
- between bacteria and cells, and
- between bacteria within themselves.

John: Well, as we have several trillion components here we should have an idea about the number of connections that are happening between them at any given moment.

Peter: Yes, but we should know that these calculations could not be mechanical since we are dealing with the organisms.

Liza: What does it mean?

Sara: It means an organism is a living being and that it could change its behavior based on all the chemical or physical or magnetic alterations that happen to them at any instant.

Peter: And again here we should be attentive to another concept that will be crucial in our understanding of infinity.

Liza: And that is…?

Peter: The kind of relationships that govern a living entity, as Sara said it, for instance, in an organic set.

John: And to which kind of relationship are you alluding to then?

Peter: In the organic entities the components shape the whole structure in an interactive way. This means that when one element changes the whole thing changes through the living and active interlinks that are shaping it. So, the entity could never be conceivable beyond the total of its components in interaction. Therefore, each alteration brings a new change in the whole sequence of interconnections running in the organic bodies.

John: Which means that we cannot count on just one single interaction for one change. With each single alteration, the whole chain of events modifies as well, almost simultaneously. Our calculation could never be static in such a situation.

Peter: Right. When it comes to a living being, each move means usually multiple variations because it affects at least a thing that is spontaneously and closely associated with many other organic gears.

John: And this will greatly increase the number of interactions. We go rapidly from a simple arithmetic progression to a complex geometric progression.

Liza: What is exactly the difference?

John: The mathematic progression means that next number in the series is calculated by adding a fixed number to the previous number in the series.

Liza: Example?

John: Well. 1, 4, 7, 10 and afterwards, if we add 3 for instance each time.

Liza: I see. And what about the geometric progression?

John: Well, a geometric progression means that next number in the series is calculated by multiplying a fixed number to the previous number in the series.

Liza: Like 1, 3, 9, 27, 81 and so on. We multiply by 3.

John: You got it.

Peter: So you're saying that in the case of multiple interconnections we get the output to increase over the geometric progression.

John: Yes, but what's very exciting about the subject of our discussion is that, if I'm not mistaken, the number of interrelations between the components isn't multiplied by a fixed number all along. The multiplying number itself changes gradually to become so gigantic that you cannot calculate it anymore.

Sara: And could we then say that we get an infinite number as a result of these progressive multiplications?

John: Well, naturally, because in mathematics infinity is uncountable, which means there are so many you can't "number" them.[24]

Peter: This is true, that in similar calculations like the number of interconnections between the components of our body we do get numbers that we can't even write down.

John: Right. Like googol.

Liza: And what exactly is a googol?

John: A googol is number one with a hundred zeroes after it. It's written like this: 10^100.

Peter: It looks normal such that in the case of interactions between all of the body's cells and bacteria we soon reach the numbers with googol scale.

John: Yes, several googols.

Peter: Indeed, putatively, but as a methodological principle I would like to go over a thorough examination to see if really such a quantitative development is confirmed or not.

Then Sara started to make a detailed presentation of the interrelations between systems, organs, cells and bacterium…

(Please see Annex **A** and return here)

Peter: I think, thanks to this presentation, we could see how it would be hard if we want to use a number aimed at presenting the amount of components and their interactions inside the human body.

John: So true. Impossible to calculate that.

Peter: This is what I wanted us to check here: that if there is a way we could imagine any boundary, any end for this huge ongoing process is inside of our body as long as we are living as an organism. In no way could we calculate the number of components, structures,

and interactions that are shaping and happening in our whole body at each instant.

Liza: This is then just an infinite process as we supposed it, I think.

Peter: Looks like. We have, in our body, an infinite number of facts that are producing and reproducing each other through a complex interconnectedness that go beyond any known possibility of calculation. A boundless number of elements and a countless amount of interactions.

Liza: Peter! You said “any known possibility of calculation.”

Peter: Yes, I did.

Liza: But, is it possible that we could one day calculate the number of interactions thanks to a higher technology? There’s the giant quantum super-computer, for instance.

Peter: Sure. It’s possible, but the issue is that even that number will only present the total interactions of what we would have knowledge about at that particular moment. But what about a billionth second later, when the whole thing has already changed with a new unknown number?

Liza: So you’re saying that it would be impossible to get any reliable number there, I mean a number that could last more a millionth of a second.

John: Right, it’s like a frame of a long and continuing movie. It is impossible to freeze it anywhere for the smallest unit of time that you could imagine.

Peter: Right! Also I would like to make the following point. We know that new discoveries could bring up new components and then new interconnections, which is to say this process never stops. So, at any moment in human history, our knowledge of the universe is conditioned by the civilizational grade of our time. It means our knowledge is measured, so to speak, by where our scientific knowledge and our technology currently stand. But do remember that the reality of the universe, beyond the presence of our knowledge or not, alters unceasingly.

Now it was a good occasion to make a conclusion of all these factual data.

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Peter: You see that we have just a first level of our scheme and we are facing the reality of a concept that is hard to imagine beyond the material facts.

Liza: You mean just in the level of human being, before society, nature, the world, the universe, and existence.

Peter: Yes, just for the first category, Man and only when it comes to his body and not to his mind.

John: We have then the confirmation of *infinity* present in the human body with regard to the quantity of constituents and the number of interconnections among them.

Peter: I won't use the term "confirmation."

John: Then what? We saw that this number of the little particles, interacting to each other, is totally impossible to calculate. This means *infinity* in mathematics.

Sara: And please don't forget that we didn't talk about the hundreds of billions of poor bacteria in our body. They have also their role in keeping us alive. Think about the multiplications of all these connections, trillions of cells interacting with trillions bacteria while from each linkage will be born some other new connections.

Peter: Well, even without these billions of cute bacteria and their interactions among themselves and with other organs and cells of our body, we are completely overwhelmed by the amount that looks incalculable.

John: So, isn't this a proof of infinity?

Peter: This is a good indication of it but we should go through all the levels of our categories to see if this process is present everywhere or not. This is what we need as foundation for our task.

Liza: Your carefulness is because we put the infinity in the center of our undertaking, right?

Peter: Indeed, we would like to form a worldview that could comprise every issue that needs to be understood and dealt with.

Sara: And as we said, for that we need a foundation.

John: And we took the concept of *infinity* as our foundation.

Peter: True. We need a solid foundation to shape a functional, realistic, and useful worldview for us.

John: And then we want to know if this worldview would reduce our explicit or implicit suicidal conduct or not.

Sara: So to review, we went over the little details of our body just to see if the main feature of our foundation, the *infinity*, can be found there or not. We saw that there is an infinite aspect of things in our physical body.

Peter: Yes. This is also why for all the levels of our scheme we should see if we reach a similar conclusion or not.

John: We have done it just for the first level.

Peter: Not totally. Just for the physical aspect. Now we have to go through the human mind and deal with it again.

Liza: Yes. I will be ready for the mind part of this first level at the next meeting.

Peter: Great. I would like to thank Sara for having worked with so much detailed data for this first part.

Liza: Great job, Sara.

John: Thank you so much.

Sara: You're all welcome. I enjoyed that.

They left to prepare for the next meeting. Meanwhile, Liza had to work on many documents and sources to prepare the presentation on brain and mind.

*

Chapter 8

The meeting started. Before that, Sara had passed her notes on the structure of brain to Liza. That's why Liza started her presentation with an explanation on the physical facet of the human brain before talking about the mind, properly speaking.

Liza: Let's begin with some amazing facts about our brain.

John: Especially yours.

Everybody laughs.

Liza: Yes, John. My brain as well as yours is much more complicated than the computers you program.

John: Let's see that.

Liza: First things first. We should know that we have one hundred billion neurons in our brain.

John: One hundred billion?

Liza: Give or take a few billion, but yes, 100 and nine zero after.

John: What is it? The neuron?

Liza: Here you can see one.

John: So, we have 100 billion of these brain cells in our skull interacting with each other.

Liza: Definitely. They are themselves complex structures. If you look closely you will see the different components of this cell: nucleus, dendrites, cell body, axon, myelin sheath, and axon ending. (Figure 7)

Sara: Before going through the details of this structure it would be good if you could tell us what these neurons do.

Liza: Sure. Our brain works with signals. Signals travel along our neurons at about 250 mph (400 kilometer/hour).

John: Wow! They are fast.

Liza: They are a specialized cell designed to transmit information to other nerve cells, muscle, or gland cells.[25]

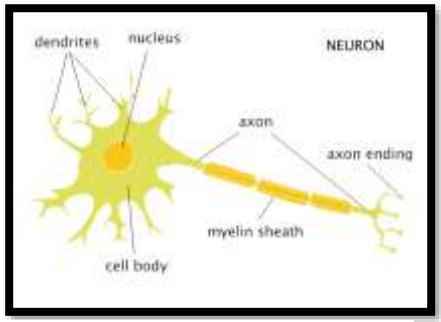


Figure 7

John: So they are like the networking cables that transfer data.

Liza: You can say so. The brain is what it is because of the structural and functional properties of interconnected neurons.[26]

Peter: You said that each neuron is a complex structure with its many components.

Liza: Yes. Let's start with the first element of the cell brain: the nucleus.

Sara: This is the center of the cell.

Liza: Yes, a typical neuron has all the parts that any cell would have, and a few specialized structures that set it apart. The main portion of the cell is called the soma or cell body. It contains the nucleus, which in turn contains the genetic material in the form of chromosomes.[27]

John: So, inside the nucleus we have chromosomes.

Liza: Yes, maybe Sara could tell us more about the chromosomes.

Sara: Sure. Chromosomes are a threadlike structure of nucleic acids and protein found in the nucleus of most living cells, carrying genetic information in the form of genes. [28] Here is one image of them: (Figure 8)

Figure 8

John: What is the function of chromosomes?

Sara: Well, Organisms grow by undergoing cell division to produce new cells and replace older, worn-out cells. During this cell division, DNA must remain intact and keep its even distribution throughout the cells. Chromosomes are important to this process to ensure the DNA is accurately replicated.[29]

Liza: Now we can dive in the chromosome to say that their structure is composed of DNA tightly coiled many times around proteins called histones that support its structure.[30]

John: Histones?

Sara: Yes, you maybe remember what we said about the structure of proteins. Histones are also a kind of protein.

Peter: With their own structure.

Sara: Of course. You can see its structure here. (Figure 9)

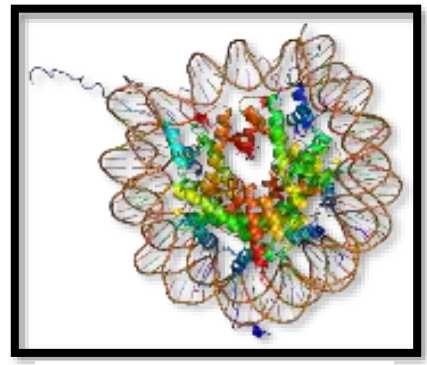


Figure 9

Liza: So, we can go further and deeper in these multiple structures; but I would like to return to the brain edifice.

Peter: Sure. My hint was just to remind all of us that wherever you go, you find this hierarchy of structures and substructures that intertwine and shape an organ. As much as the science and technology allow us, we could go deeper and get acquainted with more and more tinier elements.

Sara: Yes, the brain is one of these complex structures with highly sophisticated mechanisms. When the brain has to manage our other organs, it receives and sends the messages by its neurons and these neurons have their own internal structures, components, and mechanisms that are working and interacting at any moment to assure the transmissions.

John: And as they have to transfer these data at 240 mph speed we could imagine the traffic of this internal activity in order to answer to all the tasks they have to fulfill.

Liza: Same thing when we reflect. As soon as we want to think of something, or to say a word, these neurons set off working really fast to answer to what we need to comprehend or to express.

Peter: Good. Now It's time to see if we could find the track of some infinite process when we are thinking and using our brain or not.

Liza: We should know that these two things, the physiological aspect of brain and its function, called mind, are closely interrelated.

John: How come?

Liza: We said that the thought comes from neurons. We should know that each neuron can make contact with thousands or even tens of thousands of others in a thousandth of second.[31]

John: This amount of simultaneous contacts for one single neuron is impressive.

Sara: Especially when we know that there are 100 billion of them.

Peter: Imagine the number of the connections that 100 billion neurons could have with each other when we know that each of them is able to link simultaneously with thousands of others. Each contacted neuron in its turn can tie with thousands other neurons and so on.

John: We are again here in a geometric progression with a high common ratio[vi] that makes it incalculable again. I think once again the ratio here isn't fixed but is increasingly varied.

[vi] In mathematics, a geometric progression, also known as a geometric sequence, is a sequence of numbers where each term after the first is found by multiplying the previous one by a fixed, non-zero number called the common ratio. For example, the sequence 2, 6, 18, 54, is a geometric progression with common ratio 3.

Liza: Yes, especially when we know that our brain forms a million new connections for every second of our lives.[32]

John: Every second?

Liza: Yes, million new connections every second and you can calculate how many connections the brain can make in one minute.

John: Three thousand six hundred seconds multiplied by a million. It means 3 billion 600 million connections per minute.

Liza: And during an hour.

John: Sixty times more. 216,000,000,000 connections per hour.

Liza: And for a day?

John: Multiplied by 24.

Liza: And so on.

Peter: The number of connections our brain establishes during one day or a few days easily reach the limit of any current calculation capacity. We're not talking about weeks, months, or years.

Liza: And imagine that all these connections are unique. The pattern and strength of the connections is constantly changing and no two brains are alike.[33]

Sara: So, each thought in our mind mobilizes thousands and thousands of networks made by millions of neurons and billions of connections. And each mind has its own networks whose assembly makes it unique and different from all other minds.

Liza: Yes, and when we know that each day we have thousands thoughts in our mind you can imagine the rate of activity of our brain in a scope of 24 hours.

John: So, the calculation will be near to some thousands thoughts multiplied by thousands of cell networks multiplied themselves by a million of neurons without calculating the number of the interactions of the membranes of these cells.

Peter: I told you. It does look countless.

Liza: We should also know that thinking is an active process. We are able to produce more patterns if we spend energy on specific thoughtful efforts. This is the reason for which we can find a difference between the brain of a conscious person and an unconscious person, as seen in this image. (Figure 10)

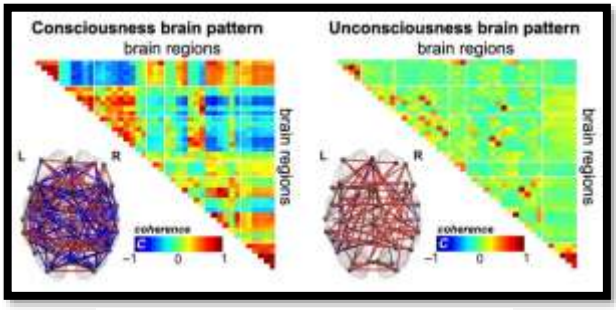


Figure 10

John: The number of the connections is visibly much higher for the people with consciousness.

Liza: This shows that the more we are mindful the more our brain is ready to work with making more additional connections.

Peter: Yes, and this shows that our brain could work far more than the usual average where it's necessary or pushed to. The brain is not only an organic system, looking for maintaining its chemical

balance and assuring its survival, it's also a programmable machine where we can put its automatic functionalities at the service of the manufacture of new intellectual and behavioral patterns. It is these patterns that form our consciousness.

Liza: Yes. In the computational theory of mind they talk about the system by which our brain treats data as representations and process them as a computer.

John: This simulation would be simplistic since we see more complex mechanisms in the structures and the functions of the brain as an organic and highly active system.

Liza: Of course, but they develop this theory in order to produce a comprehensive order of how the brain works.

Peter: The number of calculations our brain does to make a decision is impressive.

Sara: Indeed. We should know the human brain is far more advanced and efficient, and possesses more raw computational power than the most impressive supercomputers that have ever been built.[34]

John: I know that "the fastest supercomputer in the world is the Tianhe-2 in Guangzhou, China, and has a maximum processing speed of 54.902 petaflops.[35]

Sara: What does petaflops mean?

John: A petaflop is a quadrillion (one thousand trillion) floating point calculations per second.

Liza: Well, it is huge as capacity, John. But I have to let you know that our astonishing brains operate on the next order higher. Although it is impossible to precisely calculate, it is postulated that the human brain operates at 1 exaflop, which is equivalent to a billion billion calculations per second.[36] A quintillion.

John: Ah Gosh! One exaflop! My goodness!

Sara: And we don't forget that each of these calculations implies thousands and thousands of interactions between the cells and nerves. Which means the number of calculations should be multiplied by the amount of all the interactions between the components to make these connections possible.

Peter: So, John. Any chance to count the number of these interactions during a minute?

John: Simply not. It's just impossible. How do you want to count the number of internal interactions that generate a quintillion calculations per second?

Liza: Look at what I found in a report: "In 2014, some clever researchers in Japan tried to match the processing power in one second from one percent of the brain. That doesn't sound like very much, and yet it took the fourth-fastest supercomputer in the world at that time, the famous K Computer, 40 minutes to crunch the calculations for a single second of brain activity!"[37]

John: This means that in one second, one percent of the brain made as many calculations as the K Computer does during 2760 seconds.

Peter: It looks like, with what is happening in our brain and is represented in our mind, we could soon reach an infinite number of operations that are happening right now for each of us and in our brain.

Sara: One technical point could show even more of this marvelous part of the things.

John: What is it? I'm already all impressed.

Sara: Well, you know it's not because it's my field of activity but in general it is said that biology is a beautiful thing, and life itself is much smarter than any computers.

Liza: Of course.

Sara: For example, the brain is both hardware and software, whereas there is an inherent difference with computers. The same interconnected areas, linked by billions of neurons and perhaps trillions of glial cells, can perceive, interpret, store, analyze, and redistribute at the same time. Computers, by their very definition and fundamental design, have some parts for processing and others for memory; the brain doesn't make that separation, which makes it hugely efficient.[38]

John: It looks like a computer with all-in-one-piece motherboard.

Liza: Yes, and I have to add that the same calculations and processes that might take a computer a few millions steps can be achieved by a few hundred neuron transmissions, requiring far less energy and performing at a far greater efficiency. The amount of

energy required to power computations by the world's fastest supercomputer would be enough to power a building; the human brain achieves the same processing speeds from the same energy as is required to charge a dim light bulb.[39]

Peter: This means that not only does the brain function with a lot of complexity, it also manages itself with a huge economic and energy-saving system. It's a kind of integrative supervising managerial mechanism that is running within our brain, and this system of management itself requires billions of calculations and interactions.

Sara: Of course. Lots of chemical operations happen to reduce the energy consumption of the brain and all of these represent billions of interactions going on behind the functional scene.

Liza: Yes, it's because biological processes have had billions of years to evolve perfect and efficient organs that far supplant technology, and we are beginning to reach those artificial limitations.[40]

Sara: And one more thing that reveals how complex and capable the brain is how it truly sets brains apart, aside from their clear advantage in raw computing power, is the flexibility that it displays.[41]

John: What kind of flexibility?

Sara: The human brain can essentially rewire itself, a feat more formally known as neuroplasticity.

John: Could you explain it more, please?

Sara: Neurons are able to disconnect and reconnect with others, and even change their basic features, something that a carefully constructed computer cannot do.

John: Woo. Continue please.

Sara: Of course. We see this amazing transformative feat in a wide variety of brain functions, such as the formations of memory, knowledge acquisition, physical development and even recovery from brain damage.

Peter: Yes, a self-reconstruction setting.

Sara: Absolutely. When the brain identifies a more efficient or effective way to compute and function, it can morph and alter its physical and neuronal structure, hence the term plasticity. Until we achieve true artificial intelligence, in which computers should theoretically be able to rewire themselves, neuroplasticity will always keep the human brain at least one step ahead of static supercomputers.[42]

John: It's like a computer in a computer, supervising and acting intelligently and permanently to assure the best performance for the brain.

Peter: In fact, it's like multiple computers networked to deliver a high performance.

Liza: Let me say that if the human brain were a computer, it could perform 38 thousand trillion operations per second. The world's most powerful supercomputer, BlueGene, can manage only

.002% of that. But, we know though that we cannot perform like a supercomputer.[43]

John: Why?

Sara: Let me explain it.

Liza: Go ahead!

Sara: You know why we cannot compare brain and computer properly? It's because those 39 thousand-trillion operations per seconds are neurons firing. They are operating in parallel, and while they are all operating toward the vague notion of "you thinking," they are not working on the same tasks. A supercomputer, in contrary, has every operation being an instruction of machine code executing. There is no easy comparison between a machine code instruction and a neuron firing.[44]

Liza: How so?

Sara: Well, "the machine code instruction is going to be a distinct step in an algorithm focused on a goal while a neuron is a vague impulse through a neural net. It would be a sequence of several neurons to be equivalent to an operation on a computer, just as a computer operation is using many transistors to do its computation. I'm not even sure how some got the 38-thousand trillion operations number. We have 100 trillion synapses that fire up to 200 times a second. Even if they all fired at their maximum rate, this is 20 thousand trillion impulses, just over half of the stated number. They don't all trigger that fast, they don't all fire at once,

and even if they did, the result would not be considered thinking as much as it would be a seizure.[45]

John: That's right.

Sara: The computer is also operating digitally, being extremely precise, doing exact math at each step. Neurons firing aren't really similar but something in between, with thresholds and spikes. The functioning of the brain is very different from a computer, and it doesn't simulate a computer easily.[46]

John: You could be right. I've made a rapid search on Google and it looks "scheduled for delivery to Oak Ridge National Laboratory (ORNL) in 2021. The Frontier supercomputer promises a performance of greater than 1.5 exaflops, faster than the current lineup of petaflop-level machines".[47] Also we know that the new generation of computer is coming soon.

Liza: What is this?

Peter: The quantum computation. "Google and NASA claimed that a problem their D-Wave 2X machine processed inside one second would take a classical computer 10,000 years to solve."[48]

Peter: It's impressive, but we see how evolution had put our brain in a hegemonic situation for long time.

Liza: So, despite the difference between computer and brain, I think we have enough indications to say that when it comes to thinking processes in our brain, we are faced with a real possibility of an immeasurable number of calculations.

Peter: Yes, and I think the complexities of our thoughts shows that some trillions of calculations should be done so that we have a simple and basic thought.

John: And when we said that there are a few thousands of thoughts per day we could imagine that as a total of the number of calculations behind these thoughts we get a number that we could never count.

Liza: And this countless character suggests the idea of infinity—again.

Peter: Indeed. Especially when it's a question of complex ideas and, in addition, when we want to transform them into words and express them with all the details of a linguistic communication process. And we know that human communication is one of the most complex developments that we have in the human world.

John: There, the calculations should be multiplied.

Peter: Yes, and it's a huge number. We should know that our comparison with the computer is just symbolic. We know for instance that our brain is ten millions times slower than a computer when it's a question of treating the data.[49] But when it comes to the number of calculations and the number of parallel connections of neurons, we have a complex phenomenon that we could not simply count.

John: And as Liza pointed out, the increasing aspect of these operations suggest we are facing a mathematically infinite number.

Peter: So, as you can see, like the biological features of the human body, when it comes to the mind, we are faced with an infinite combination of thoughts, memories, words, and interconnections that are so huge that they could be identified as infinite. This is especially true when we know that each new thought in our mind will be marked consciously or unconsciously. This means that when it comes to the difference with computers, our memory is not fixed and mechanical but organic, alive, and changing, and reconstructing itself permanently.

Liza: So, we should also add to our calculations all the electrochemical processes that affect our short-term memory to convert them partially into a new, long-term memory.

Sara: As a result, it looks right now and for the first level of our scheme of categories that we have little evidence of infinity.

Liza: Now we should know if we can find an indication for such levels in society, nature, the world, the universe, and existence.

Peter: Right. We don't know, but for the next meeting I will go over society and social life and we will see if we are finding a trace of infinity there or not.

And then, exhausted and impressed, they left.

*

Chapter 9

The next meeting started. Now it was Peter's turn to go through the category of society.

*

Peter: We will try to see if this concept of infinity—the endless number of components and interconnections—is occurring in big communities where people live together.

John: How are we doing that?

Peter: I will try to show you how social relations are established and to what extent we could quantitatively measure their extent.

Liza: So, the objective is to see if the number of social facts and interactions are going toward infinite or not, right?

Peter: Yes, since we would like to use *infinity* as the foundation for our worldview building, I think we should check the generality of this notion's presence and how any extrapolation could be.

Sara: OK. Let's go.

Peter: We know that mathematically the interaction between two people will be a matter of a simple calculation.

John: Like 1+1=2.

Peter: Yes. One action will bring one reaction and the chain can continue regularly when it's a question of only two persons with their action-reaction rapport.

John: Yes, this is the mathematic progression where each item is added by a number each time: 1, 2, 3, 4, and so on.

Peter: Correct. But what fascinates sociologists is that as soon as you add only one person to this group of two, called a dyad, things change dramatically.

Liza: You mean quantitatively?

Peter: Certainly, but then, later, we will be interested in the quality of this phenomenon as well.

John: Both aspects, the quality and the quantity, are interrelated.

Peter: Of course, any accumulative quantity could cause a qualitative change, and any change in quality may decrease or increase the quantity in return.

John: We have this tradeoff almost everywhere.

Liza: Yes, but within the frame of our own work, we should check it case by case.

Sara: Back to the social interaction.

Peter: Of course, Social interaction can be studied between groups of two (dyads), three (triads), or larger social groups.[50]

John: What about comparing those two?

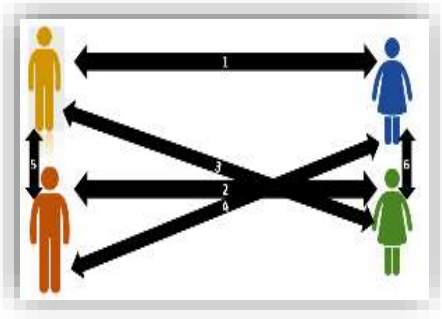
Peter: We have a formula for that.

Liza: Which one?

Peter: Well, in any group of 'N' people, like our group of four, the number of possible relationships, presented as R is N, the number of group's members, multiplied by N minus one divided by two.[51] Let me write in down on the board: R=N*(N-1) /2

Liza: Can we use it for our group?

Peter: Of course. That would be R= 4*(4-1)/2, which is 4 multiplied by 4 minus 1, divided by 2.



John: We got 6.

Liza: That's all?

Peter: Yes, we're talking about 'relationships' that are going on between two people if someone subjectively believes one or both are significantly affected by the welfare, attitudes, behavior, and needs of the other.

John: Six relationships that are the results of how many interactions?

Peter: Oh God! For the number of the interactions it's another story.

Liza: How so?

Peter: Let me distinguish three sociological things:

- Social relations, as we defined them.
- Social interactions, which are a constitutive part of the social relationships, and
- Communicational interactions, which are any act that we do to send a message to other people.

Liza: How is this difference important?

Peter: Well, it's just like a structure with its constituents:

- Each social relationship, like friendship, as a lasting and complex human relation, includes numerous social interactions.
- And each social interaction, like greetings, could contain multiple communications.
- Each communication involves a lot of verbal and non-verbal signs to transmit a message.

Liza: What about an example to illustrate it?

Peter: Sure. For instance, in order to establish a friendship as a social relationship, we should have lots of social interactions with the person that we will befriend. Social interactions include things like greeting, helping, inviting to a dinner, lending money, and so on. Each of these social interactions implies several communications like smiling, shaking hands, hugging.

Liza: So, we see that social interactions are a kind of durable and established set of behaviors employed or utilized in order to initiate a social relationship, while an interaction is just an exchange of messages as a little part of this process.

Sara: So, for having a social interaction we could have a lot of inter-individual interactions.

Peter: Exactly. Let me explain that. When we talk about social relationships we have five that constitute the most common forms: exchange, competition, conflict, cooperation, and accommodation.

John: Interesting list.

Peter: Yes, each of them could result in hundreds or thousands of social interactions consisting of lots of communication.

John: A communication is the simple act of sending and receiving the messages, right?

Peter: Yes, by and large, while social interactions shape our social relationships that are kind of long term and serve as strategic links in our social life.

Liza: So, the question will be how many communications are needed to shape a social relation or a precise social interaction?

Peter: Well, we know we don't have a formula to calculate it. But we can study the communications made between two persons who are going to create a social interaction as a part of their social relations, like one of the five forms we enumerated.

Liza: I think we should try to define these five forms of social relations and see how the communications are extended in each one.

Peter: Well, we don't have to go over all five, but let's start with the case of "exchange."

Sara: Yes, what is an exchange?

Peter: Well, it happens when people communicate in an effort to receive a reward or a return for their actions.

John: So, in exchange, the objective is to give and get something back.

Peter: Yes, in our daily life we have a lot of exchanges in our family, with other people in the street, at work, at school, in our neighborhoods, and so on.

Liza: In each exchange we have many interactions that tend to be basic communications.

Peter: Yes, that's why we should now work on an example of situation to calculate the number of communications made between people.

Liza: What kind of situation?

Peter: Let's start with an imaginary situation where a boy of 10–11 years old who wants to persuade his father to buy him a skateboard.

John: I really had to do it when I was at that age.

Peter: First, he has to think about the suitable time and location to set off the conversation with his father on the subject.

Liza: Where and when to start talking about the case with his dad, right?

Peter: Yes, where and when his father would be in a more suitable mood to his request. Then, at this given appropriate situation, the boy starts the conversation with his daddy by an indirect subject considered as an implicit preliminary message. His father gives him the first feedback. We imagine that there are no other people around. We suppose that they have a 10- minute conversation for that purpose composed of, let's say, 60 messages. Every message is elaborated based on trying to persuade the other one about his own interest: on the one hand, the boy to obtain an agreement from the father on the skateboard's purchase, and on the other hand, the dad wants to convince his son that this isn't a good idea.

John: So, each message should be construed as a function of dissimilar purposes that each of them wants to convey.

Peter: Yes, from the first remark from the boy until the last one of the 60 exchanged messages during the conversation.

Liza: This means that each message should include into consideration the reactions of the other side.

Peter: Yes, each statement or remark by them should take into account three elements:

1) The consistent objective-searching of the discussion in perspective,

2) The inclusion of the feedback coming from the other person,

3) The ongoing detailed calculations to pursue, step by step, the final goal.

Sara: In everything they are saying to each other, they should calculate these three parameters.

Peter: Yes, and this is what they have to do as a minimum requirement. They could include other considerations that relate to the specificity of the situation. For instance, if a third person comes into the room or if the father receives a phone call, and so on.

John: So, their brains should be at the maximum of activity to do all this, right?

Peter: Yes, imagine all the micro-self-interactions that they have in their mind when they are doing so. You know the calculations to get their goal.

Liza: But this isn't the aspect that matters to us here.

Peter: Not really, it was just to make a link to our previous discussion on the density of the brain's activity.

Liza: So, how do we calculate the number of interactions they have in their communications during these 10 minutes?

Peter: In the first step the boy says the first phrase with only one of these three considerations, which here, is the objective.

John: Then the father, who is the receptor of the message, gives his boy feedback.

Peter: Yes, from that moment the boy should take into account all these three parameters we mentioned in order to adjust his messages.

Liza: So, he should analyze the feedback, right?

Peter: Yes, he should see his father's returned messages, their form, the tone, the body language, and other details.

Sara: Which means that the boy has to include this information in the building of his second phrase.

Peter: If he includes all of this info coming as feedback from his father, he only fulfills one third of the parameters. We said that he should also keep in mind the objective and the detailed construction of the step-by-step way to reach his goal as well.

Liza: And for that, he should continuously include the info of his father's successive feedbacks in his calculations.

Peter: Yes. And now, John, could we have a quantifiable idea on the number of calculations he has to do to formulate his second phrase?

John: He has three parameters to manage. One parameter has four pieces of info to include and the two other parameters will be also influenced by this info and by the first parameter.

Peter: Yes, this is the pattern that he has to follow all along the conversation.

John: Based on my calculations for his last phrase and in a conversation of 10 minutes, with 60 exchanged phrases, the boy has to take into account some 1.416 points.

Liza: You mean his last phrase should have integrated 1.416 parameters and info produced during the conversation?

John: Yes, this is a calculation based on a 'mathematic progression'.

Peter: Which is the most mechanical quantitative approach that we can have for this case.

Sara: But we know that communication is an organic process. It's alive. It's altering and evolving constantly.

John: So, in this case, we might use the 'geometric progression' for this case.

Peter: Yes, and the result will be completely different.

John makes the calculations.

John: Well, instead of 1.416 points for the last phrase, we will have 6.664 points to be integrated in the last piece of this communication.

Peter: And we can see the number of the mental calculations going high if we have more parameters, more info, more time, and more people during the interaction.

Liza: This will be huge when a group of 10 or 20 are interacting.

Sara: Yes. Therefore, if we assume 10 people communicating with each other, we will have 10 times this number, which is 66.640.

John: Not really, dear Sara! The actual number will be much higher than tenfold because the interactions will add up in a 'geometric progression' for each part.

Peter: Yes, for 10 people interacting with each other the total will be much more than 10 times the first number.

John: So with more people and more parameters added to this group we soon reach a countless situation—again.

Liza: How will the situation be for society as a whole then?

Peter: You are simply talking about billions and trillions of interactions per second inside a society with millions of population in the cities like New York or Beijing.

John: Yes, we soon get an infinite number of interactions and interconnections even with a limited number of people in communication with each other.

Peter: Now, imagine that this is only for the case of inter-individual interactions.

Sara: What about adding the institutions and the media?

Peter: There you go. Imagine the number of the reactions to a message in the railway station's speakers and the feedbacks of thousands of the passengers among them. (Figure 11)

Figure 11

John: And their reactions to a commercial billboard there.

Liza: Or to a huge screen streaming video there, sending a message in an active way through a sequence of various images.

Sara: And the people who are speaking loud on the phone.

John: And the people who are chatting there at the same time and you hear them.

Peter: And now, combine these elements of this situation and calculate the number of interactions are triggering per second, per minute, per hour, per day, per week, per month, and per year.

John: Ah Jesus! We will never have anything but the infinite number there.

Peter: So, you can see how *infinity* could be found and materialized in our social life.

Liza: Society actually includes an infinite number of social relations, uncountable social interactions, and innumerable communicational exchanges.

Peter: Indeed. We could and maybe we should keep going with other examples of infinity present in society.

Liza: Does such an infinite complexity occur only in the individual level or also in the level connections between the institutions?

Peter: Social institutions are an organized assembly of people. So, at the end of the day, these institutions are crystallized by the individual behaviors, decisions, and communications.

Liza: So. Communication between institutions are essentially through the people and their interactions.

Peter: People, yes, but also through the media, publications, news, and so on.

Sara: Ok, I think we have proof of *infinity* in social relations and society as well.

Peter: Well, lots of other examples could be developed in the frame of our discussion. But I think it's enough to see that in the family, between classmates, among teammates in sports, between colleagues and friends and in other social groups, for all of these examples we are in the case of an infinite number of interactions, reactions, communications, and interconnections. And all of this is happening, changing, and evolving in an organic, alive, and undying way.

Sara: For the next meeting I will talk about nature and its details.

They left with the idea that *infinity* is present in the social relations and communications that occur among 7.5 billion people on earth.

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Chapter 10

In the next meeting it was Sara's turn to talk about Nature.

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Peter: We checked out the presence of infinite process and components at the human level, both for the physical and psychological aspects. Then, we tried to detect infinity in society and we saw that social relationships happen in a kind of countless number of interactions and communicational details. Now, we would like to check the presence of this limitlessness of interconnections in Nature.

Sara: We all remember that we defined nature as the frame of relations between human, animals, and plants.

Liza: I think it's like an ecosystem.

Sara: Well, a very general and dictionary definition of nature is "the phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth, as opposed to humans or human creations."

Peter: So, nature includes everything we didn't create.

Sara; Yes, everything that is natural, made by the nature, and not artificial or made by man.

John: How we are looking for infinity in nature?

Sara: We could use the concept that Liza has just mentioned.

Liza: Ecosystem?

Sara: Yes, the ecosystem is a large community of living organisms (plants, animals and microbes) in a particular area. The living and physical components are linked together through nutrient cycles and energy flows.[52]

Then Sara and the rest went over a long discussion with a few examples of an ecosystem and the huge number of interaction between their elements.

(See Annex B and return back here)

The discussion arrived to a point where Liza concluded.

Liza: In other words, we find ourselves again in an immeasurable reality. The number of events that are happening everywhere in nature as a set of interrelated ecosystems goes rapidly beyond any possible calculations. It never stops.

Sara: Then we have our *infinity*.

Peter: Yes, we could say that.

Liza: What to do now?

Peter: Now that we have our proof of the presence of the *infinity* in Nature, we could move on to another level.

Liza: The next one is the World.

Peter: Yes, we will take care of that at the next session.

But before leaving Liza was thinking about a methodological point: *If we have the proof of infinity for the smallest part of a whole, we should be able to extend that to the whole itself as well. If so, why does Peter want them to go over all the levels?* This was a question that she put to Peter.

Peter: This is a very good question Liza.

Liza: Yes, thank you.

Peter: So, you are asking if there is endlessness in a subdivision, why the upper layers of this division should not be presupposed as granted for infinity. Am I right, Liza?

Liza: Yes, this is the substance of my question.

Peter: Well, the first reason has to do with methodological constancy. When you start to apply a method to a set of objects you should keep applying the same method for all the members of that set without exception to assure the consistency of what you are doing.

Liza: You mean you should not change the method halfway.

Peter: Yes, it's even said that if you discover that your method has a few deficiencies, it would be better to go with the same deficient method till the end, instead of correcting and changing it halfway.

Liza: But for our case it was not a question of changing the method, was it?

Peter: Well, somehow it was. Because our method was to find the objective circumstances and facts in each level and look for the number of components and the complexity of interactions among those facts until we are objectively persuaded that there are infinite number of interactions between the components that constitute the phenomenon.

Liza: And we did it.

Peter: Yes, and we did it for all the levels we studied so far. But according to your argument, once we did it at the level of the human being, we should have concluded and supposed that the same thing is going on at the level of society without having to go through the examination of our hypothesis at the level of society.

Liza: But we know that society is made of people, and if man represents infinity, then society should represent it too.

Peter: The first part of your argument, about man, is correct, but your second part, what you said about society, is just an assumption.

Sara: It would have been a mere supposition.

Peter: Yes, we can't act objectively for one part of our study and simply subjectively for the other part.

Sara: Because in our scheme all the levels have an even value.

Peter: Correct. We name them as "categories" and we should respect each of them as such and check all of them out in a similar manner. I'm referring to the objects and facts at each level and to see if the components and interactions go toward a countless number or not. For all the levels we do the same thing, the same method, and the same approach. We want to know the quantity of components and to which extent they are interrelated. Nowhere do we prefer our supposition, our guesstimates.

Liza: Yes, therefore we keep to a methodological consistency.

Peter: Indeed. We did it to ensure that the foundation of our worldview is solid and serious.

Persuaded that they are methodologically on the right path in their task of building up a worldview, they left until the next meeting.

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Chapter 11

The next meeting began with asking if they could find a trace of infinity in what they had defined as the World.

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Peter: Do you remember how we defined the world?

Liza: We called it the part of the universe that is accessible to the man.

Peter: Yes. It includes earth and anywhere else that we could have access to.

Liza: What could be an example to study for this level? The level of the world?

Peter: We extract fossil fuels and minerals, we use nature and the human community and electricity and technology to make the missiles and spaceships that we send into space in order to discover life and get knowledge.

John: All these operations involve millions of interactions that are bound together to make such an undertaking possible.

Peter: Yes, an example is radio telescopes. These are complex and high-technology systems that we make to capture the sound of other planets or stars or to observe space.

John: We can also talk about the satellites that we put in orbit. Recently, one satellite was sent to observe the sun's poles by putting itself in its orbit.

Peter: Indeed, this is also kind of space telescope.

Liza: What is this?

John: Well, a space telescope or space observatory is an instrument located in outer space to observe distant planets, stars, galaxies, and other astronomical objects.[53]

Liza: How it can help us to check the *infinity* at the level of the World?

Peter: These devices are an intermediary object between earth and space or outer space. They are placed at the orbit of our planet or other planets and observe space.

John: Yes. These are the complex mechanical systems that capture images and other forms of information from space and transfer them back to earth.

Peter: Any change in light, motion, density, length, color, and sound wave that is done in their observatory field is captured as data and then analyzed. This becomes a permanent capture of any change of these elements.

Peter: This is a huge process with a lot of interactions since most of these telescopes are able to readjust their focus with any change.

John: The biggest and the most complex telescope right now[54]will be James Webb Space Telescope. It's planned to launch in 2021. Webb will live 1.5 million kilometers away at a point known as "L2.[55]

Sara: Where is it, L2?

And then they went on a long discussion on how this space telescope represents an infinite number of interaction between in the one hand, the man-made telescope and on the other hand, the space elements' variations.

(See Annex C and return here)

The exchange between the telescope's sensitive elements and all the information it will be capturing reveals a rapidly an unlimited number. They could find that the number of this part of their categories is also leaning toward an infinite number.

Liza: I think we are done with the World.

Peter: Yes, we could detect there also the immensity of the interactions between the parameters that happen in the world.

John: And by world we mean the part of the universe that is accessible by our means and devices and technology.

Peter: Yes, for instance the L2 point we studied is a point where the man gets and installs its Webb telescope.

Sara: Now we have just two more levels remained: the Universe and Existence to check if the *infinity* is present there too.

Peter: Right. At the next session we will study *infinity* in the Universe.

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Chapter 12

When the next meeting started, they were all excited because they had reached a major level where it was a question that concerned everything: the Universe.

Peter: We already defined the universe as the entirety of material things that exist.

Liza: And now we want to know if there is an infinity involved with this realization.

John: We have lots of literature on it.

Sara: The first thing to know when talking about the infinite universe is that we are alluding as well to the dimensions of space and to the infinity of the number of elements and interactions within the universe.

Peter: Excellent remark. Because until now we stayed in the frame of the second approach you pointed to.

John: You mean the number of elements and interactions?

Peter: Yes, of course we could imagine that if proved, this kind of infinity, the endless expansion, could also be a normal and logical consequence of what will then happen.

Liza: But I think you said the methodological consistency requests that we keep our approach alike for all the levels.

Peter: Indeed. That's why I suggest that at any level we limit ourselves to looking into the connections between the elements.

Sara: Some of the components of the universe are galaxies, stars, and planets. Why not start with that?

Peter: Yes, we could; these are actually the components of the universe.

John: Let's start with the galaxies. We know that according to the best estimates of astronomers there are at least one hundred billion galaxies in the observable universe.[56]

Liza: Amazing number.

Peter: We should know that the way they calculate it is they've counted the galaxies in a particular region, and multiplied this up to estimate the number for the whole universe.[57]

Sara: So this number is related to the idea that we know the size of the universe.

Peter: Well, this means that we have just an idea or, should I say, an estimation of the size of universe. But, if there is new evidence, beyond the current estimation, then we should increase this scope and consequently the number of galaxies.

John: Also, we should know that we're talking about an idea of the size of the universe and, based on the galaxies, the visible part of the universe. But we should know that some discussions are about more than just galaxies.

Liza: How so?

John: Something called the 'dark matter'.

Sara: What do we know about this?

John: Dark matter is a form of matter thought to account for approximately 85% of the matter in the universe and about a quarter of its total energy density.[58]

Liza: You said that this is thought. Does it mean that we don't have proof of its existence yet?

John: You know, the majority of dark matter is thought to be non-baryonic[vii] in nature, which means something substantially different of the matter we know, something possibly being composed of some as-yet undiscovered subatomic particles.[59]

Liza: We need something that is observable for confirming presence of infinity in the universe. Here you are talking about 'undiscovered' things.

Peter: Liza is right. Let's go back to what we could observe more or less, the galaxies.

Sara: We said that we could have 100 billion of them.

John: Yes, this is an estimation.

Peter: We should not be very rigid on the number. Recently the scientific announced that while estimates among different experts vary, an acceptable range is between 100 billion and 200 billion galaxies.[60] But all of these numbers are still conditioned by tools,

[vii] Baryonic Matter. By definition, baryonic matter should only include matter composed of baryons. In other words, it should include protons, neutrons, and all the objects composed of them (i.e., atomic nuclei) but exclude things such as electrons and neutrinos, which are actually leptons.

concepts, and theories that we use to make our guesstimate. And this will change with time, for sure.

Liza: Now, 100 or 200 billion galaxies. And what about stars?

John: Well, you will be impressed about the density of the universe when I'm going to tell you the number of the average of stars per galaxy: 100 billion stars.

Liza: You're kidding.

John: No, to get an idea on the number of the stars in the universe you should think about 100 to 200 billion galaxies multiplied by 100 billion stars per each.

Liza: How much that will be?

John: Well, let's focus for a moment just on the observable universe. There are about 10 billion galaxies in the observable universe! The number of stars in a galaxy varies, but as I said, assuming an average of 100 billion stars per galaxy means that there are about 1,000,000,000,000,000,000,000 (that's 1 billion trillion) stars in the observable universe![61]

Sara: Huge number.

Liza: And how much of the universe can we observe?

John: Well, all the stars, planets and galaxies that can be seen today make up just 4 percent of the universe. The other 96 percent is made of stuff astronomers can't see, detect, or even comprehend [62] for now.

Peter: Yes, just for now. Back to the stars. There would be one billion trillion stars. But let's see what the structure of a star is.

John: We don't know that much. We can take as the case study just the nearest star to us, the sun.

Liza: What is the sun composed of?

John: Well. There are layers of the sun:

- the solar interior composed of the core (which occupies the innermost quarter or so of the sun's radius);
- the radioactive zone;
- and the convective zone;
- then there is the visible surface known as the photosphere;
- the chromosphere; and
- finally, the outermost layer, the corona.

Sara: Here you can see this structure: (Figure 12)

Peter: What are the interactions of these layers?

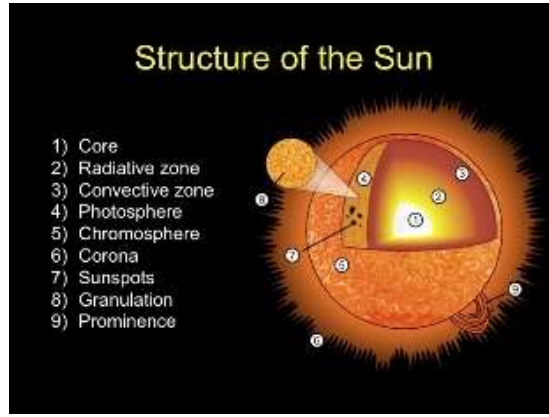

Figure 12

John: Well, the energy from the sun—both heat and light energy—originates from a nuclear fusion process that is occurring inside the core of the sun. The specific type of fusion that occurs inside of the sun is known as proton-proton fusion.[63]

Liza: A complex process with many actions and reactions, right?

John: Yes, the proton-proton fusion is a several-steps process that goes on permanently until a star dies and goes extinct. During some millions to some billion years this fusion process is going on depending on the star.

Liza: And beside the stars, how many planets do we have with all these stars?

John: Oh my dear! Let's for a moment forget about the other galaxies. If we take only the one in which the sun is, in only one galaxy, you could have an idea about the whole thing.

Liza: How many?

John: Well, in terms of the number of solar systems present in the universe, there are something like 300 billion stars in the Milky Way, so if 10 per cent of them have planets, there are around 30 billion planets in our galaxy alone.[64]

- Interactions between the components of a planet
- Interactions between the planets of a solar system
- Interactions between the star and its planets
- Interactions between the stars of galaxy
- Interactions between the galaxies
- Interaction between the clusters that are set of galaxies
- Interactions between the clusters
- And it keeps going

Liza: And earth would be one of these 30 billion of planets?

John: Yes. You could imagine that when we said there would be one billion trillion stars how many planets that would amount to.

Peter: And also, we should know that there are eight planets in the solar system. And some of them, like earth, have their own moons.

Liza: The universe is huge.

Peter: The universe starts to give us an idea about the immensity of its components and its interactions when we imagine that all the complexity we see on earth likely exists, in one way or in another, on other planets and their interrelations with other plants, with their stars, then between the stars with each other, then between the galaxies and so on.

John: There wouldn't be any number that could represent the quantity of all these interactions but an infinite number.

Peter: The most impressive thing is that any number you get change immediately since these interactions are bringing about the permanent fluctuations at each of one billionth of second across the universe with newborn galaxies, stars, and planets.

When they arrive at this stage of discussion they were all persuaded that *infinity* is for certain at the level of the Universe.

Liza: The next session could be dedicated to the last level of our study: Existence.

Peter: Yes, at the next meeting we will talk about Existence and the notion of *infinity* there.

*

Chapter 13

The next session began. Everybody was excited. Liza, Sara, and John didn't have a clear idea on what could be the study of *infinity* when it came to Existence.

*

Liza: I think we will have trouble now to do the same thing we did for other categories when talking about the existence, a pure conceptual category. Could we have some objective or material cases and facts to check the presence of existence?

Peter: You are right to be apprehensive about this. This won't be as easy as it was for other levels.

John: Why so? We considered Existence as one of the categories of our scheme.

Peter: We did. Nonetheless, for the all other categories we studied in our scheme, we have had material reality at hand, but existence is more a conceptual reality than a plain material fact.

Liza: What is the difference?

Peter: When we talk about 'conceptual reality' we refer to something that exists subjectively and objectively at the same time.

Liza: Like what?

Peter: Like the concept of existence. We know that existence is materially everything yet at the same time we can't show something as existence itself.

Sara: But existence exists.

Peter: Yes, everything is the materialization of this concept but the concept itself is not materialized.

Liza: So, a conceptual reality is a combination of the subjective and objective aspects of reality unified in one concept.

Peter: Yes, it's a concept through which the things could be realized but the concept cannot be comprehended without its subjective dimension.

John: So, if we consider existence as a 'conceptual reality' we can explain the material realities within, but we wouldn't be able find a specific material actuality to explain the concept.

Peter: Yes, existence is everything but nothing is existence.

Sara: Now, could we apply Liza's suggestion and conclude that because we found *infinity* in all the materializations of Existence, including in Man, Society, Nature, the World and the Universe, consequently we could say Existence is infinite too, as an all-comprehensive conceptual reality?

Peter: Well, not actually.

Liza: What do you mean?

Peter: I mean that we now have to examine *infinity* as a concept to make sure it has the same characteristics as existence.

Liza: Explain please.

Peter: When we were studying the presence of infinity in material realities such as man's physiology, social group, ecosystem, atmosphere, gravity, and galaxies, we found signs of

countless material components and innumerable interactions happening. It's true that we summarized and represented all these numbers in the concept of *infinity*, but the quantities we linked to this concept were of a material reality.

John: Yes, indeed.

Peter: Now we have existence as a concept, as a conceptual reality. So we should also treat infinity within a frame of conceptual reality.

John: What will this examination point to?

Peter: Well, let's first define *infinity*, itself.

Liza: What would be definition of infinity?

John: Oh, I know that when we say in calculus that something is infinite, we simply mean that there is no limit to its values.

Peter: Yes, and this is the quantitative dimension that we took as the actual presence of infinity in the entire phenomenon we studied.

Sara: But, is this the definition that we are going to keep for our study of Existence?

Peter: Let me tell you that so far we haven't actually discovered something new in our study and discussion. We should know that the first published proposal that the universe is infinite came from Thomas Digges[65] in 1576.[66]

Liza: Woo! Almost 450 years ago!

Peter: Yes, eight years later, in 1584, the Italian philosopher and astronomer Giordano Bruno proposed an unbounded universe in *On the Infinite Universe and Worlds.* He said: "Innumerable suns exist;

innumerable earths revolve around these suns in a manner similar to the way the seven planets revolve around our sun. Living beings inhabit these worlds."[67]

John: He already knew what we saw in our study.

Peter: Yes, but I didn't want to go so fast in our undertaking. We want to elaborate a worldview and we need a solid foundation that is built by our own work, by our own understanding and especially, by our own research. Otherwise, there are lots of things that we could duplicate. But it's too easy and we don't realize them, we don't internalize them and in a word, we can't apply them later or formulate them as a personal worldview.

Liza: This is true. We need to discover some points by ourselves if we're to aim at a specific purpose for them.

Peter: Yes, we want to build up this worldview with a precise function. Without an active and conscious attempt to be clear about this you can't expect this function to be assured.

Sara: Back to infinity. How we could define that in the frame of the Existence study?

Peter: *Infinity* has lots of definitions and interpretations. We should then extract the one that springs from our own study.

Liza: You mean from the cases we reviewed alongside?

Peter: Naturally, let's see first what could be the main features of the cases of infinities we saw in the levels of Man, Society, Nature, the world and the Universe.

Sara: I think the first feature was that we met a countless number of interactions.

Peter: Correct. So, infinity embraces countless aspects.

John: The number of interactions goes up either by 'mathematic progression' or 'geometric progression'.

Peter: Yes, infinity includes a progressive number of interactions with an increasing ratio.

Liza: The follow-up of interactions involves more and more components either toward inside or outside.

Peter: Correct. Infinity could go in any direction: macro-level or micro-level.

Sara: We found until now three features.

Peter: Yes, let's pool them to see what definition takes shape for the infinity.

Liza: Let's do that. That will be our first definition of infinity as a conceptual reality related to existence.

Peter: Based on what we said, *infinity* is a countless increasing number of components and interactions in micro and macro levels.

John: It sounds good.

Liza: Is it the definition that we will use?

Peter: We could rephrase it later as we progress with our discussion, but we should keep in our mind that a definition of infinity isn't something immovable or common.

Liza: Actually, we can say that there would be infinite number of infinity's definitions.

Peter: Yes, could be. The reason for that is we discover and learn every single day, and as long as mankind exists, this effort keeps going and all the definitions evolve.

Sara: So we embrace this definition for our purpose of studying Existence.

Peter: Yes, we consider *infinity* as a progressive number of components and interactions in all directions.

John: Our approach here is very mathematical. More precisely I would say it is calculus.

Peter: Yes, methodological consistency requests that we don't change the basis of our approach halfway.

Liza: So our approach with regard to infinity was quantitative and we then stay there.

Peter: For now. But we will see what else we can bring out or reveal with this quantitative approach.

Sara: Do you mean like the qualitative features?

Peter: Let's see. You know that with a research-like approach, you shouldn't decide on the output before arriving there.

Sara: Correct.

Peter: Let's see if there is any chance that these infinite things that we discovered at each level could be somehow interconnected.

Liza: You mean that what we saw at a human level could be tied to what we detected at a social level, and this one linked to the natural level, and this latter one to a worldwide level, and finally this one with the universe level?

Peter: Yes, this is what I mean.

Sara: How we could know that?

Peter: Back to the facts. We saw how our body and our brain include innumerable interactions.

Liza: Yes.

Peter: The result of this comes up as our physical and mental activity, placed in the society as one of its members.

Sara: Correct.

Peter: So, these human interactions are shaping the social exchanges.

John: For sure.

Peter: By our social exchanges we affect our environment, ecosystem, animals, and plants.

Liza: Yes, either positively or negatively society affects nature.

Peter: Which can determine the future of earth.

Sara: Sure, the fact that there might not be any life on earth or the reverse—life continues to evolve—depends on what we do, right?

Peter: Yes, for instance, we make the ozone hole bigger than what it is with more dioxide carbon emissions. Then the sun, as a star, will be a killing force and nothing could survive on this planet.

Sara: So, we are until now seeing the interaction between man, society, nature, and the world connected to one of the elements of the universe.

Liza: You mean connected to the sun as a star of the Milky Way and this one itself in relation to other parts of the whole universe.

Peter: Exactly. Or to take a different direction, imagine that something in space causes an explosion in the sun and this one could burn any track of life on the earth.

John: So the interactions could be in both directions.

Peter: Yes, we could see that there is reciprocal interaction between the infinite processes that are going on between all these levels.

Liza: As a matter of fact, it's like we have a big infinity that embraces all these infinities we detected.

Peter: Actually, infinity has this meaning in itself. There wouldn't be any boundary, any limitation, or any specific direction or level for infinity.

John: The concept goes on, endlessly and without any specific path.

Peter: So, *infinity* could be defined as directionless and endless interactions between phenomena.

Liza: Does it include interacting between all phenomena?

Peter: Well, each phenomenon is related directly to some other phenomena.

Liza: But if we keep going with this chain of relations, could we arrive to the relatedness of anything?

Peter: Well, this would be a supposition. However, as we unable to factually check it, we should consider this only theoretically.

Liza: But the whole relatedness could be perceived as a conceptual reality.

Peter: It could be. We can imagine that any chain of cause and effect is linked to another chain of events and this continues to spreads itself…

John: … forever.

Peter: Yes. This is possible but it needs to be checked as well. Some call it the 'universal solidarity'. This is the interconnectedness between everything in the universe.

Liza: But we could never check this extension of infinity materially.

Peter: Yes, and because of that we should see this relatedness just as a concept, a conceptual possibility.

John: The fact is that this chain of relatedness isn't something verifiable.

Liza: How so?

John: Because some billions of new causative chains will be created at any instant and this would happen at and for all levels and endlessly.

Liza: So, we could just have a conceptual idea of relatedness.

Peter: Yes, and we could integrate it in our definition with the precaution that one part of the definition is conceptual reality and the other part is more conceptual or purely so.

John: But it's not detached from the conceptual reality of Existence.

Peter: Correct. Let's define *infinity* now as the relatedness of the endless and directionless interactions between phenomena.

Liza: In other words, we can see infinity everywhere all the time.

Peter: Well, these two last words bring the idea of space and time in the definition of infinity.

Sara: Does it mean that infinity is being run in all places and all times?

Peter: Well, both of them are relative. We define space as the boundless three-dimensional extent in which objects and events have relative position and direction.[68]

John: You said boundless, right?

Peter: Yes, space is theoretically unlimited. Otherwise we are talking about a precise space, which is a 'location' with position and direction.

John: So, could we integrate the boundlessness in infinity's definition?

Peter: Sure, but it is already there. We said that there is no direction and there is no limit, avoiding the two characteristics of a precise location.

John: So, infinity is spaceless.

Peter: If we mean boundless, yes.

Liza: What about time? Is infinity timeless as well?

Peter: Well, we know physicists define time as the progression of events from the past to the present into the future. Basically, if a system is unchanging, it is timeless.[69]

Sara: But infinity includes exchanges, which mean lots of alterations of events at any instant.

Peter: Correct, that's why we can't consider infinity as timeless in the same way metaphysicians could conceive it.

John: But on the other hand, the division of time in the past, present, and future can't be very practical for infinity, as we define that as an endless continuing process.

Peter: You are right. Innumerable interactions that infinity embraces are so intertwined that past, present, and future are completely tangled and mixed and can't be mechanically separated at all.

Liza: So, no time in infinity.

Peter: Not really. In our understanding of infinity, time, neither in its three steps definition, nor in its continual approach, could make any sense.

Liza: So, we could consider it as timeless.

Peter: In this sense and in the frame of our approach, yes. We could.

John: Now, how can we integrate this absence of space and time in our definition?

Peter: Well, *infinity* is the never-ending interconnectedness of phenomena.

Liza: Beautiful. The everlasting connections of the whole universe.

Peter: And this is something happening at all the levels we discussed, that at any time we could imagine such connections and it never ends.

Sara: It's clear.

Peter: Really? Maybe you didn't notice that I've just made our definition more precise.

Sara: How so?

Peter: We should be able to imagine *infinity* 1) at any level, 2) between the levels and 3) as a whole.

Liza: What do you mean exactly?

Peter: I mean that this never-ending interconnectedness is occurring either when we are studying the structure of a little thing, or the connections between several things, or between all the things.

John: What you are saying here is huge. Let's be clear.

Peter: Sure.

John: You are telling us that this definition of *infinity*, what was it, the never-ending interconnectedness of phenomena. It's not only valid for macrocosms but…

Peter: …also for microcosms. Yes, exactly.

Liza: Wonderful! How it could be so?

Peter: The most important thing is to consider that *infinity* is everywhere, including in itself.

Sara: What do you mean by "in itself"?

Peter: It means this connectedness is directionless. It goes in all directions, macro or micro. We can say inside any case of infinity the continuous infinite connections and process are running.

Liza: So, somehow we can say that there are infinities. Right?

Peter: Yes, this approach of the plural infinities looks more realistic.

John: With the same definition for all?

Peter: The never-ending interconnectedness, of course, in all places.

Sara: But wait, please. Let me ask for a clarification. Are we talking about the presence of infinities in anything?

Peter: Here you are, and also we should take into consideration the connections between everything.

John: Interrelated infinities.

Peter: Sure. If we take a closer look, what we have at every level, and then at all the levels together, is just all the infinities in interaction to each other.

Liza: You mean infinite processes are running in all things?

Peter: I mean they are the things themselves.

Silence for a moment. And then:

John: Let me understand this. You are telling me that a thing equals infinity.

Peter: I'm telling that things are infinities, yes.

Liza: Or, the infinities are the things.

Peter: Each formulation represents just a different angle of the same assertion.

Liza: Do you mean infinities and things are the same?

Peter: Naturally, if we think of the substance of process and not the form or the structures, you don't have anything but ongoing infinities, running at all levels, at the micro and macro levels. The infinite constant process that exists between them is the only genuine reality that doesn't need an external observer to exist.[70] This is true even at the quantum level where they state that the existence of the observer could change the path of a moving object or their presence or their behavior.

John: So, what we call matter is not actually a substance, it's an ongoing process of infinities interacting with each other at different related levels to create a structure with its components.

Peter: Yes. Every matter is just a bunch of infinite process of changes and interactions that bring about what our perception considers as structures and then the structures interact with each other and they keep going. What happens in fact is an interchange between the infinities.

Sara: Very interesting. It's akin to our bodies existing as we are now at this moment from the time when each of us was a fetus.

Peter: Yes, or when we have an idea about something, this idea changes a bit all the time and is being transformed in some new idea without our conscious realization. The changing process is constant and ceaseless.

Liza: And these permanent changes are happening in us as human beings, in our society, in the nature, in the world and in the universe.

Peter: Certainly, these infinite processes of interactions, interconnections, and changes are running without stop, everywhere and for everything.

John: And this setting is existence.

Peter: Yes, because the concept of Existence can't be limited by any outward expression. Existence goes far beyond what we could conceive with our deficient senses. It represents a pure reality that is free of any intelligent being's perception. Existence is conditioned by nothing. Any effort to bring the concept of existence under the yoke of a condition will be nothing more than a useless attempt to reduce and weaken the vastness that is expressed by its ongoing infinities.

Liza: You mean that *infinity* could be closer to what the notion of Existence represents than to what we can see and attribute to it.

Peter: Correct. *Infinity* assures the reality of Existence. However, infinity isn't an invention of anyone but could be, at best, just a discovery of man.

Liza: You mean the *infinity* is not an artificial concept.

Peter: Not really. It's something we can observe and formulate. Let's put it this way: If other extraterrestrial intelligent beings perceive these processes and formulate it in their own way, the

perception and language or formulation would be different with ours, but the major common points would remain.

Liza: Interesting futurological guesstimate!

Peter: Indeed. And I suggest that this assumption is one of the reasons we haven't met other extraterrestrials because of the way they perceive the universe. Their discernment could be shaped so differently that they might not be able to communicate with us. I mean they wouldn't have the appropriate tools to do so. And this would be regretful situation since I think the substance of this perception would be highly similar between them and us. If we could formulate our insight of *infinity* and find a convenient way to communicate it with them, this might become the first central basis of a common understanding of the surrounding universe and trigger a possible constructive exchange of messages between us. A first but promising beginning.

For some moments they were thinking about the hypothetical suggestion of Peter according to which the aliens could be at hand if we could readjust our perception of the universe based on the universality of the concept of *infinity* as defined.

Liza: Now, back to the earth! How are we going to use this approach of *infiniteness* for our mission, which is to construct a functional worldview?

Peter: This is what we will discuss at the next meeting. Now, let me just conclude our discussion on the level of Existence.

Sara: Go ahead, darling!

Peter: We wanted to know what could be the study of the presence of *infinity* on the level of Existence. We identified this level as a conceptual reality.

Liza: Our definition of infinity had to be seen also as such, the same kind: a conceptual reality.

Peter: Yes, that's why we defined it eventually as the never-ending connectedness of phenomena.

Liza: And then we saw that such a process is everywhere.

Peter: Yes, everywhere. That's why we thought that what could be more realistic is infinities and not infinity.

Sara: Infinities are the reality and infinity is the concept.

Liza: Or more precisely, *infinity* is the conceptual reality of infinities.

Peter: Yes, and because what is going on everywhere is the infinite process of interactions and changes, we concluded that what exists ultimately is not anything but the infinite process of changes.

John: And we said that matters are not anything but these ongoing processes of changes and interactions.

Peter: Yes, the Existence is these infinities in action.

Liza: The Existence is the actual related infinities.

Peter: Yes. In the next meeting we will see how such a view on the concept of *infinity* can lead to a way to build up a worldview—because we have now our foundation.

They left thinking about what the first step of this worldview's building will be. *

Chapter 14

The next meeting begins with this question:

How do we use this view on infinity as the basis for constructing a worldview?

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Liza: We should remember what a worldview was and what we want to do with it.

Sara: Its function.

Peter: Remember, a worldview is about how we apprehend the world, how we connect with it, and based on this view, what kind of relationships we work out with ourselves, other people, society, nature, the world, and the universe.

Liza: The worldview should help us to connect with all these levels in such a way that we could have a better life.

Peter: This is our theory. We would like to know that, once we have designed this worldview, it could help us to have less explicit and implicit suicidal trends in our behaviors.

Sara: Yes, that's the objective: to see if our worldview could reduce the destructive propensity in us.

John: Now, how do we go about implementing our interpretation of *infinity* in the construction of this worldview?

Peter: The notion of infinity, as we developed it, tells us that we should see the world as a constantly changing reality.

Liza: Yes. Nothing immovable or frozen but just in appearance.

Peter: Indeed, every feeling of stability and stagnation comes from our human perception of time and its specificity.

Sara: You mean because we don't see the changes as they happen.

Peter: Most of them. We only realize the change once the manifestation of the change is perceptible by our senses.

Liza: We cannot see lots of these changes when they happen at the macro or micro level.

Peter: Right, either they are happening at a too big level, or too small level; either its velocity is too fast or too slow to be perceptible to us.

John: And then we miss them.

Peter: Yes, and because of that, we have an essentially deformed stable image of the reality.

Liza: A slow and longish picture of an all-the-time-changing reality. And anyway a deficient view.

Peter: Absolutely. But the important point is that historically we established our relationships with the world based on this so-called denatured image. All our decisions, behaviors, and attitudes are grounded on this sluggish and artificial perception, compared to the naturally, all-the-time moving and changing pace of the reality.

Liza: And this discrepancy isn't nothing.

Peter: Not only that, it deprives us from a rich reality we are missing. This discrepancy gives us a stagnated and fake image of the reality that is full of resources that we don't see.

Sara: So why did we adopt such a disadvantageous view of our life or our history?

Peter: Because of the difficulty of apprehending the complexity of all the interacting changes around us. Beyond our historic insufficient knowledge, we are the beings eager to save energy and stay comfortable with our habits and clichés since we don't have to think when we are routinely using internalized patterns. This physiologically generated laziness nurtured our comfortable ignorance.

Liza: What ignorance?

Peter: The one that includes the fact that the reality we see, as so-called stable, is actually constantly altering.

Liza: So, we have to take knowledge of the shifting character of reality.

Peter: Not only that, but we must also be ready to intervene when it's possible.

Liza: You mean we should be aware of intervening to channel these ongoing changes toward our favorite point.

Peter: Yes, when and where it would be possible.

John: But in order to interfere in this process, we should first avoid being prisoner of this distorted view of the reality.

Peter: Indeed.

John: Do we have any solution for that?

Peter: Yes, we have, but in order to appreciate it and then get seriously involved in its application, I would first like to go through a balance sheet where we can see the damages of an obtuse view on the world and then we can return to our remedy for that, if any.

John: Very well. Let's do that.

Liza: What cases will we review to see how our indolent image of the world is detrimental to us?

Peter: We could see it in the different levels. Once again, we could follow our scheme and see how at each level our "frozen vision" on each one is harmful to us either individually or collectively.

Sara: You mean we could start with the human physiology?

Peter: Yes, you know, for instance, that there is a myth that says if we consume more protein and vitamins we will be healthier.

Liza: Yes, some think so and that's why they take so much without really knowing if they are helping their body or not.

Sara: And this, when we know that a number of research studies suggest that supplements aren't always beneficial. Taking certain vitamin and mineral supplements may even do more harm than good.[71]

John: How do they harm us?

Sara: Well, for example iron supplements could be a cause for a higher risk of death. Vitamin E supplements may increase the risk of heart failure. Too much vitamin A may be bad for your bones.[72]

Liza: So, people are harming themselves by taking these supplements.

Sara: In some cases yes, or should I say, in many cases. They could find everything they want with a good diet, but they prefer to eat poorly for pleasure and then recompense their wrong diet by these useless and even harmful supplements. They don't know or don't want to know that nutrient-rich whole foods—such as fruits, vegetables, and whole grains—provide many benefits over dietary supplements.[73]

Peter: You see! They do so because they don't have an idea of the innumerable possibilities they can find with natural foods and whole foods to let them work on our bodies. They go around holding to a man-made belief in an insufficient intake of vitamins.

John: You mean because of an unrealistic view of their bodies they pursue an endless number of supposedly better possibilities to stay healthier.

Peter: Yes, they stay in a narrow vision of possibilities, which is moreover highly influenced by the industry's advertising of an almost 200 billion dollars.

Liza: So, they're victim of this industry's propaganda.

Peter: Not only that, they're also the victim of their maintained ignorance about many better and healthier ways to consume these vitamins.

Sara: But the greedy dietary supplements market must exist for something anyway.

Peter: For sure, but what is dramatic is that even the industry itself is prisoner of its hidebound and narrow view.

Liza: How come?

Peter: They want to make money but choose to do so by a way that is not rational or ethical: providing supplements that aren't as beneficial as people make them out to be. On the other hand, they could have the same profit with a business that provided whole foods thereby leading to a situation where money is made in a more ethical fashion.

John: And you say they do so because they don't know that there would be better ways to make profits.

Peter: Not exactly. They know of other ways but they choose the easiest way because it's the one that produces the quickest profit. The internalization that there is always only a few solutions or even only one solution for an issue dominates their mindset.

Sara: Then they are not able to see the numerous other solutions there.

Peter. Exactly. Moreover, because they don't have this vision of connectedness that could show them they are harming not only their consumers' health but also the environment and society at large, they keep hurting everyone just to make more money.

Sara: At this regard I can mention that U.S. health officials have issued more than 700 warnings during the last decade about the sale of dietary supplements that contain unapproved and potentially dangerous drug ingredients.[74]

Liza: Oh my god!

Sara: Yes, in nearly all cases, 98 percent, the presence of such ingredients was not noted anywhere on the supplement's labeling.[75]

Liza: It's harming public health.

Peter: And this, while our view on infinity teaches us that to make money they don't need to put people's well-being at risk because there are safer and better ways to make a greater profit.

Sara: Let me talk about an example of a lack of view when you miss the idea of connectedness in your calculations.

Peter: Go ahead, honey.

Sara: The fish oil market is a billion dollars industry that continues to expand.[76] Around 19 million, 8% of the total population, adult Americans, lured by the health benefits, take omega-3 supplements in the form of fish oil. It's far and away the most commonly consumed supplement in the country.[77]

Liza: It's a huge business.

Sara: Yes. Fish oil supplements are produced by treating and processing mass-caught fish in order to extract the oil that fills the soft gels you can buy at a drugstore.[78]

John: OK. We follow you.

Sara: The problem is that in order this industry could provide these billions of pills, it should fish a lot. The fish that become fish oil are the bottom-of-the-food-chain dwellers menhaden.

Liza: What kind of fish it is?

Sara: Ah, they are a large deep-bodied fish of the herring family that occurs along the east coast of North America. The oil-rich flesh is used to make fish meal and fertilizer.[79] These menhaden fishes are so crucial for the ecosystem.

Liza: How so?

Sara: You know, menhaden are omnivorous filter feeders, feeding by straining plankton and algae from water. Along with oysters, which filters water on the seabed, menhaden play a key role in the food chain in estuaries and bays.[80]

John: So they are necessary to the survival of food chains in the ecosystem.

Sara: Absolutely, and I have to add that nearly every fish a fish eater likes to eat eats menhaden, like Bluefin tuna, striped bass, redfish, and bluefish are just a few of the diners at the menhaden buffet. All of these fish are high in omega-3 fatty acids but are unable themselves to synthesize them. The omega-3s they have come from menhaden. As more of these fish disappear into soft gels, the nutritional supply of more consumer-friendly fish has become threatened.[81]

Liza: So we are harming the food chain of their aquatic ecosystem.

John: Once again, a lack of the view on the connectedness is pushing them near this destructive activity in the seas and beyond.

Peter: Which is by extension a kind of collective suicidal attitude. Because once the balance of the global ecosystem is at risk,

everybody will be affected including those who are making money by this industry.

Liza: So, our analytical model based on *infinity* as an endless relatedness is well answered in this case.

Peter: Yes. Now, let's work on the case of mental issues.

John: You mean a demonstration of lack of an infinity-oriented grasp on the psychological case.

Peter: Yes. I would like to consider the case of pornography.

Liza: This is a huge industry.

Peter: Yes, it is. According to various reports, currently, the porn industry's net worth is about $97 billion. This money is enough to feed at least 4.8 billion people a day.[82] This is an industry that did not exist 100 years ago. The question is what happened so suddenly to society to become so eager for sex and porn? Isn't it one of these superfluous consuming needs fabricated by market to make profits? Is it harmful to the foundation of society and civilization?

John: Beyond any ethical remark, we could answer these questions by studying concrete cases. For instance, Pornhub, one of the industry's biggest providers, claims their site streamed 75 GB of data a second in 2018.[83]

Sara: It's a lot of servers and computers working permanently. Isn't it?

John: Let me tell you. In general we know that the entire information technology (IT) sector—from powering internet servers

to charging smartphones—is already estimated to have the same carbon footprint as the aviation industry's fuel emissions.[84]

Liza: And video streaming is one of them.

John: Of course. In fact streaming video accounts for the biggest chunk of the world's internet traffic.[85]

Sara: Really?

John: Yes, watching video over the internet at home is roughly the same as having two or three old-fashioned incandescent light bulbs on.

Peter: We are talking about energy consuming, heating the planet, destroying the climate balance, and causing global warming.

John: Yes, the power used by these devices is the energy consumed by the networks that distribute the content.[86]

Sara: They need lots of energy.

John: Yes, the data centers are estimated to currently consume at least one percent of the world's electricity every year, a figure that is expected to rise in the future.[87]

Sara: By how much?

John: Data centers are going to consume three times as much energy in next decade.[88] Already, data centers have mushroomed from virtually nothing 10 years ago to consuming about three per cent of the global electricity supply and accounting for about two per cent of total greenhouse gas emissions.[89]

Peter: Let's go back to the porn industry. The pollution due to the servers working for streaming porn videos is just one aspect of this new activity adding a new burden on the environment.

John: Yes, we said about the network called Pornhub. We should know that visits to Pornhub totaled 33.5 billion over the course of 2018, an increase of five billion visits over 2017. In 2019 the website reached 42 billion visits, which is 8.5 billion more than the previous year.[90]

Liza: How many daily visitors does that represent?

John: They have almost 115 million visits per day.

Liza: Woo. To put that into perspective, that's as if the combined populations of Canada, Poland, and Australia all visited Pornhub every day![91]

Peter: Yes, and since we want to use porn as one example of psychological facts, let's see what porn is doing to mental health and social relationships.

John: Here you could have an idea of what happens in this website each minute. (Figure 13)

Figure 13

Liza: When we know the psychosocial effects of pornography on people, we could imagine what all of these minutes are doing to our society. (Figure 14)

Peter: Regarding the socio-psychological effect we should know that 64% of young people, ages 13–24, actively seek out pornography weekly or more often.

Sara: As young as that? Sixty-four percent?

Peter: Yes, even teenage girls are significantly more likely to actively seek out porn than women of 25 years old and above.[92]

Liza: How will this affect them in their life?

Peter: Well, a study of 14 to 19 year olds found that females who consumed pornographic videos were at a significantly greater likelihood of being victims of sexual harassment or sexual assault.[93]

Liza: And these are the aggressions that could traumatize them for long time.

Peter: Of course. A Swedish study of 18-year-old males found that frequent consumers of pornography were significantly more likely to have sold and bought sex than other boys of the same age.[94]

Sara; A direct socio-psychological effect of porn consumption.

John: The Swedish society might deal with lots of issues like these. Peter: It's not only in Sweden. A 2015 meta-analysis of 22 studies from seven countries found that internationally the consumption of pornography was significantly associated with increases in verbal and physical aggression, among males and females alike.[95]

Liza: This is bad.

Peter: Yes, very bad because a recent UK survey found that 44% of males aged 11–16 who consumed pornography reported that online pornography gave them ideas about the type of sex they wanted to try.[96]

Figure 14

John: These facts are horrible too.

Peter: The effects of porn on social relations are interesting as well. Because 66% of men and 41% of women view pornography monthly in the United States.[97]

John: Do they know that if it's something positive or negative?

Peter: A recent study conducted in Australia asked pornography consumers whether the porn they watched had a positive or negative effect on their overall well-being. Fifty-nine percent of responders said that pornography had a positive effect, stating stress relief, open-mindedness, and educational insights as benefits. In contrast, only 7% claimed the impact was negative, citing the unrealistic expectations in most pornographic content as well as the prospect of pornography addiction as reasons for their claim.[98]

Liza: But could we take their views as facts?

Peter: This could be just their impression, one that is comparable to harmful supplements, with the delusion they are paying for something helpful. Likewise, these porn viewers are looking for so-called relaxation, and don't forget about what we said about the implicit individual and collective suicidal trends.

Liza: What precisely are they ignoring then, those who watch porn and think that's a cool thing?

Peter: For instance, a 2014 study done by researchers at Cambridge University explored internet pornography addiction. They reported that 60% of subjects in the study had difficulty becoming aroused with real life sexual partners, yet had little to no difficulty achieving arousal while viewing pornography. This data suggests that frequent and impulsive pornography use may affect the body's physiological responses to sex.[99] This will affect the quality of their life then. There is a causal chain here, where we could argue that this "cause and effect" has ramifications for society and not just for isolated individuals.

Liza: Yes, this could affect husband and wife relationships, for instance.

Peter: Indeed, and then it brings on divorce or extra-conjugal relationships. Both of them affect, in their turn, the education of the children and the quality of the relationships between parents and their children.

Liza: The children who are affected in this way will be the source of a new family and social issues in the future. We will have a multitude of problems that will follow.

Peter: Of course. The chain of events is active now and can go endlessly deep.

John: So we can see how the porn industry's incentive for short-term profit pushes lots of people toward producing, acting in, or consuming porn while ignoring or neglecting the secondary damaging psychological and social effects on themselves and their social life.

Peter: In most pornographic movies what happens is a change in the status of a human being, as if there is no humanity in the way people have sexual encounters.

Liza: Do you talk about the violence shown in porn sexual relationships?

Peter: Explicit or implicit viciousness and also the lack of feeling, lack of love, lack of respect and frequently, absence of any decency.

John: In a lot of cases, all the ethical and social boundaries are violated, like explicitly encouraging incest. These fantasies weaken the ethical values that are essential among very young viewers. There is then a direct link between rape and watching pornography either as subject of the rape or its victim. In one study, fraternity men who consumed mainstream pornography expressed

a greater intent to commit rape if they knew they would not be caught than those who did not consume pornography.[100]

Peter: It's fine for a couple to have fantasies, but the value of this fact comes from the idea that it's a voluntary and conscious process. They respect each other while they are taking sexual enjoyment from each other. It's not in the frame of a financial trade.

Liza: While in porn, sexual pleasure is without any love or respect, without any personal relationship. It's a kind of an inhuman, senseless, and mechanical act.

Sara: And how is this affecting the other people?

Peter: It's simple. By watching lots of porn your view on people as respectable beings starts altering in an elusive and even unconscious way. Whoever you are dealing with, in many cases your behavior in their regard could be reflexively affected by the unconscious recall of what you watched in porn movies.

John: And this degradation of relationships with other people would then affect our behavior more.

Peter: Yes, every single behavior we manifest toward other people simultaneously affects our interlocutor and ourselves.

Liza: Nothing is lost then?

Peter: Nothing. We don't have something called 'lost' in the real world. Every single act that happens will continue acting directly or indirectly forever.

John: This is imaginable because we are permanently affecting our environment and the elements of this environment will, in its turn, be touching other related components and this goes on.

Liza: As this sequence of mutual impact will be interminable we have a kind of endless influence on everything by what we do, say, or think in our family, among our friends, or in society.

Peter: Exactly, nothing is lost in the absolute meaning of the term. On the contrary, everything is everlasting in one form or another, here or there.

Liza: When we lack respect for someone, he or she will be affected and then they will indulge in bad behaviors with other people. Later on, one of these negatively affected people will behave badly with an animal, another one with nature, and another will later become a famous politician and then he or she will make bad decisions for society that will impact millions of people's lives.

Sara: A bad life for a nation could cause civil war, conflicts, and forced migrations.

John: Those issues could cause regional and even worldwide problems. One of them could bring on a war with nuclear weapons that would extinguish life on the earth.

Peter: Yes, there's nothing that could prevent us to go far in the imagined continuation of this causal chain.

Sara: How so?

Peter: For instance, we can say that an absence of life on earth could affect the atmosphere and cause some change in the situation

of the solar system and through this the Milky Way will be affected in a long process and then this will impact other galaxies in a scale of billions of years and so on.

Sara: Yes, manifestly we are in an endlessly vast interconnectedness that goes beyond of what we could immediately perceive in our daily life.

Peter: Sure. Now you see that the work we have done on establishing the concept of *infinity* is helping us to see this boundless web of interconnections running almost everywhere and at any level and at any time.

Liza: And what is the consequence of this view?

Peter: Well, this awareness of the connectedness is a source of consideration on my associations with everything else. So, that I'm aware of everything I'm doing, saying, or thinking is for sure affecting directly or indirectly lots of other people and things.

Liza: So, we can say that when I work on this idea of connectedness, I progressively internalize it and arrive at its presence in my deeds, words, and thoughts.

Peter: Yes, at a progressive stage of this process I can have it in me, in a spontaneous way.

John: Spontaneous?

Peter: Yes, but in this case, we don't mean it in a mechanical sense; on the contrary, I should be fully and permanently aware of this connectedness so that I could apply it seriously.

Sara: So, the difference with ideological or religious ethics is that I cannot transform this awareness in a mechanical or down-for-the-count attitude.

Peter: No. As soon as I forget the connectedness as a dynamic process of finding and seeing a connection, I can't be aware of how it works, and so I lose the necessary control that I normally would have control over. So I should permanently think of these dealings. I should study and practice that concept of interconnectedness continuously.

Liza: Do you mean thinking permanently about my connections with everything else?

Peter: Yes, I do know that at the beginning it looks hard, but progressively this ongoing process of thought and discovering the relationships will sharpen my mind on the one hand with the result that the task of thinking becomes easier to handle, and on the other hand, my mind runs faster and gets sharper since I have to envision many of my connections in order to channel my deeds, words, and thoughts conform to this logic of connectedness. This is kind of the conscious usage of a physiological capacity of the brain that we don't learn by way of a traditional system.

Liza: What is the traditional system is missing exactly?

Peter: It encourages us to get used to focusing on only one thing at a time. Our brain is conditioned by this cognitive pattern and then we become inattentive to a multitude of elements that are going in a given situation. Our brains get lazy and we become slow-minded

individuals who aren't able to take in more than one variable at time when faced with a highly complex equation of different situations.

John: But could our brain really do otherwise, like you are suggesting?

Peter: Of course. The capabilities of the brain are unlimited. It depends on how much of this capacity we would like to use. The awareness I'm talking about could be formulated and trained from a very young age where a newborn is ready to digest any educational approach. With a view based on the dynamic connectedness of the world's elements we will be able to train people who know that everything they are doing, thinking, or saying is affecting permanently their environment where they might be closed off to other things.

Liza: Such that the people trained in this would certainly act differently compared to the way we had been educated.

Peter: For sure. And even now it's not late for us to start testing it on ourselves.

Sara: You mean that we already could start using this view in our life as a worldview?

Peter: Our plan for a worldview would be more complete than that, but this foundation is already usable in our daily life to make decisions. I'm referring to training ourselves to embrace a systematic attention toward the unlimited connectedness of what we are doing or saying or thinking and then seeing what the

effectiveness is of this approach and to see if there's any improvement in our material or intellectual life.

John: And beside that, what are the other parts of the worldview that we have to add for completing it?

Peter: Well, this worldview we are creating will result in a huge change since the burden means serving the complexities of what it means to be human. It should answer to our main concerns since they have already been shaped and formulated by human history, beyond our individual will, but have been transmitted to our culture and instilled in our mind; therefore we should take care of them.

Liza: About what concerns are you talking concretely?

Peter: Well, there are essentially two questions that deserve being treated. One is "Where do we coming from?" and the other is "Where we are going to?"—perennial questions of everlasting curiosity from *Homo sapiens* that will be with us for thousands of years, maybe.

Liza: So, we should first understand the mystery of creation of the world.

Peter: Yes, this is one aspect.

Liza: And also, we would like to know what we would become of us after death, our post-mortem future.

Peter: Correct. These two queries and the question on how to act and behave are the three main interrogations that all the religions and most ideologies and philosophies have dealt with.

Liza: You mean after all these discussions we have to answer these three questions as well?

Peter: Yes, we should tackle these three questions anyway.

They left, and all four were pondering how to explain the creation of the world.

*

Chapter 15

The meeting started with a huge challenge for them to respond to: "From where do we come?"

Peter: A worldview that cannot bring an answer to this famous question of how the world and everything had been created would be seen as quite deficient.

John: But we have a long tradition of retorts in this matter.

Peter: You mean the world's religions?

John: Yes. They say that a deity created the world.

Peter: Sure, there are two sets of the answers: those who say that God created the world and those who tell us that something else did it.

Liza: And how we would be able to tie them and say which one actually did it?

Peter: We don't want to judge their answers, but to design our own. Then we could see which of these sets of ideas to our answer is the most satisfactory.

Sara: How we could do that?

Peter: In order to keep to some methodological steadiness, we should unsurprisingly use the foundation of our worldview for this part of the job.

Liza: Do you mean that we should set the concept of *infinity* as the basis of our answer to the question of who created the world?

Peter: Yes. And that wouldn't be easy, because as we said even when formulating this question we use the word "who." This shows us the extent to which our mind is still under the influence of the religious or traditional convention in this field since the question is somehow personalized in the God or a god-like being.

John: But does God exist?

Peter: We can't give a yes or no answer if we want to stay loyal to our methodological equilibrium.

John: You mean we should look for the application of infinity in the construction of our response?

Peter: Affirmative. Otherwise our answer will be subjective while we insist that we would like to stay objective.

Liza: And how we will stay objective for a question that goes as far as the creation of the world?

Peter: By, first of all, being attentive in formulating the question and its assertions.

John: What do you mean?

Peter: Look, you saw that since we started talking about these two questions we've been using the word "creation."

Liza: Yes, I said that even a few seconds ago.

Sara: You referred to a question that goes as far as the "creation" of the world.

Peter: Yes, she said that and we all usually say it when talking about this stuff.

John: But what's wrong with this word?

Peter: What is wrong with this term is that when you use it, we are once again somehow influenced by religious-like ideas.

Liza: That the world had been "created" by someone?

Peter: That it had been, simply, "creation." This means that it had not existed before and at a given moment someone or something created it.

John: So, the word "creation" is not ideal because it supposes two situations: before creation and after creation.

Peter: Absolutely, and this is a division that is totally arbitrary and imaginary. It implies the famous man-made and anthropocentric vision on time and its division into past, present, and future. While we saw that Existence, as a conceptual reality, obeys rules that are beyond our perception; Existence doesn't need and is not conditioned by the features and limitations of our perception or of any external observer.

Sara: You mean this division of a before and after creation is not objective because it's produced by the subjective nature of man's mind with regard to an invented concept like time. Do I have that right?

Peter: How could it be? Nobody was there to see before creation to say we had a creation phase and afterwards.

Sara: Right. This is more a supposition based on man's understanding.

Peter: And because the supposition of creation itself is only a product of the mind and is therefore subjective, what we do based

on that is also a pure product of our subjectivity. The creation is then not a fact but a story or a myth that we invented to amend existence by our perception.

John: You are alluding to the story that religion tells us about God's will for creating sky and earth and man.

Peter: Yes, we could invent thousands stories that would state something similar, but how we could check the veracity of these stories?

Liza: But in this case, we have a creation-like story in science as well.

John: You mean the Big Bang theory?

Liza: Yes.

Peter: This is a good example of how strong the myths of creation have been up to now, that they have imposed themselves, or at least their vocabulary, on the scientific view of things. And we started to use facts like the distance of the oldest light we receive to even estimate the lifespan of the Big Bang up to now.

John: You mean scientists bought into the idea of creation without incredulity?

Peter: Yes, they somewhat did because the Big Bang is a kind of scientific version of God's creation of the world. We establish there's a starting point that is similar with the religious version of the moment God wished to create the universe.

Liza: Are scientists wrong?

Peter: Well, something called the Big Bang could have existed, no problem with that, but how do we explain what existed or what happened before the Big Bang?

John: But there are quantum physic theories that explain how the Big Bang happened.

Peter: Yes, I know, but what nags is that you should then admit that something caused the Big Bang.

Liza: And in this case, the question is what caused the Big Bang, and once this is established afterward, we then move on to what produced its stated cause and so on.

Peter: Exactly. Once again we would be dealing with a causal chain. And we know that any causal chain is theoretically infinite.

John: Yes, I remember. Any cause is an effect and each effect is also a cause, endlessly.

Peter: Precisely. This is the endlessness of a causal chain that would explain where everything is coming from.

John: How?

Peter: Look, those who tell us that the causal chain started with God or with the Big Bang are telling us that this chain has some finite points.

Sara: They say more exactly that there is a starting point and therefore they open the door to the possibility of maybe a termination point for this causal chain.

Peter: This is exactly what religions do. They say that the world started with God's will and will "logically" finish with it too. And

after that, we go to Hell or Heaven and this, forever, evermore. Period.

Liza: For them they are the start and end points.

Peter: Yes, a causal chain that begins at what they call creation and ends with what would be, let's say, "the final day." This is where their causal chain becomes manipulated and artificial; I would say even fictional, non-natural.

John: Non-natural?

Peter: Yes, because the causal chain, in the real world, doesn't ever stop. The actual chain of events is lasting and forever.

Liza: The real causal chain is endless.

Peter: Yes, go back to our fundamental notion: *infinity*. The causal chain is infinite no matter the direction you imagine it to be.

John: And as we defined infinity with its directionless characteristic, this means that the causal chain can go endlessly in both directions: toward what we supposed as past or to what we consider as the future. It's endless and timeless.

Peter: Yes, and that's why we have the answer for these two questions in our definition of *infinity*.

Liza: You mean before and after life.

Peter: Yes, if you're looking for how the world had been before, you have to continue any causal chain in the direction of the so-called past. Now, if you want to know how and what will be afterwards, you have just to move forward with that chain. In any

case, what is genuinely happening is that there is no stop point in any direction you go.

John: You were saying that it would be wrong if we look for any time indication in this chain.

Peter: Yes, because time is, at the end of day, our fabrication to understand the world and to indicate the changes that happen there, but the changes themselves don't have any timeframe. Most of the parts of these chains don't happen linearly but as a network, simultaneously, with back and forth and zigzagging. Existence is an ongoing process that is simultaneous and concurrent that it doesn't bear any space-time indication. Any timing or location is just the implementation of artificial constructs we use in order to operate either perceptually or practically.

Liza: Because the process carries changes that are in fact consecutive, everlasting, and non-stop.

Peter: Yes. Changes that are created by alterations and the alterations that are produced by changes happen in such a broad way that adding any dimension to them will be a total reducer of the ongoing reality of the process. I mean if you put whatever you take as a time indication in the causal chain in reality, you have just caused that thing to do or be as well as what it is caused by. The cause becomes the effect of its own former effect, and this happens sometimes so swiftly or delicately that you have almost a kind of simultaneity of the cause and effect with their interchangeable

places. You can't freeze the universe in a mechanical or linear order to distinguish between cause and effect of reality.

Sara: And this evolving reality is the only one that is going on.

Peter: Yes. This is what is happening substantially independent of the observers that we are. Reality, as it happens, doesn't need any subjectivity. It follows its own rules. What we picture as going on is a single-shot frame of the existential movie. But the movie moves and doesn't wait for the next frame. Similarly, reality has its endless and restless moving rules.

John: The rules that we could discover and codify by our invented time scales or by the mathematics…

Peter: Or language. Yes. Reality could be observed and understood, but our mind doesn't change its ongoing causal chain until our subjectivity is transformed into an operative physical actuality and starts to change objectively something in this chain as a cause. The effect that we caused afterwards will be a cause of a new effect at its turn and the chain continues.

Liza: So, based on this argument, could we say that the world had never been created?

Peter: What we could simply say is that the world is the result of an infinite constant causal chain. And with a definition of *infinity* we could say the world is, itself, a timeless, endless, boundless, directionless interconnected causal chain. There is no starting point or an ending one.

John: This view will free us to look for an initial point, whatever it is. Right?

Peter: Yes, and this absence of the starting point also fulfills asymmetrically and successfully the curiosity of a human being's attitude toward the death and a supposed afterlife.

Sara: Because death becomes a part of this endless causal chain as well, with its earlier stages and afterwards.

Peter: Absolutely. Death, seen as an effect, has some causes but then turns itself into the cause of some effects. These latter are, in their turn, the causes of many other upcoming effects and this keeps going. This is the reality of eternity. We were there before we got our bodies and we will be there after our death somewhere and somehow.

John: So, the death is not an end but a part of an endless process in a chain of events.

Peter: Not only for death. You could say it for anything. Everything has an end that equals to a transformation and then a continuation. Any so-called end is a step of a continuous and never-ending journey.

John: Anything is then a part of a causal chain.

Peter: Yes, and if you pay attention you see that we could even integrate this causal chain in our definition of infinity.

Liza: We defined *infinity* as "an ever-lasting connectedness of phenomena."

Peter: Now we can say *infinity* is an ever-lasting causal chain.

John: So, infinity is a causal chain that is endless.

Peter: Yes, and we could add that infinity is a starting-point–less and ending-point–less causal chain.

John: For any cases?

Peter: Yes, we can discover an infinity in any element we choose to study. So, we mean infinities, in plural. I have to add that there is a causal chain of infinity, but studying any phenomenon, like a human being, can only deal with one aspect of an infinity that includes a bigger and endless causal chain. The more this section of a causal chain is vast and broad, the more varied and rich will be the interactions that we could take knowledge of.

Liza: And then, Existence could be materialized as all the infinities interconnected directly and indirectly between them.

Peter: And with this new approach, existence will consist of interconnected causal chains that run endlessly without a starting point—unbrokenly, boundlessly, continuously, and in a directionless way.

John: And we can say that what we consider as matter is in fact these intertwined causal chains that interact permanently at a given level.

Peter: So, you can see that what we call reality or the universe isn't anything else but *infinity* as we describe in action. The constant intertwined process of causal chains is everywhere.

Sara: Infinity is the universe and the universe is infinity. Or infinities are the universe and the universe is the infinities.

Peter: Yes, removing any distinction between these two will greatly help us.

Liza: How?

Peter: By the fact that our perception of reality would be made more coherent. There is no more a universe and an infinity of the universe as two, but as one. What constitutes the universe is infinity and what infinity is is the universe. We will be finally free of a dichotomy that we had created because of a weakness of our perception. By this view, we see only one concept that could be easily interchangeable and meaning one individual reality, a unity.

Liza: In this new approach, the universe and infinity are as one. When we say the universe we do mean infinity.

Peter: Yes, and the disappearance of this duality brings about the full notion of Existence.

Sara: Existence contains then the universe as a constant interconnected assembly of infinities.

Peter: Yes, and in this way, by Existence, beyond the other forms of probable non-material realities that could be and we ignore for now, we mean infinite universes and by this we mean the universe of infinities, which overall become the infinite interconnected universes, or infinite interconnected infinities.

Liza: I think this is the most comprehensive view one could have.

Peter: For now, Liza. But remember! Infinity teaches us also that even this innovative interpretation will be indeterminately evolving—if human beings survive.

John: So, everything that we see and understand of what we are is subject to an infinite transformation.

Peter: It is. This interaction between the elements of an infinite causal chain is what constitutes matter and therefore, any phenomenon. The reason we see these interactions, changes, and moves for some things and not for other things is that the velocity of the interactions is not the same for all phenomena.

John: And this difference of speeds means we could or could not deal with other things.

Peter: Let's formulate that in another way. We could imagine that when two things meet, there would be three possibilities in general:

1) A and B have the same speed of interactions, more or less.
2) A has a higher speed than B.
3) A has a lower speed than B.

The example of case 1 is two human beings with more or less an identical physical and mental capacity. Cases 2 and 3 concern a human being and a worm. In cases 1 and 2 it's possible for the human being to see B's changes and to interact with the other person or with the worm. But for case 3 it would be hard for the worm to interact equally with the human.

Liza: So, the interaction between the phenomena is conditioned by the degree of complexity of their structure's abilities to react?

Peter: Yes. In order to formulate it in a better way, let's say that everything could be interacting with three kinds of things at the same time or other times with regard to the degree of sophistication of its structure and functions:

A) Interacting with comparatively *equally* sophisticated things;

B) Interacting with *more* sophisticated things;

C) Interacting with *less* sophisticated things.

Liza: Three sorts of meeting between things with regard to their velocity.

Peter: Yes, and now if we want to know what kind of outcome we will have, we could talk about three kinds of upshots as well: an interaction that creates balance and stability; an interaction that creates degradation, lost, or defeat; and finally, an interaction that creates progress, advantage, and success.

Liza: Is there a connection between these three outcomes?

Peter: Yes, from the interaction of these three situations of stability, degradation, and progress will come death or survival of a set, stability, or change of a phenomenon.

Liza: How so?

Peter: Well, in the long term, a quantitatively *sufficient* survival will cause durability of that thing as such, and a quantitatively *insufficient* survival will cause the disappearance of a thing from a causal chain as such. This causes a seemingly stability or change.

Liza: So, what we call life or, more precisely, a lifespan, is, after all, the extent of the durability of a thing in meeting with other things. Right?

Peter: Yes, and on the opposite point, what we call death and afterlife constitutes the disappearance of a thing from a part of a causal chain. But we should be precise that when we say the disappearance of a thing we don't mean the absolute loss of it. No, the disappeared thing is in reality has just shifted in a causal chain as such to be assigned to another role or another place in another chain of events where, again, based on the three kinds of interactions with other things, it will experience either stability, defeat, or victory.

Liza: So, at any moment, a phenomenon is being in one of these three situations of stability, degradation, or progress.

Peter: Yes, but these states are not frozen. They represent a situation at a given instant and appear short or long only to our perception, but the change in fact is permanent.

Liza: But anyway, the change we're talking about is everlasting.

Peter: Yes, in some way. Because the fact is that in order to detect the changes, moves, and interactions that are happening, we should be perceptively well equipped to realize that.

John: Equipped with what?

Peter: Equipped with tools like our five senses but above that, with consciousness.

Sara: So, our consciousness is a part of our perception of complexity?

Peter: Before dealing with the complexity in our brain's interactions we can't really be considered as a conscious being per se.

Liza: You're talking about the structure of our brain.

Peter: Yes, and its components. You remember one billion neurons and their complex function.

Sara: This is what is gives us consciousness as opposed to the "low" level of animal consciousness.

Peter: Well, animals have a kind and degree of consciousness too that is just different from ours, but it doesn't mean at all that they don't have any aspect of consciousness in them in terms of our general understanding of that term.

Liza: But what then makes our consciousness so special?

Peter: Nothing makes our consciousness very special, particularly if we use the argument, for instance, where we put ourselves in a superior position and mistreat animals.

John: But animals and humans don't have the same kind of consciousness.

Peter: Well, we have a more complex brain with a capacity that is, for some aspects, greater than many animals' brains.

Liza: That is a fact, without any exaggeration or considering it as a privilege.

Peter. Right. Nevertheless, we should understand that having such a brain is in itself a great chance in the evolution of our species.

Liza: Ah! This is for the first time that you are using the word “chance”.

John: I was surprised too. You insisted that we should be loyal to our positivist methodology and now, suddenly you talk about the chance for our species.

Peter: Ok. I’m happy that you all noticed it immediately. I will explain it in our next session.

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Chapter 16

Peter was facing the question on how and why he had made the usage of the word “chance” when he talked about the constitution of a human brain’s complexity.

*

Peter: We got our current brain by a process made from a combination of natural and social evolution.

Liza: So, natural and social both.

Peter: Yes, one part of our brain is the work of nature’s evolution during thousands of years and then, from a particular moment, our history and what we achieved during it. The mix of these two played a role in our having a skull with its huge capacity.

Sara: And you said that nature’s part in shaping our brain is a kind of chance for us.

Peter: Yes, because it’s not really the result of deliberate decisions and choices. It’s more the outcome of the interactions between components that existed in nature before we arrived to a state of any conscious capacity to improve it or channel it.

John: And was this a chance for us?

Peter: Well, when you find money on the ground, you consider that as a chance encounter, yes?

Liza: You mean that until a certain step of evolution we didn’t purposely act to get this high capacity brain.

Peter: Absolutely. But in order to open the window of this discussion, I would like to develop this notion of chance beyond the little historic case of our wonderful brain.

Sara: You mean the presence of chance in other levels of existence?

Peter: Indeed, honey. I would like us to think of it at the scale of the universe.

Liza: I think you're referring to this question that's one of the main philosophical interrogations on whether there is any purpose in the universe or not.

Peter: You got it. Think about that, guys. A lot of ideologies establish themselves by just answering this question. And then, based on this point, they present the deity who made the universe purposely, and finally they determine the why and how and that as a consequence we should behave in a certain way regarding this purpose.

John: The religions do it as well.

Peter: Of course. They all do it. Because if you could make believe in a specific purposefulness for the world, you could then easily attribute this purpose to a highly intelligent being and set some achievements that should be fulfilled by us to conform to that intelligent source's expectations.

Liza: So, it's like a spider web, once you are grasped in one part you will devoured by the whole thing. Once you believed in the so-

called purposefulness, you should comply with the rules that ensue afterwards.

Peter: Yes. That's why it's important that we examine the idea of the presence of a purpose or intelligence in the universe. This is what I meant by using the word "chance."

John: How we could do that?

Peter: For the sake of methodological uniformity, we should go through our fundamental concept, *infinity*.

Liza: That we defined as a never-ending causal chain.

Peter: Yes, and we saw that anything and any matter is just a permanent causal chain weaving an endless interconnectedness.

Liza: Yes.

Peter: Now, the question of purpose comes up within this causal chain. Is there any interaction that would be designed deliberately?

Sara: Hard question?

Peter: Yes, it's hard. We would like to determine if the relations between phenomena are purposeful or accidental.

John: How do you define "purposeful" or "accidental"?

Peter: Purposeful is when an intelligent being interferes to determine that a connection should be established with a predetermined goal, a predefined aim, and a preplanned objective with a purpose.

Liza: And accidental?

Peter: Accidental is when an interaction occurs based on the substance, mechanisms, conditions, and the internal rules of the

thing's properties without any predetermined specific goal or purpose. It's a pure contingency of conditions.

Liza: But don't these conditions and properties you're pointing to represent a kind of intelligence in themselves?

Peter: Well, yes, but only if we stretch the meaning of intelligence so that even a blind physical adjustment of the components of a whole entity would signify intelligence.

Liza: Right.

Peter: But here, by intelligence, we mean a kind of cognizant calculation whereby we review the existing options and then make a deliberate choice among them with an explicit embrace of the concept of interest, attention, and preference or evaluation. The keyword is *choice* that represents implicitly, if not explicitly, a preference for one of these choices.

Sara: This is a little more sophisticated than a mere mechanical intelligence.

John: So what is the question? Do we want to know if there's a conscious intelligence making choices for interactions in the universe?

Peter: The question is not exactly that because we know that such a conscious intelligence exists in us and in what we are doing. We are a part of the universe. Other forms of intelligence could be possibly found in other planets.

John: So, then?

Peter: We want to know if in the universe there would or would not be an intelligence, not as a partially confirmable material reality, as it's the case of the human intelligence's presence here on the earth but as a general existential principle everywhere in the universe.

Sara: Do we have it?

Peter: Well, the question deserves to be studied under the duality of purposefulness and contingency.

Liza: You defined purpose and accident.

Peter: Yes. Here we have another one of these classic dichotomies of philosophy that represents a challenge.

Sara: Are you saying that this dualism pushes us to choose between a purposeful universe with a predetermined destiny and an accidental universe with no final call at all?

Peter: Yes. It's a hopeless symmetry, isn't it?

Liza: And what would be a better choice?

Peter: Opening room for both as our tiny human experience is teaching us here on the earth.

John: The universe in which causal chains are running here and there would be the result of concurrent accidental and purposeful calls. Is it what you mean?

Peter: Yes, there would be a combination of accidental and purposeful acts in some parts of the universe but in that scale that we could never know what would be the proportion of each one.

Liza: The experience of human beings on earth should give us some indications. Does it?

Peter: Yes, this slight human intelligence experience proves that from accidental events and their interactions there could be born an intelligent being that could have some decided interactions in the universe.

John: You are saying that men have deliberately created civilizations.

Peter: Yes, we intervened in the earth's natural cycles, we master them, we transformed some of them, and we made what we wanted to.

Liza: And we don't know how big or how important our role is in this web of universal interconnections.

Peter: Actually, it's small, but what's interesting and even exciting is that potentially there is no limit for its expansion.

Sara: What do you mean?

Peter: I mean on the one hand, if we see how small our planet is compared to the universe, we could see that we should absolutely not exaggerate our own intelligence in the whole process of interactions within the universe.

John: I have a picture here that could give us an idea. (Figure 15)

Peter: But on the other hand, as we have an idea of the infinite causal chains running within the universal interconnectedness, we could imagine that what had happened here in the earth might have happened on millions other planets as well and we know that as we are living in a timeless universe, all these scattered forms of intelligence in the universe could keep growing and communicate with each other in order to create an opportunity to unite or join for shaping a bigger intelligent entity, for instance. We already tried to do it, for example, via initiatives like the Pioneer 10. (Figure 16)

Figure 15

Liza: So if we remove the element of time from our equation, we would have a potential to see a growing portion of intelligence among the interactions compared to the accidental within the universe.

Peter: Yes, but we don't have any illusion on this equation and its components and especially their proportions, but the principle that we are exploring is, in itself, interesting and valid.

Sara: So, we are injecting intelligence into the universe.

Peter: Yes, and this is a good opportunity to introduce a noble philosophy of life here because don't forget that we're talking about the construction of a worldview for a precise purpose.

Pioneer 10 (originally designated Pioneer F) is an American space probe, launched in 1972 and weighing 258 kilograms (569 pounds), that completed the first mission to the planet Jupiter.[3] Thereafter, Pioneer 10 became the first of five artificial objects to achieve the escape velocity that will allow them to leave the solar system.

Figure 16

Liza: What kind of life's philosophy?

Peter: Injecting more intelligence in the universe could be a higher and mighty purpose in the life of everyone.

Liza: How could it become a source for a philosophy of life?

Peter: The intelligent elements of the universe have this privilege of choosing the options that could result in as outcome the multiplication and development of the production of intelligence by a "geometric progression".

Liza: You mean we could double the production of intelligence and inject it in the universe.

Peter: Yes. In a given causal chain, human involvement could increase the portion of purposeful interactions compared to the accidental ones even though the proportion would remain small in an infinite scale.

Liza: And what do we expect from this possibility?

Peter: That the proportion of the purposeful part of the interactions gets progressively greater compared to the accidental part. If we keep going on this pathway at a given moment the quantitative accumulation of the intelligent portion of some parts of the universe could bring about important qualitative changes, catapulting us—human beings—to a new existential orbit.

John: And we don't necessarily mean at the scale of the whole universe.

Peter: No, no. Absolutely not. This doesn't make sense when we see the universe as an infinite reality. But we point to a trend of increasing the purposeful part of a chain of events that touches our existential surrounding conditions in a proportionally broad scope.

Liza: And this would be expanding step by step.

Peter: Of course, we could keep going by getting more and more possibilities for us to go farther in an operational purposefulness. What we should not forget is that, as I have just mentioned, it's the quantitative changes that make the qualitative alterations. And then, the qualitative changes make possible the quantitative upsurges. Based on this fact, we could see that the injection of intelligence in a universe that is full of accidents cannot be ignored. And this, in our tangible scale, whatever its proportional dimension is compared to the greatness of the whole infinite universe.

John: But you said that this idea could become a life's philosophy. Tell us what will be the tangible output for human beings to adopt this philosophy?

Peter: A better life, a smarter life, a more contently life, and a very far, but totally accessible eternal life.

Liza: You said “eternal life”?

John: Here we are! Are we back to religion or something like it again?

Peter laughs.

Peter: No, the eternity here means going along with the immensity of the possibilities our intelligence offers.

Sara: You mean an intellectual eternity.

Peter: Mainly.

Liza: But how could it be?

Peter: We don’t know yet. If we knew that, we would have already realized it.

Liza: Do you mean that the eternity of man is a possibility?

Peter: Yes, this is what we could do if we mobilize and use our resources.

John: But what is this intellectual eternity precisely?

Peter: It’s making possible that our mind survives when our physical organism could not go along.

John: But this is what religions promise to us.

Peter: Yes, but all they do is promise. We’re talking about how to do so, how realizing it as a philosophical/scientific project.

Liza: And how?

Peter: I told you. Precisely and on an operational plan, we don’t know yet, but we know that we could do it potentially.

Sara: And how could this potential eternity be a philosophy of life?

Peter: If we understand well how great the outcome of such an undertaking is, everybody could or maybe adopt it as his or her philosophy of life.

Liza: Really?

Peter: Yes, for instance, we four can try to see if we could adopt it as our own philosophy of life or not.

John: I'm ready to do it, but I have to be convinced.

Peter: I could give you some thoughts and insights but then you have to individually ponder over that and make it or not your life's philosophy.

John: Then try me!

Peter: Always, let's start with this at the next session.

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Chapter 16

The next session started with the idea that the establishment of a system to inject more intelligence in life could bring about a tendency toward eternity.

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Peter: We know that eternity is a dream long held by humans. This emerged when people recognized the finality of death.

Liza: It was horrible to imagine death as a termination of life.

Peter: Termination of life and all else with it.

John: So, primitive people would've been scared by the idea of death as an end to everything.

Peter: Indeed. That's why they invented tales and myths around death, and concluded that death should not result in the total elimination of life for a person. As you can see, their imagination was fueled by a fear of death.

Liza: But we know that death is effectively the end of life.

Peter: Even nowadays many people won't admit that.

Sara: And that's why they still believe in an imaginary afterlife.

Peter: Yes, and this promise of an eternal life after death is the fundamental grounds of the great religions like Judaism, Christianity, and Islam.

Liza: But we don't believe in that.

Peter: We cannot say we believe or not in something without an argument, and this argument should be based on our unbiased methodology and facts.

John: Our methodology is our analytical tool to find the objective answer to these questions, right?

Sara: Absolutely. While an ideology is a package of pre-construed answers, a methodology is toolbox to produce answers.

Liza: Well said. And we know that our methodology has a few principles that are causative, that is, we see cause and effect as an endless causal chain.

John: And the foundation of our worldview is the concept of *infinity*.

Sara: And we also defined the infinity as never-ending interconnected causal chains.

Liza: Yes, we saw that infinity is an ongoing process everywhere and in everything.

Peter: Yes, now when it's a question of the existence or not of an afterlife, we have just to use our methodology to scrutinize it deeply.

John: If causal chains are infinite, we should believe in a kind of continuation of our existence even after death.

Peter: True. We just change form.

Sara: From an organic form of being to an inorganic one.

Liza: Or should we say to a less-organic being.

Peter: Or we can say from a conscious being to a non-conscious being.

Sara: Right. Because when our brain stops working, we stop being conscious about what is going on around us.

Peter: Right. This is what happens to some extent when we sleep or fall into a coma.

John: So, as long as we have consciousness, we are alive and when we lose it, we are not anymore alive, but we keep existing.

Sara: That's why sometimes when we've had a bad accident or a stroke, we go to a status that doctors refer to as a "vegetative state."

Liza: Because our organism works but not our mind.

Sara: Yes, and this shows the importance of our brain functioning as evidence of a living being.

Peter: And when we say the importance of our brain, we mean the importance of its function, our consciousness.

John: So, death happens when we lose consciousness.

Peter: Yes, but as you said, in the following steps of our afterlife being, we continue to exist under other forms of matter.

Liza: Can we say that we are organically and physically eternal but not mentally or consciously?

Peter: This is obvious if we take the appearance of what is happening.

Liza: And do we have something beyond this so-called appearance?

Peter: I mean the continuation of our material part of existence after death is so obvious and we could be sure that with the endless causal chain, our material eternity is in some way assured.

John: But what about the immaterial part of our being?

Liza: Our consciousness?

John: Yes, what happens to our consciousness after death?

Sara: But wait a minute! We said that consciousness is just a function of the brain. When the brain stops, there is no more consciousness.

Liza: Right. No more consciousness.

Peter: Well! What we know is that, based on the outcomes of consciousness as deeds, words, and behaviors, we affect our world during our lifespan, including people, society, nature, and we indirectly continue to stream in all of these elements and things.

John: This could be the meaning of eternity for our consciousness.

Peter: Of course, kind of. We survive not only through our children but also by what we did and what we said. These different and constant chains of events go beyond our physical life.

Liza: And this is forever.

John: It's normal. It's the causal chain that is endless.

Peter: The question is though why billions of people could not be content with this understanding of eternity for what they call their soul and look for something more.

Liza: Isn't it because they can't or don't want to conceive of any other sense of survival apart from the only form of life they know and got used to?

Peter: This is for sure one of the reasons. They think that life is just walking, talking, eating and so on.

Sara: But something more serious than that should push them to an eternal life's conception, shouldn't it?

Peter: Yes, they don't want to be deprived from all the pleasures of life. It's a grievance, a feeling of deep regret.

Liza: When you say pleasures, you mean material pleasures or immaterial ones?

Peter: Both, depending on the kind of people. But they love both.

Liza: Especially when they didn't have all of them in their real life. They wish they would have it at least some in another world after death.

Peter: Or, on the contrary, because they had these pleasures in their life, they want to keep enjoying them even after death.

Sara: But we know it would be impossible to have these pleasures, material or not, once we are dead.

Peter: Yes, we know. But could the fact that we know it close the case for us and put everyone in a serene state of eternal life all along?

John: Maybe yes, maybe not.

Peter: So, it's not sure. And we know, except for cases of a depression, nobody would refuse the idea of kind of eternity.

Liza: Sure, at least I'm sure.

Peter: So, we're precise that if we're talking about eternity of an afterlife here, we mean the endless life of our consciousness as we experience it now.

Sara: And we know that consciousness is product of the brain's functioning.

Peter: Therefore, what we mean by eternity is the perpetuity of our brain's function.

Liza: You mean that our brain could keep functioning even after we are bodily dead.

Peter: This is an imaginary way to keep consciousness alive even after our whole body is clinically announced dead.

John: Does the continuation of our brain's function mean eternity for us?

Peter: This could be a preliminary approach to get a tangible hold on this word.

Liza: But how could we keep our brain alive?

Sara: Is it technologically possible?

Peter: Not yet, but potentially, yes.

John: You mean we could hope that we would invent a technology that could keep one hundred billion neurons alive in our brain?

Sara: And in this case, how we are supposed to feed it? With blood and protein?

John: And how could we conceive of any input to enter data and what we could get as its output?

Liza: And what would this artificially alive brain be like? A machine? A person? If it's a person, what would his rights and duties be? Is this living brain considered a citizen? Does it have a right to vote?

Peter: Here we are. With scores of questions on this idea.

John: And do we have answers for them?

Peter: I don't know, but don't forget that if we consider these questions as an effect, it's because something is causing them.

Liza: Yes, these interrogations are the result of our discussion about eternity.

Peter: And this discussion itself is partially caused by our interest in eternity.

John: True, we said we are excited about that.

Peter: Now, if we keep going in this causative chain, we could go far to find why we are so thrilled by the idea of an eternal life, right? But right now we would like to go in the opposite but forward direction.

Liza: Do you mean considering our interrogations not as effect but as a cause?

Peter: Yes, let's explore this trail.

John: What would be the effect of this curiosity?

Sara: Concretely, what would be the effects of our questions on how to keep the brain alive, how to feed it, how to enter data and get an outcome. Put simply, what will the status be of this alive brain?

Peter: Right. The result of all these interrogations, if we're consistent and interested, would lead to more research and reflection.

John: A research and exploration in which we can go far.

Peter: Very far. For instance, we talk about keeping the brain alive. But do we mean the brain as an organ or in terms of its data and content? Or both? If content is more important, could we download it to a device that continues to function as our brain used to? And there are many other related questions that are in need of an answer.

Liza: Until we get a response?

Peter: Yes, and not only theoretical responses but also practical ones.

Sara: You mean actual solutions.

Peter: Yes, solutions that bring us clarity and a guideline for all these interrogations.

Liza: What will be the final outcome?

Peter: That we will know how to keep a brain alive, busy and functional, with solutions for entering the data, how to communicate with this working brain, how to get its output, determine its status and other points related to it. Or, as I said, we just download its content in a machine and let it evolve and survive.

Sara: Are you saying that all of this is really possible?

Peter: Yes, it is.

John: By us?

Peter: Well, maybe not by us but by other people. And this will only happen as soon as people decide to go down this path.

Liza: You mean if society wants to answer these questions and give us solutions, it could do it.

Peter: Of course, for sure.

Sara: And I'm excited to know what would be the next step.

Peter: Exactly. If we take solutions as the effect of our excitement and curiosity, we could continue this causal chain and ask what this new situation would cause.

John: You mean once we have the actual capability of keeping alive a brain what this situation would bring about?

Peter: Yes, let's just imagine that.

Liza: I thought that based on our methodology we should establish our exploration on facts and not imagination.

Peter: Yes, but we're discussing the hypothetical. We're weaving our hypothesis based on a probable causal chain. Once it's done we can go to the factual field to examine it.

Sara: So, the question is what would be the next step once we can keep the brain alive by feeding it and making it function with a defined status?

John: Then we could go forward.

Liza: How?

John: We could ask how we could provide this living brain other elements it needs to look like a humanoid.

Sara: Like a robot?

John: Yes, and how we could put this human brain in a robot body, for instance.

Liza: A body that doesn't die and could have it pieces replaced.

Peter: Here we are. As you can see, the causal chain in its infinite usual progress brought us on the imaginary situation where we have a formula for a humanoid that would be a combination of our surviving brain's consciousness and an infallible perfect body.

Liza: Will this combination be a human being?

Peter: Well, it will depend on our definition of it at that time, once we have that.

John: And don't forget that this imaginary situation would be conceivable in a long period of time where lots of things, including our views, laws, society, and definitions will have evolved.

Peter: Of course. It would also change our relationships with nature, animals, and the environment.

Sara: For the good or the bad?

Peter: It will depend on us. We can save our planet and also explore new ones once we master certain technological challenges.

Liza: All this sounds like science fiction.

Peter: And we know that science fiction is a source of innovation and inventions like the stories of Jules Verne.

John: In such an imaginary world, a human being will be born to live forever.

Sara: Eternity won't be a mysterious myth for the people then but an accessible reality.

Peter: Yes, and we know that this imaginary way is something that could or should go parallel with lots of progress, not only in technology, but also in philosophy, sociology, psychology, politics, and the law.

Liza: Yes, such a thing is imaginable in a world with a high degree of technology and a high level of acculturation so that the society could handle such a complex phenomenon of newness.

Peter: Eternal life is a sensitive issue. If we can't assure a peaceful and progressive society where there would be equality, justice, respect for the human life, respect for the environment, nature, animals, and a high degree of strategic planning for sustainable development, we can't do it just by being eager and thereby deplete all resources.

Liza: Yes, eternity for a human being really needs a socio-utopia.

John: What is this?

Liza: A society that is so perfect for such ideas, like eternity, that would look like a utopia.

Peter: Such a utopia would be a version of the paradise that humanity has been promised by the religions, but this time it would

be available and at hand as a feasible material venture, as mega project being realizable.

John: Fantastic!

Sara: But if it's so exciting for us, if it's so meaningful and decent, why don't people massively embrace this idea?

Liza: Good question! Why society doesn't go in this direction, to arrive at a point where they can provide eternity and live in harmony with the universe? Why don't they try to build up a society where life could be really and endlessly continued and endlessly flourishing?

Peter: Very well! I'm happy that we've arrived at this point. But let me ask you. Would anybody be as excited as we are with the idea of eternal life?

John: Why not? Nobody likes death.

Liza: Not sure, because, I remind you, our initial problem, you'll remember, was why people have an acute or moderate suicidal attitude.

Sara: Yes, and we said that with a good worldview these suicidal trends would alter and maybe fade away.

John: Absolutely, and as you can see, we built only a part of this worldview and we are already thrilled by the idea of eternity, putting aside the idea of suicide for now.

Peter: We will see the effects of this worldview on our suicidal propulsion once we finished building it up. But now we would like to know why some people won't embrace this idea of eternity.

Liza: We said before that it could be the sign of a depressive outlook.

Peter: Yes, and why is that?

Sara: Why are people cheerless?

Peter: Well, as long as this idea of providing eternity hasn't reached a huge number of the population, we couldn't hope that they will make real efforts we need to generate a lovely utopia.

John: So, the question is why people would not be enthusiastic to participate in our project of constructing a socio-utopia where people would live eternally in harmony with nature and in peace?

Peter: Yes. Why? Why would some people even mock you and call you crazy, naïve, and dreamy after you explain this idea to them?

Liza: Even worse, we could ask why some people will criticize you unjustly, attack you, and impede or hamper your progress?

Peter: Yes, we could ask why people could be so skeptical regarding a better future that could turn the current situation upside down where billions are suffering from poverty, disease, war, drought, discrimination, depression, nihilism?

Sara: We could wonder why people insist on staying in their miserable lives and ignore fantastic projects like the one we are talking about. And I have to remind you that history tells us there have been lots of idealists who suggested magnificent ideas or projects that a majority of people didn't buy and just ignored.

Liza: This is true. Why is that?

Peter: Good question. Let's talk about it at the next meeting.

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Chapter 18

The meeting starts. They all wanted to know why a utopia like the one they had drawn outlines for could not attract a majority of people.

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Liza: It's so rational to make an effort to build a better society. Why won't people do so?

Sara: Is it because they're lazy?

John: Or is it because they get used to what they have as lifestyle.

Liza: The fear should be for something, the fear of leaving their comfort zone and losing everything.

Sara: Or maybe they feel unable to grasp an abstraction and use it to create a better world. Maybe the majority of them don't have the intellectual capacity necessary for that.

John: Yes, there would be a lack of education or knowledge to dare imagining something different.

Peter: All these reasons for such nonchalance could be true and present. But don't you think, my friends, that the cases you mentioned could be not only the causes of the lack of enthusiasm but also the effects of some other causes?

Liza: If we look at them in the causal chain, for sure, it's possible.

Peter: Then, we should see if we can find those causes.

John: Are you hinting at the structural causes of these behavioral attitudes?

Peter: Yes. We should study and find the explanation as to why the world, when it's facing so many miserable challenges with a dark future, persists in having an obvious lack of motivation by a majority of people to find a way out of these problems.

Sara: Especially with the climate change and global warming, I think we are going toward serious issues there.

Liza: For sure! Do you think that the seriousness of the environmental issues is a reason why people give up the idea of building a better world?

Peter: Well, let's study this environmental trail to see how it really affects people's morals.

Sara: If we want to understand how far our concept of earth from reality is, let me remind you that right now, Earth is the only known planet that can support life, I mean for human beings.

Liza: And despite of this, we are behaving as if we have other planets in reserve once the earth is depleted of its sources and becomes inhabitable.

Sara: Indeed. The reason Earth is different from other planets is because of a number of things. For example, we get the right amount of energy from the sun.[101] We should know that if we were closer to the sun we'd all probably burn up and if we were farther it would be rather chilly![102]

John: We are then in the perfect distance.

Sara: Absolutely. But if the situation were to change, we wouldn't be around much longer.

John: How so?

Sara: Well, we know that the atmosphere is all around us and it's made up of a layer of gases that surrounds the Earth.

John: OK.

Sara: Sunlight comes shining in through the atmosphere as it passes through a blanket of greenhouse gases.

Liza: And it arrives to earth.

Sara: Yes. It then touches down on earth's surface, and the land and water absorb the energy from the sun.[103]

John: And what happens after that?

Sara: Well, now that it has been absorbed, it goes all the way back up to the atmosphere and causes infrared rays.

Liza: So after having given its energy to the earth the sunlight backs to the atmosphere as the gases.

Sara: Yes, and we call these infrared gases.

Liza: And they stay there?

Sara: Some of the energy goes back into space, but most of it is trapped in the atmosphere by those greenhouse gases. This is what causes the planet to warm up. And this reheating is called global warming.

Liza: So, global warming is a natural process.

Sara: Partly, because beyond what the nature does there, we're also sending lots of gas to the atmosphere.

John: What kind of gas are we sending there?

Sara: Well, think about all the gadgets and devices that we use in everyday life. Many years ago we didn't have cars, planes, microwaves, light bulbs, cell phones and lots of other modern appliances.[104]

John: But we have piles of them now.

Sara: Billions! And in order to fabricate them we give off more smoke, fumes, and water vapor.[105]

Liza: So, we are sending too many gases into the atmosphere.

Sara: Yes, the things we love are creating greenhouse gases that are going straight up into the atmosphere. They are trapped and make our planet warmer.

Liza: So, global warming is now no longer a natural process.

Peter: Well, pretty much everything we use needs power to work and this power comes from burning fossil fuels and other natural gases. The more that we burn the more carbon dioxide (CO^2) goes into the atmosphere which is not a good thing.[106]

John: No, it's even very bad.

Sara: In addition, the forests have been cut down to make way for big factories, roads or for farming. Trees normally absorb CO^2, but as there are fewer of them, that's also why more CO^2 is charging up into the atmosphere.[107]

Liza: Yes, we are destroying the forest.

Sara: Imagine 200,000 acres of forest are cleared each day, we call it deforestation. That is 139 acres each minute. Assuming there

are around 400 trees per acre making 55,600 trees being destroyed every minute.[108]

Liza: It looks like a suicidal collective behavior.

Peter: Here it is. You see that morbid conduct is not only individual but also collective.

John: Sara! And what will the global warming cause to our life?

Sara: Well, John, global warming expands land and water; it also makes ice sheets melt in really cold places around the world.[109]

Liza: And is this bad?

Sara: Well, these large amounts of melted ice turn into water and flow into streams, rivers, lakes, and seas. This means that our water levels are rising and this causes major floods.[110]

John: I've heard that some cities like London will go eventually under water.

Sara: Yes, if it continues the way it is, we could see more droughts and more violent storms and even heavier rains, which can also cause damages.[111]

Peter: The perspective is not good at all. Because higher temperatures are worsening many types of disasters, including storms, heat waves, floods, and droughts. A warmer climate creates an atmosphere that can collect, retain, and drop more water, changing weather patterns in such a way that wet areas become wetter and dry areas drier. Extreme weather events are costing more and more.[112]

John: You point to what we have to pay for natural disasters.

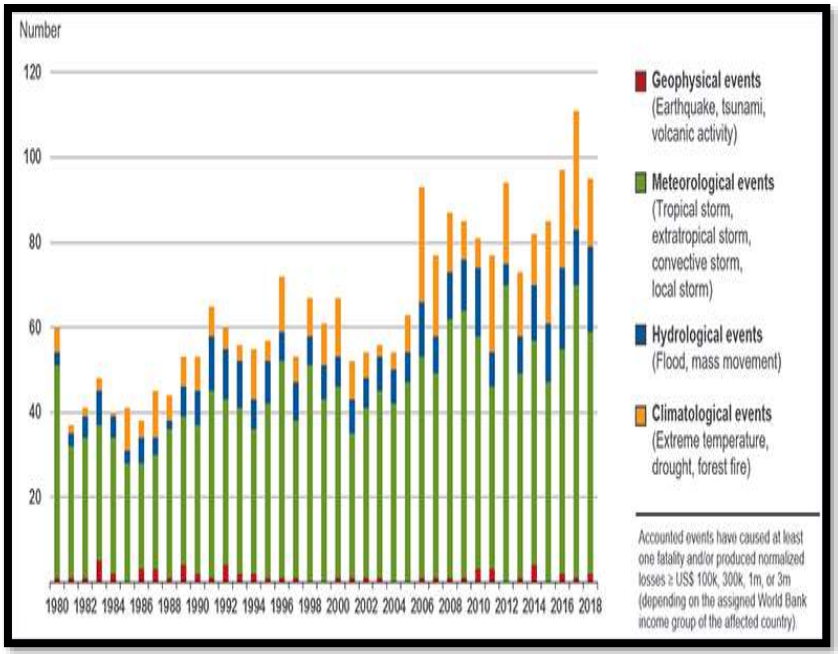

Figure 17

Peter: Yes, what we have to pay for these not-very-natural disasters is growing in such a way that lots of the prosperity that we produce by using and sometimes depleting the natural resources will be simply wasted down the road, and we lose them during these disasters. The amount of billion-dollar weather disasters is expected to rise. (Figure 17)

John: Do we have any numbers on that?

Peter: Well, natural disasters cost the United States $91 billion in 2018.[113] Same year, we had a new record for wildfire costs, with $24 billion in losses caused by several fires throughout the summer and fall.[114]

John: That's a lot of money.

Peter: In 2017 with three devastating hurricanes, extreme wildfires, hail, flooding, tornadoes and drought, the United States tallied a record high bill for weather-related disasters: $306 billion.[115]

Liza: I think globally we have more and more disasters.

Peter: Yes, if you look at this diagram you can see the increasing curve.[116] You can see it also here.[117] (Figure 18)

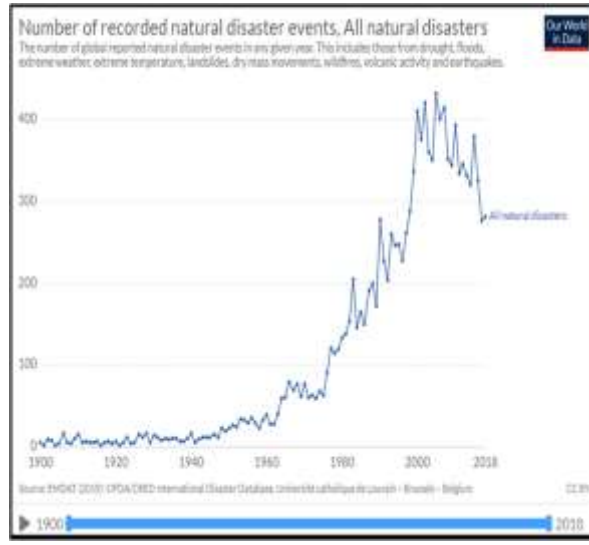

Figure 18

John: What about this curve going increasingly in the coming years?

Peter: Well, if we don't act fast to prevent it, we could imagine that the cost of not-that-much- natural disasters would reach a point that economically it won't even be worth it to produce wealth anymore since we would lose it all by the damages caused by the activities for making those products.

John: Do you mean the rising damage will be at such a level? Peter: Yes, it could be, by its direct and indirect effects and by the fact that each year the situation would worsen. If we look at this scheme we will see how natural disasters could trigger a cycle of destruction, poverty, and damage. (Figure 19)

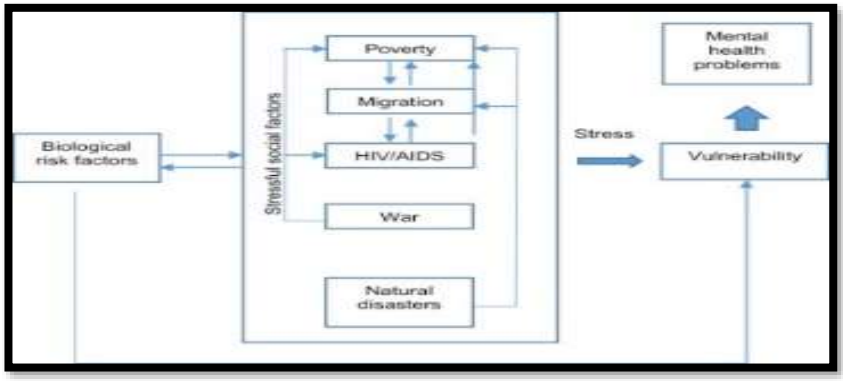

Figure 19

Sara: Let me explain some of the damages that global warming could cause and then we could have an idea about their cost.

Peter: Yes, go ahead.

Sara: The first impact of global warming is more frequent and extreme heat.[118]

Liza: This could push populations toward some climatic migrations because some parts of the globe will become inhospitable to live.

Sara: Affirmative. More and more of the population will have to leave and some other parts of the world will be overpopulated

causing more damage to their limited natural resources and causing social and ethnic conflicts.

Liza: That will be disastrous for poor countries where overpopulation is already problematic, and this will push scores of people toward rich countries.

Sara: Indeed. The second impact is rising seas and increased coastal flooding.

Liza: Yes, coastal zones and cities will be submerged and there will be billions of dollars in damage and millions of people pushed to climatic migration.

John: Entire towns will be underwater including Jakarta, Indonesia; London, England; Dhaka, Senegal; Bangkok, Thailand; New Orleans, Louisiana; Houston, Texas; and Lagos, Nigeria.

Liza: All of this?

Sara: They will push the millions of people toward the other submerged cities where we will have lots of hygiene problems, water and social issues, and even chaos. We should think about epidemics and pandemics as well.

Peter: A real catastrophe when we know that we will soon reach new levels as the sea rises.

Sara: The third impact is longer and more damaging wildfire seasons.

Liza: Yes, we saw that here and there. Even in the Amazon considered as earth's lungs.

Peter: With billions of dollars materials damage and catastrophic environmental impairment.

John: And the risk of more heat for a greater global warming.

Sara: The fourth impact is costly and will lead to rising temperatures that will likely lead to increased air pollution, a longer and more intense allergy season, the spread of insect-borne diseases, more frequent and dangerous heat waves, and heavier rainstorms and flooding.[119]

Peter: And all of these changes pose serious, and costly, risks to public health.[120]

John: Any idea about how much?

Peter: You know, it's so hard to calculate the real cost since the impacts are variable and spread.

Liza: How so?

Peter: Well, the wide range of health outcomes potentially affected means counting one: costs associated with increased health care and public health interventions for morbidity and mortality from a long list of climate-sensitive health outcomes; two, costs associated with lost work days and lower productivity; and three, costs associated with well-being. Costs could also accrue from repeated episodes of malaria, diarrhea, or other infectious diseases that affect childhood development and health in later life.[121] We saw how devastating the Covid-19 crisis was. Costs associated with actions taken in other sectors are also important for health, such as access to safe water and improved sanitation.[122]

Sara: The fifth impact of the climate change is an increase in extreme weather events.

Liza: What is this?

Sara: Well, strong scientific evidence shows that global warming is increasing certain types of extreme weather events, including heat waves, coastal flooding, extreme precipitation events, and more severe droughts. Global warming also creates conditions that can lead to more powerful hurricanes.[123]

John: And each event could bring a huge cost for the victims and damages that it causes.

Peter: Of course and each time a damaged region is more vulnerable for future events.

Sara: The sixth impact is heavier precipitation and flooding.

Liza: The floods are devastating for towns and also for agriculture.

Peter: Yes, and in some regions water can't be absorbed by the soil and this leads to surface water stagnation, which can cause diseases.

Sara: The seventh impact of the disasters is destruction of marine ecosystems.

Liza: This is something that will damage the environment globally. All ecosystems are affected in the oceans and beyond.

Peter: Yes, with the irreversible consequences that could put life at risk on earth since we now know that they are interconnected, directly or indirectly.

Sara: The eighth impact is more severe droughts in some areas.

Liza: This will push lots of people moving from areas where there is no more water.

Peter: Yes, and we are facing a water war.

John: Water will be for the 21st century what oil was for the 20th.

Peter: Yes, we know that wars like the civil wars in Syria or in Yemen were initially water wars and we will have more of this kind of conflict in the Middle East and in Africa.

Sara: The ninth impact is melting ice.

Liza: How serious is this?

Sara: Well, Temperatures are rising in the planet's polar regions, especially in the Arctic, and the vast majority of the world's glaciers are melting faster than new snow and ice can replenish them. Scientists expect the rate of melting to accelerate, with serious implications for future sea level rise.[124]

Liza: And we said how it could be catastrophic for the coastal regions and towns.

Peter: Is there anything else, honey?

Sara: Let me just finish with the tenth and the last one: Disruptions to food supplies.

Liza: Less food for an increasing population.

Sara: Yes, rising temperatures and the accompanying impacts of global warming—including more frequent heat waves, heavier precipitation in some regions, and more severe droughts in others—has significant implications for crop and meat production. Global

warming has the potential to seriously disrupt our food supply, drive costs upward, and affect everything from coffee to cattle, from staple food crops to the garden in our backyard.[125]

Peter: Thank you, Sara. I know that the impacts of global warming are much more than that. But if we take these ten cases we can see how our planet and its human and animal populations and also the vegetation are at grave risk.

John: So, to return to our main issue of discussion. You think that because of all these environmental issues that we should detect some public despair within nations.

Peter: Well, this happens progressively and even sometimes unconsciously. People are directly affected by these disasters or by their news and images.

Liza: And then they get depressed.

Peter: They could find themselves disheartened and powerless.

Sara: They realize there are forces that are much bigger and stronger than themselves.

Peter: Yes, and then they give up.

John: The social media are there for something too.

Liza: How so?

John: Well, they bring a ton of bad news and horrible images of all the catastrophes and disasters that are happening, with the result that people sink, psychologically speaking, into a grim ocean of problems and despair.

Peter: We know, in social psychology, that once a problem is too big and far beyond your capacity, you might have tendency to give up.

Liza: Yes, this is a known fact.

John: Well, because social media shows hundreds and hundreds cases of bad events hourly, this bring you to a state of lethargy that is so deep that you cannot even imagine a getaway. You feel disarmed. Just one hour of surfing on social media can get you so much bad news that you don't know which one you should react to. This overwhelming feeling starts to drag you into a state of passivity such that you begin to accept anything as it is. You become a passive observer of atrocities. Formally these sources are informing you, but functionally they are getting you used to everything that happens far beyond your will and your ability to do anything or mount a response. An unconscious lack of power comes over you that makes you ready to accept whatever is happening.

Sara: Does social media do this purposely?

Peter: The answer could be yes or no. But then again, the consequences are the same.

Liza: People become submerged by all this information and just want to attach themselves to the little things that they have in their comfort zone. This is the end of social actors' era where citizen intervention was a pervasive major factor of change in society.

Peter: Yes, a majority of citizens now don't have any dream bigger than a flat routine plan for their individual life in the scale of

days, months, or even years. Most of them are exhausted by all the bad things they are exposed to, kind of a too-much-I-can't-bear-it-anymore life that pushes them into an unconscious depression that can't be treated but by a drug, medication, alcohol, sex, or Hollywood's garbage. Even suicide is seen as a final solution.

Liza: The uncertainty becomes part of life and this feeling that at the end of the day nothing could look possible or worthy to save.

Peter: Everything that could be a source of motivation for people to change the status quo became as ordinary as a Facebook post or a banal tweet.

Liza: Yes. People end up ignoring any perspective that could make things better by doing something dissimilar to their ordinary acts.

John: Now, in such a situation, how we could be optimistic that they would adopt a worldview that generates hope and excitement?

Peter: You see, John, there is a shadow of impasse in your question. A paradox.

John: Which one?

Peter: On the one hand, people don't want to change anything because they don't see any chance for change.

John: Yes.

Peter: On the other hand, they won't change anything as long as they don't see a chance for change.

John: True.

Peter: So, if we want people to change anything we should show them that there is an effective chance to change.

Liza: Sure, but how do we do this?

Peter: We suppose that a good worldview would do that.

John: But which worldview precisely?

Peter: Well, the one that we are building up is just an example.

Sara: Excuse my French, but what the hell are you thinking, my dear, that you think this worldview could change people's lethargy? Why the optimism?

Peter: Our optimism is instituted on the fact that if there is one thing that is not lost yet it is hope and the will to have a better life.

Sara: Yes, people look for that. But they don't make moves to get it done.

Peter: Correct. And we asked why. We looked for the cause of this passivity and we saw that the lack of perspective is a cause.

John: And we want to know why they are blind to this interesting horizon of possibility.

Peter: Yes, and our long discussion showed that this blindness comes from the fact that they ignore how a better life could be made.

Liza: So, as long as you don't know what a better life is, you don't see it and therefore you don't look for it or try to get it, right?

Peter: Correct. Could you imagine a bunch of gold diggers finding any gold if they had never seen gold in their entire life and don't know what it is concretely?

Liza: Right. The problem isn't that billions of people don't want to change and get a better life. The issue is that they don't know what kind of life is a better one.

Peter: Indeed, they don't have any tangible indication to know what to look for. They don't have any perceptible idea of a better world to identify the landscapes and then to construct it.

John: You mean all their education and media and information are not useful to them to see how and what a better world could or would be.

Peter: Obviously, because education and media are not there to draw a perspective of a better world because a better world, here in our discussion, means a different world, something far from what we have right now. In this perspective, a better world, a different world, will be one that would put into question the current system's dominant logic in order to set a new higher social order of assuring the well-being of everyone in a world of justice, progress, and humanism.

Liza: You say that the dominant system doesn't like that?

Peter: Well, official education and institutional media are mainly tools of the existing system to make us believe in the inescapable aspect of the model on which we already built our society. The current social structures teach us just how to make the system function, not how to change it. The indirect function of such a cultural configuration is to get people to believe that the only world

possible is the one that they have, that the only life they can get is the one that they already have gotten.

Sara: It looks as if education and media do more than induce the mentality of change. They encourage immovability and acceptance. Anyway, this is what we could note as their outcome.

John: But why does the system promote stagnation instead of shift and progress?

Liza: It's not complicated. I think it's mainly because those who dominate the current system are also those who take the greatest advantage from the status quo.

John: Right, I could imagine that. But we said and saw that the existing situation of the world can't be sustained for a long time. Don't the decision makers see it themselves? Don't they see all the risks heading directly to their face?

Peter: They surely do, but the profits and the benefits they are drawing are so huge and important for them that they cannot think of the long run. In fact they cannot think of anything but preserving the status quo to keep making more profits and enjoying their privileges as long as possible.

Sara: It means that they exclusively take care of short-term benefits and that's all. They are willfully blind to any long-term issue regardless of what it is.

Peter: What we should notice here is the psychological state of the upper class that encourages them to embrace absurd denials on tangible warning signs and facts.

Liza: You might be alluding to what is called “alienation”?

Peter: The label is not as important as the substance. We know that the psychological effects of earning a lot of material benefits in a short period of time are such that they create an unrealistic conservative approach, filled with fear and at the same time a kind of unconscious greediness, and all of this makes getting a rational judgment difficult if not impossible. It blinds you to obvious facts that would bring you down to earth and out of your fairytale world where everything is supposedly perfect.

John: So, could we say that because of this long-term sightlessness they are sacrificing the collective lasting interests under the foot of their private immediate ones?

Peter: Yes, unfortunately. We saw it for the environment and it’s the same for economy, military, society, culture, and, let’s say, the whole of humanity.

Liza: Far and wide, this greedy mindset for short-term profits is damaging something durable about human civilization.

John: In this way, at the end of the day, those who have this avaricious attitude could even destroy earth and humanity. I wonder why the media doesn’t try to inform people on this fact and warn them.

Peter: You know, most people working in media are themselves a part of the moneymaking machine. We have very little media that could be labeled as truly “independent.” The social actors who want to challenge the system don’t possess any important mass media in

their hand. We know, for instance, that only six corporations control 90% of the media in America.[126]

Liza: And what about social media?

Peter: They become gradually part of the system that wants to avoid serious and embarrassing topics as well. The companies that are running these social media are private businesses that are looking for profit in the same way as classic brick and mortar corporations. These social media companies are structured in such a way that their function doesn't challenge the dominant order they are taking advantage of as well. We know that in 2017, Google had 38.6 per cent, Facebook 19.9 per cent and Twitter a paltry 1.3 per cent of the digital advertising market. And regardless of their market share of free services, it's their revenue sources that are important when considering if they're monopolies. They aren't social media companies, they're digital advertising companies.[127] They should make money based on the same rules that other greedy companies are doing.

Liza: So, now that we know why people had been kept from seeing what could be a better world, is there anything that one can do to change it?

Peter: Of course.

John: But how and what?

Peter: Again, remember the foundation of our worldview.

Liza: Do you mean *infinity*?

Peter: Yes, because we believe in the infinity in anything, we could look for the infinite ways to find a solution for the issue we are talking about. Any challenge has an infinite number of ways out of the problem.

Liza: You mean there are possible ways for massively changing the view of people?

Peter: Yes.

John: And this, despite the fact that the dominant system and those who benefit from it don't want people to know that there would be a serious change of perspective?

Peter: Of course. If they can find solutions for securing and maintaining ignorance and stagnation, we could also imagine, on the flip side, the change and its solutions.

Sara: And you say we could hope to find this solution because we believe in the *infinity*.

Peter: Of course.

Liza: But how?

Peter: Well, remember! Infinity was a never-ending causal chain. Right?

Liza: Yes.

Peter: In this case, based on our methodology, if we consider that a bad situation in the world is the cause of our interrogation on a solution, what could be the effect of this interrogation?

John: More reflections, study, and discussion.

Peter: Right. And then?

Liza: Some pre-answers.

Peter: Correct, and after that?

Sara: If our answers are good and unbiased, and if they are positively verified, there would be the beginnings of a solution.

Peter: Here we are. As you can see, people who are equipped with a worldview that integrates an infinity-oriented methodology could never stop and say that we can't move forward. They would never say we can't do anything.

John: You said "never"?

Peter: Never.

John [excited]: Then we can feel infallible.

Peter: Absolutely. And we are infallible, not because we feel it, emotionally speaking, but because we are objectively and rationally convinced that for any difficulties there would be an endless number of ways to find a solution. Reaching these solutions is just a question of willpower and consistency in our methodical efforts.

Liza: Wonderful. We talk a lot about the structure and mechanisms of infinity as a process, but we didn't talk about its tangible functions.

Peter: In the next session I will develop it. But first we will continue our discussion on how we could find a way to show people that there is a real chance of transforming the world's bad situations into better ones.

They left.

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Chapter 18

They were waiting for the Peter's presentation on how *infinity* also refers to countless solutions when it comes to a problem.

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Peter: We should define the two notions of "problem" and "solution." Let me ask you guys! What is a problem? An issue?

John: An unwanted situation that should change by a method that is currently unknown.

Peter: Well said. And what is the solution?

Liza: A way that could change an undesirable situation to a better one by knowing the unknown.

Peter: Correct. Now, how many ways we can conceive for finding an action that could turn an unwanted situation into a wanted one?

Sara: If we apply our principle of infinity—that is everywhere and in anything—we could say there are theoretically a countless number of ways to do something.

Peter: Right, and by saying that we mean that by taking any phenomenon as the *effect* of a causal chain there would be possibilities to change the sequence of events in such a way that one of them produces the right solution we could apply to our problem and get the desired result.

Liza: This is true, but we said that for infinity there is no limit and no time, while we know that for a concrete problem to be solved there's always some material restrictions and time limit.

Peter: You are absolutely right, Liza. Let's distinguish two things: infinity as a concept and infinity in action.

Liza: What is the difference?

Peter: *Infinity* as a concept is what we defined: A never-ending causal chain.

Liza: Right.

Peter: *Infinity* in action is not actually limited, but conditioned, by those elements that we could influence and impact in a causal chain.

John: You mean those elements that we could effectively modify and adjust.

Peter: Right. Those elements that we are able to materially affect, change, orientate, manipulate, or regulate in such a way that the causal chain redirects itself and gets to what we want: a solution.

Liza: So, the theoretical countless possibilities of the chain of events are in reality counted by our capability to shake the elements of that causal chain.

Peter: Yes, that's why we use the concept of infinity as theoretical frame for our action. But within the action we should see what the real and material possibilities are and then get what is doable.

Liza: So that's why you said that we should have hope for finding a real solution to know how to motivate the people for a change despite the fact that the dominant system wants them to stay resented and passive, kind of abdicated from the world's problems.

Peter: Sure, we have a concept that suggests us and assures us that there will be somewhere a possibility for finding a solution and that we should never stop looking for it.

Liza: You mean here the idea of countless possibilities, right?

Peter: Yes. As you can see, not only for this case, but also for all other issues and problems we will meet. We are equipped with a notion that will remove us from a state of despair and keep us searching for a solution.

Liza: Yes. Always.

Peter: Then, once we are motivated and start searching for the solution we will see which components we could actually modify to orientate the chain of events toward a favorable and better situation. If we're not successful with the first trial, the same vision invites us to try a second way, if not, a third one, and so on. We keep going.

Sara: So, the person equipped with the concept of *infinity* and the idea of infinite possibilities doesn't ever stop and keeps going as long as he or she is alive.

Liza: And of course, the more we are trained, educated, equipped, creative, and intelligent, the more we have chances to find one of these impending solutions.

Peter: I have to add that the margin of maneuver to change a causal chain is also determined by what we get as the outcome of the evolution of that chain at the time we take it in to alter it. The particularities that come from the previous changes of the chain will determine what the actual possibilities for the immediate and future modifications are. Of course, if the range of possible changes of a chain is not satisfactory at a given moment, we could first introduce some primary and subsidiary modifications in the chain in order to defuse and neutralize the effects of the unwanted past alterations and then, implement, progressively, our sought changes in an improved causal chain that is then readier to incorporate our preferred adjustments.

Liza: So, there always would be direct solutions or first some minor alterations and secondary solutions to arrive at the desired change.

Peter: Yes, always. We should see if our resources and time allow it or not. Everything is a question of proportion between the complexity and hardship of an issue on one hand and our ability, logistics, and capability on the other.

John: And, what if, despite of our efforts, we don't see any opening?

Peter: Then we should look for the secondary solutions and more incremental efficient activities in order to get additional resources and time to go to a higher level of solution finding and a change-implementation process.

John: Adding the new logistic resources I can imagine OK, but what about time? Would it be possible to buy time along the process as well?

Peter: If priority is given to finding the solution and its implementation and not to whom is doing that, then yes, we will have always the opportunity to buy the necessary time and to see what could come up as a new option. Because even if a person or a group or even a generation is unable to get the solution, they can at least buy time for another person, another group, or another generation to try to find the solution. It all depends on our view on the world.

Liza: On our worldview.

Peter: Yes, because when you have a worldview, it means that you see the big picture, you see the things in large scale of time, of space and of scope of generations or actors.

Liza: You are not then a prisoner of your own life or your own lifespan.

Peter: Of course not. You see all these efforts and changes in a holistic approach where everything is bound to each other and you cannot egoistically distinguish yourselves from what is going on elsewhere or what will be going on afterwards once you are not there.

John: It's a kind of extended view on the world.

Sara: This is what holistic means.

Peter: Yes, it's when we see ourselves as a part of a whole that could not be unaffected by anything we do, say, and even think.

John: And this image of connectedness of everything and every person will bind you to anyone else and their destiny.

Peter: Yes, as everything other people will do that also directly or indirectly affects your life, you could imagine that that would be the same for you. Anything you do will positively or negatively affect someone or something somewhere. This is what I mean by total relatedness.

Liza: This understanding of large interrelations—you call it "total relatedness"—should be something omnipresent in our mind if we adopt this worldview, right?

Peter: Indeed. That's why we started our work by studying the reality of this connectedness through different levels and with some concrete and material examples. These kinds of examples will show us each direction we could go. In the next session we will develop one more aspect of the misuse of resources and how it would be beneficial for humanity if we redirect all that we have at hand.

They left.

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Chapter 19

The next meeting started with this interrogation on how the dominant system wastes wealth and assets in the world.

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Liza: By the dominant system what do we mean by that exactly? The capitalist system?

Peter: We should talk about the global system that includes capitalism but also mixed models like the Chinese one.

Sara: What is wrong with the global system?

Peter: Let's start by understanding what the superpowers spend to destroy each other and compared to what we could have done with that money.

John: It looks that the overall military expenditures rose 2.6 percent between 2017 and 2018, to hit a total of $1.82 trillion.[128]

Liza: It's huge.

John: Yes, the total from 2018 is 5.4 percent higher than 2009, and represents a 76 percent increase over 1998, a 20-year period.[129]

Sara: So we spend more and more for military in the US.

Peter: Yes, now let's imagine how much money this 1 trillion and 820 billion dollars is.

Liza: And what we could do with that.

Peter: Let's take the 2019 US military budget. It is 717 billion dollars and we should know that in order to cover everybody with Medicare you need just 12 billon dollars more.[130]

Liza: Medicare for all would be a huge in that it could help more than 200 million Americans who challenged and frustrated by the private insurance industry.

Peter: So, a little conclusion: if some hundred billion dollars go to the military and no to the Medicare it's good for private insurance companies, right?

Liza: Yes, because their business will be ruined if everybody gets Medicare.

Peter: Or let see if we can use the Pentagon budget for something like free college. I quote: "Free college for all is completely affordable—especially if you have the Pentagon budget at your disposal. The military's $717 billion could pay full tuition for four years at a public university for 21 million college students—more students than are currently enrolled in *all* colleges in the country.[131]

Liza: That would be fantastic for the students.

John: And for the economy, imagine that millions of students, instead of paying back the college by their own money, could use this amount of money in other sectors of economy.

Peter: Imagine the impact of the Pentagon's budget for the poor. For instance it's said that "at the same time that the $717 billion military bill wends its way toward Trump's desk, Congress was debating the merits of cutting $24 billion over ten years from food

stamps and related assistance for the poor. Together, the proposed cuts and rule changes could result in 3 million Americans_losing food assistance. Trimming the Pentagon budget by $2.4 billion per year—a reduction of less than half a percent—would make up the difference and keep food stamps and its sister programs intact."[132]

John: And with transforming this money into the sustainable development we could create job and housing for millions of these poor people.

Peter: Imagine that "Planned Parenthood received $543 million in government funds in its last reported year. "Now we should know that a "one-year Pentagon budget could fund services like birth control and gynecological exams at the current funding level until the year 3336."[133]

Sara: Just the budget of one year of military sector could assure a positive activity for more than 1300 years.

Peter: Yes, or "the military budget could fully fund the $200 billion annual investment needed to reduce US fossil fuel emissions by 40 percent by 2035, according to a 2014 study. That study—the best cost-estimate available for carbon reduction—also estimated that a $200 billion annual investment would create 2.7 million new jobs."[134]

Liza: This is fantastic. We could help both the environment and the people.

John: Of course we could.

Peter: And regarding infrastructure, "since the United States is $2 trillion shy of the needed funds for repairs over the next ten years, a 28 percent cut to Pentagon funding—from $717 billion to $513 billion, still higher than during the 1990s—would cover the difference."[135]

Liza: Jesus. It's unbelievable all we could do by just one year of the defense budget.

Peter: Or just by part of it, to be realistic.

John: And imagine what we could do with the entire military budget worldwide.

Peter: Much more construction, improvement, development, and help for the needed people in all fields.

Sara: And envision what kind of world we could create if every year we inject such money into a sustainable and environment-friendly economy.

John: We would have a new world.

Peter: Yes, and imagine that the military budget is spent to destroy and obliterate, while a sustainable investment could be highly productive and fruitful.

Liza: Now the question is why they don't do that.

John: Let me just bring some points of how the military budget affects the economy. We should know that: "Increased military spending leads to slower economic growth.

- Military spending tends to have a negative impact on economic growth.

- Over a 20-year period, a 1% increase in military spending will decrease a country's economic growth by 9%.
- Increased military spending is especially detrimental to the economic growth of wealthier countries."[136]

Peter: Great points. Now Liza, before we go over this important question on why people don't go in a rational direction, we should know that a huge amount of money, in general, is spent for the things that are not productive at all, but we do them just to keep the social order of a society that functions on a problematic basis.

Sara: What do you mean? What kind of things you mean?

Peter: Well, it's a question of a huge budget we spent for assuring security in a society that is so unequal that it would continuously spend money for the maintenance of a badly built system.

John: You're talking about what we spend for prisons, police, and law enforcement.

Peter: Yes. Here again, like the military industry, we have a field where money is wasted in order to repress people by leaving them without anything productive and useful.

Liza: How much we are spending for?

Peter: Well, "over the past three decades, U.S. cities have allocated larger and larger shares of their budgets toward law enforcement. Today, the U.S. collectively spends $100 billion a year on policing and a further $80 billion on incarceration."[137] More than two million people are imprisoned in the United States.

John: So, only in the US do we spend almost 200 billion dollars for that.

Peter: Once again, imagine what else we could be doing with 200 billion dollars.

John: Let's see what all this money could do if we have a global sustainable development plan.

Peter: Well, one example would be constructing educational buildings in African countries. That could be a good demonstration.

Liza: While we should know that 100 billion dollars mean 100 thousands of million dollars.

Peter: Yes, for example, "in Angola, Lynn Cole, a resident of Illinois, runs RISE International—an organization that builds schools for as little as $12,000. Fueled by donations, the residents of Angola construct and run the school themselves."[138]

John: This means with only 12 million dollars you could build in that country some 1000 schools. With 120 million dollars you could build 10,000 schools and so on. Imagine the number of the students that could be educated in these schools and how their professional and economic function would change the fate of that country.

Peter: Or in Bangladesh "CO-ID (Co-Operation In Development Australia Inc.) led by Fred Hyde, builds schools in the poorest areas of Bangladesh. Donation-run, it costs $8,000 to build a charity school, and another $8,000 each year to keep it running."[139]

John: Well with eight million dollars you could build 1000 schools in Bangladesh. And we are talking about one hundred thousand million dollars for the budget of law enforcement in the US.

Peter: If you take Saudi Arabia and its military budget in 2018, they spent 67.6 billion dollars. China spent 250 billion dollars at the same time.

John: Imagine how things would change in the world if all these monies went in the direction of development and prosperity.

Liza: Now, could we please go back to this question on why people don't go in this rational direction?

Peter: This will be the main subject of our next meeting.

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Chapter 20

The next meeting started with this question: Why won't people in the world go in a rational direction where they could change the world for the better by spending money for improving things instead of for destroying things?

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Peter: For sure we could talk about the huge profits the big corporations gain from all these weapons and the prison industry and so on.

John: Is it the explanation for this obvious irrational direction of the world?

Peter: Yes, but just partly.

Liza: Anything else?

Peter: We should go deeper in our analysis. Don't forget that we don't judge before using our methodology to understand what is going on.

Sara: So, what will be our answer?

Peter: We should use our principle of causality and the causal chain method.

Liza: You mean we take this irrational spending of money as the cause and see all the damages and missed constructive opportunities as effects?

Peter: This is one direction, and another one is to take this irrational spending as effect and looking for its causes.

John: We said that this greediness for the profits could be the cause.

Peter: Yes, and now we continue the causal chain. What will be the cause of the greediness? Why this voracious appetite for profits?

Liza: To gain wealth and power.

Peter: For what?

Liza: For having a dominant position over the world and its people.

Peter: And why this position?

Liza: To use the privilege of having control on them.

Peter: Why do they need that control?

Liza: To keep their upper social position?

Peter: And what is use of this position?

Liza: Comfort, luxury, well-being, security, wealth, and so on.

Peter: And we know all of these are the positive things.

Sara: Yes, everyone wants that.

Peter: So, if all of this is good, why is it that people in a higher social position don't want it for everybody?

Liza: You mean why the upper social class wants all of these comforts, eases, and luxury for itself and not for everyone?

Peter: Yes, if it's good to them, why should other people be deprived of it?

John: They could say that for getting this level of comfort you should deserve it and everybody doesn't.

Peter: This is an argument. But we know that in general lots of people are hardly working and get by on a bare minimum to survive. How come they don't deserve that while swindlers and charlatans who steal people's money should have such comfort and ease?

John: They will say that this is an exception and the general rule is that people who are wealthy deserved it and got it by hard work.

Peter: And they know that sometimes it isn't at all true like in cases of heritage, fraud, or a winning lottery.

John: You mean there's something behind this argument?

Peter: Yes, I mean there is also a worldview that makes them argue like this.

John: What worldview?

Peter: The one that says all the people can't have this level of comfort.

Liza: And why is that?

Peter: Far beyond the argument of merit and virtue, they think that there aren't enough resources to provide a level of the comfort they have to everyone on earth.

Sara: So, they think the majority should live in kind of relative or absolute poverty so that resources could be used to supply a minority with an excellent level of well-being and high comfort.

Peter: Yes. At the bottom of their argument they think there aren't sufficient resources for everyone, and that's why we should go along with the social inequality.

John: But, are they right on the scarcity of the resources?

Peter: They are right and wrong.

Liza: How so?

Peter: They are right if we take the current system as a "normal" one, and they are wrong if we consider this arrangement as abnormal.

Sara: Explain it more, please.

Peter: The dominant class takes the current socioeconomic structure not only as the normal outcome of human history but also as the only possible one, and that's why they recommend we keep to things as they are.

Liza: And why do they think so?

Peter: It's essentially because they are in a good position, and when you're in a comfortable and dominant situation, you don't have any reason or motivation to criticize the system fundamentally or to want to change it substantially.

Liza: So they are naturally conservative because they want to retain the system as is, at the service of their own profit.

Peter: Yes, because the system is visibly running in their favor as such and they want to maintain and uphold it as much as they can.

Liza: What about other people in the system, the majority?

Peter: For the opposing point, those who don't have access to good comfort think that the system is unfair and should change.

Liza: And are they right?

Peter: Well, if we look at their situation and all the hardship they are enduring, yes. They are unsatisfied and they want to change it. Don't forget that one out of three people on the planet suffers from malnutrition.

John: So that's why they oppose the dominant class system.

Peter: Yes, and as they are the majority, the have-nots represent a permanent threat for the upper class's situation and are seen as a source of fear and worry.

Liza: This is what the sociologists call "class conflict."

Peter: Yes, or "class struggle."

Sara: But this is a very old story.

Peter: Ah yes, honey! As old as human history with its social stratification.

Sara: You mean from several thousand years ago?

Peter: Yes, as old as we. Men were differentiated vertically, and because of wars some turned out to be slaves and other masters.

Liza: But why during the thousands of years, with all this suffering across the world, could humanity not put an end to this unjust system of domination?

Peter: Good question. It's for several reasons. One, the majority suffers but they often don't know exactly why.

John: As they don't know the cause they don't try to change it and deal only with the effects, right?

Peter: Yes. They go along with their misery. Two, although the majority knows that inequality generates gloom, the dominant minority made them believe that inequality was normal, natural, routine, predetermined, God-willed, and then acceptable. So, the majority sees no reason why things should change.

Liza: Are you pointing to the soothing role of religion in the history?

Peter: Not only that, but all culture, media, education and social norms and traditions that keep poor people passive with a kind of fake contentment of their misery.

Sara: All things that make us go along with unhappiness and a durable poverty with a vague hope for a better world in afterlife, right?

Peter: Yes. And a third reason is that one part of the majority tried to revolt against the unequal system, but it had often been severely defeated and/or violently repressed.

John: The three reasons you pointed to are understandable for ancient society or, in the best case, in underdeveloped and despotic countries. But what about those who live in an unequal class system in developed and democratic countries? What about all these educated people who have graduated from colleges and universities and their freedom of access to information?

Peter: Well, believe it or not, in developed countries these three reasons are running as well, but in a modern version.

Liza: What do you mean?

Peter**:** Society could be defined as an interaction between the behavioral patterns of individuals and the institutional patterns of structures.

John: An interaction between individuals and institutions?

Peter: Yes, they create and maintain each other.

Liza: In this case, why is it that the majority of people can't alter these structures and change the institutions?

Peter: They could, but they won't.

Liza: Why?

Peter: Because these influences of individuals are more qualitative than quantitative.

Sara: Do you mean some individuals have more influence on the structures than others?

Peter. Of course. Those who have more power and wealth could impact and handle the structures more deeply and broadly than those who don't have power and affluence.

Liza: And then?

Peter: Because of their bigger influence, the prosperous minority could shape the structures in their favor and to their advantage. The structures shaped in this way will act in favor of those who imprint them and carry more characteristics and features left from this minority than of the majority.

Liza: Therefore these structures will influence and affect, in their turn, the majority of people in such a way that the minority could at last prevail and stay safe. I mean there would be no real serious risks coming from the majority, is that correct?

Peter: Indeed. And this shaped system accounts for two sociological concepts: production and reproduction of society.

John: What are they?

Peter: "Production of society" refers to those mechanisms, initiatives, and actions that form the structures, logic, and rules of a social system. These are the establishing acts that design and define the frames, norms, and interrelations between the main components of a society.

Liza: And what is the reproduction?

Peter: The "reproduction of society" refers to those acts and behaviors and mechanisms that maintain, sustain, and assure the continuation of society as is.

John: So, the production of society is more important.

Peter: Both are interrelated and actually important. But the actors of the production of society are usually the most influential and the most powerful. They set the rules and mechanisms and establish the social order to conform to their advantages. Production of society means setting the governing rules.

Liza: And for reproduction?

Peter: The actors of reproduction are all members of society. This means that even those who are victims of a structure's

deficiency will effectively be at the service of the reproduction of unequal social relations whether they want it or not, whether they know it or not. As soon as an individual respects the social order he or she will participate in the reproduction of society.

Sara: So, the most of the population are the actors of reproduction of a society that had been in production by a dominant minority?

Peter: Yes. That's well said, honey.

John: So, you say that if the people don't change this irrational turn of events on earth, it's because they can't imagine a new design for the production of society. Is that right?

Peter: Correct. At present, in order to become an actor of production of society you should have either wealth or power, and the best is to have both. But if you don't have either, you would be nothing more than pawns in the game of reproduction of society.

Liza: And if you don't want to be an actor of reproduction?

Peter: If not, you will be out.

Liza: Out of what?

Peter: Out of society, you will be either homeless or labeled outlaw, criminal, abnormal and then either marginalized, or even jailed or suppressed in some despotic countries.

John: And in this case, could we hope that one day things will change?

Peter: Of course. The formula for change resides in two questions: one, how we could choose not to be an actor of

reproduction in a society that isn't fair, just, and desired; and two, how do we become an actor of production in society?

Liza: So, those who want to change society should first take themselves out of the service of the dominant class and stop to maintain, preserve, and assure the continuation of a society that is not always their favorite one or in their favor.

Peter: Yes, because as long as they are preoccupied by social reproduction's activity, the system stays so potent that it looks impossible to be changed.

Liza: While if we stop acting as actors of reproduction, the system would become vulnerable and at a given point, be ready to be replaced.

Peter: Affirmative, and this process of replacement would be the opportunity of a new process of production of society. At that moment, the actors who are then equipped with wealth or power or both could shape a new society and establish a new order.

Sara: Now, the one million dollar question is how one could proceed to these two important tasks: First, how we could stop being the actors of reproduction of an irrational society? And after that, how we could get wealthy and powerful individuals to become the actors of production of a rational and humanist society?

Peter: Right. We will look into this at the next session.

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Chapter 21

Now, Peter had to explain how those who are, willingly or unwillingly, reproducing society, as it had been shaped, could halt playing such a role and become the actors of production of a new society. Not an easy task!

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Peter: When we say the reproduction of society, this is an expression for a few things. First, learning and internalizing the dominant norms and rules.

Liza: Explain it, please!

Peter: Sure, every newborn in society grows up by going through a process called "socialization." This is the process where we consciously and unconsciously learn and internalize the ruling norms of society, which will be implemented in our mind and channel our behaviors.

Liza: So we apply these norms as if they were totally natural and obvious, whatever their substance and content are.

Peter: Yes, it's for sure that with age we could become more critical with regard to these inculcated norms and values, but it doesn't usually happen that much.

John: All right, what is the second feature of social reproduction?

Peter: The second concerns transferring these norms and rules to other people through socialization and education.

Sara: You mean we become ourselves the agents of transference for what had been transmitted to us through socialization, right?

Peter: Yes, we do what our parents did to us and they did what our grandparents had done to them. This social transmission of norms and values that keep the social order intact is the backbone of reproduction of society.

John: What about the third feature of social reproduction?

Peter: The third point is about complying with social norms and going along with assigned social roles.

Sara: Here you point to everyone's routine life: people think that there is no choice but to obey norms and rules.

Peter: Yes, here we have millions of people following, more or less mechanically, the behavioral paths designed by the dominant system and live out their lives without any questioning or reflection on what they did during their 80–90 years on what was the substance of their lives. Just a continuation that assures the persistence of what is going on in the whole society. No change, no improvement, no important turning point.

John: Are there any other features of social reproduction to add?

Peter: Yes: believing in the non-changeability of the system or in only its channeled ways for little adjustments, and this only if the top agrees with such adjustments.

Sara: So, people don't try to embrace essential change since they believe in the impossibility of changing the system, right?

Peter: Yes, they accept what had been said by the system and admit that they are unable to do whatever is necessary for a structural change of an unfair system. For them everything is fixed from above and any shift can't come but from there, from the top of society.

Liza: This perception is part of the behaviors and habits adopted by people who help the system that is untouched by the majority.

Peter: Yes, when the majority espouses this lifestyle of heteronomy,[viii] it considers its life as normal and follows this belief up to the end.

John: So, the social reproduction entails a bit-by-bit passivity, compliance, and obedience.

Peter: Yes. The production of society designs the social configuration in such a way that makes voluntary obedience a no choice.

Liza: But people usually have the impression that they follow their own choices. They think they are rational.

Peter: Ah yes, whereas the real limited options for their choices had tacitly been quite determined by the dominant logic and the explicit or implicit rules of production of society. Like the famous

[viii] The condition of being under the domination of an outside authority, either human or divine. (Dictionary.com)

democratic elections that give the people the satisfactory impression that they are choosing their own government while they are just preferring one political actor of the social production's sphere to another one.

Sara: Don't they see that?

Peter: Well, they see it, but they don't realize that. You know, the system will hide some points and activities from the public's eye, but the main features are visibly there.

Liza: So, why can't people see that the game is rigged?

Peter: Because they don't have the tools to figure out that they've been had.

John: What tools?

Peter: The conceptual tools: knowledge, systematic vigilance, and education.

John: But lots of people go to college and university and are highly educated.

Peter: Sure, but we're not talking about this kind of skill-oriented education.

Liza: Then what?

Peter: I'm alluding to critical thinking and regular watchfulness where we become attentive and acutely regard the causal aspect of things before we accept them.

Liza: And how come people don't do this?

Peter: They do, but it's so tiny compared to what the system broadly instills in their mind, to push them consciously or

unconsciously toward the acceptance and approval of the prevailing conditions.

John: What and how is the system instilling?

Peter: Well, we said everything starts with a process called socialization.

Liza: This is the process by which the society makes a newborn an individual, a member of society.

Peter: Right. In a class society, socialization is the first step toward learning about the reproduction of society. It begins from day one of our birth and goes on.

John: You're talking about the role of family.

Peter: Yes, a family whose members have been socialized in such a way and then consequently educate their children in the same way.

Liza: And after socialization?

Peter: Along with the family, other institutions complete the socialization, like school, church, colleges, and media. School continues our education with an official and standardized version of the social order. It's a systematic instillation of norms and values to the students' brain for years with a coercion/reward system that forces or encourages anybody to play the game for 10–12 years.

Sara: It's an enough time to shape people's mind.

Peter: Of course, largely. And then it continues with church where we learn a philosophical view that emboldens the dominant social order and gives us tips and clues to make our obedience a

profitable action by buying our place in heaven, after death, and at the same time avoiding the horrible hell in God's domain.

John: Woo! Even heaven is playing a role in the reproduction of society.

Peter: Yes, for thousands of years now. And then we have all other tools of the system for our secondary socialization.

Liza: You mean workplace, military service, peer groups, and so on.

Peter: Yes, everywhere the system could reinforce and readjust our habits for obedience. The media and the higher education system are there as well as some new tools like social media and video games.

Liza: So, we are permanently educated and reeducated to believe in a system and to comply with its rules.

Peter: Yes. And this goes until we die without causing any trouble to the system's function and its byproducts.

John: And what if we don't comply?

Peter: I said that. You are then labeled as outlaw, criminal, radical, and possibly deprived of your freedom.

Liza: So, our freedom is conditioned by compliance with the ruling norms of the system.

Peter: Yes, they call it lawfulness, and if you don't comply, you are an outlaw and should be prisoned as a result.

John: But, at the end of the day, Peter, the society need laws in general or not?

Peter: Of course. But we should always see what kind of order these laws are enforcing. We need to have a better judgment on the content, substance, and function of these laws.

Sara: So, socialization is the process by which we start learning how to consent to the system.

Peter: Yes, and as we saw, the class version of this system has some main irrational characteristics. So we ask ourselves why follow these unreasonable ways while the earth, environment, ecosystem, and billions of people are suffering?

Liza: Yes, and we want to know how it could change.

Peter: In order to follow our methodological path, here again we should see what the related causal chain is and what we can do to modify this chain.

Sara: Yes.

Peter: In order to take knowledge of the system, its function, and how the people behave, we should have an analytical tool that lets us study all of this in the frame of a causal chain.

John: What could this analytical tool be?

Peter: Something that is behind any preconception, any judgment, or any subjective investigation.

Liza: As usual, we insist on the objectivity of our approach.

Peter: Certainly, for that we will work with an analytical means that could be affected at the very least by our own thoughts and feelings.

John: Which is?

Peter: Which is “time.”

Liza: Time?

Peter: Yes. We will see how time could be used to understand the production of society and its reproduction.

Sara: How could we do that?

Peter: First, let me be precise here by saying that what I mean by time is the invented scale of measurement the people use to know how long an action or an event takes.

Liza: So, the usual known methods used by the society.

Peter: Yes. If you pay attention, you see that every social issue could be understood by a kind of time measurement.

Liza: You mean any social fact?

Peter: Yes, almost. Let me give you a few examples to see the role of time as a good indicator in the field of social issues.

John: We’re all ears.

Peter: Let’s see a social phenomenon like the divorce as a social fact. What is divorce?

Liza: When a couple cannot live together any longer and leave each other.

Peter: So, they cannot pass time with each other as a household.

Liza: Yes. And if we want to study why and how they get there, we could also see how they managed the time of their shared life, right?

Peter: Certainly, we can see how they had spent their individual and shared times to get to such a disagreement that pushes them toward a separation.

Sara: All the misunderstandings, miscommunications, and miscalculations.

Peter: Yes, and how they ignored each other, for how long they neglected their mutual or common important interests, and how much time they put on the things that did not help them to bind and deepen their relationships.

John: So, we can, kind of, measure all of these details and come up with a timing map of the divorce.

Peter: Yes, case by case, of course, and then to compare them to see what would be the common features.

Liza: Interesting. Could we do the same thing with marriage?

Peter: Yes: how long it takes for two lovers to reach the conclusion that they should now get closer and get married.

John: All the time they spend with each other, pay attention to each other, and take care of the things that both or one of them appreciate and the other one is ready to pass time with.

Peter: Let's make a radical jump from marriage to war. How we can use time as an analytical tool to explain war as a social phenomenon?

John: We could see how two countries spend time to arrive to such a conflicting point.

Peter: Yes, how they wasted time, how they managed time for the negotiations, and how much time had been spent to pressure or harm each other in such way that they prefer to start a war.

Liza: And could we use time as well to explain social inequality?

Peter: Yes. The superiority of the upper class is measured by wealth and power. We could translate these two elements into the time spent to possess them.

Liza: How much time they put to get wealth and power?

Peter: Yes, in order to answer better to this question we have to be acquainted with two notions: “work time” and “free time.”

Liza: I imagine that work time is the one that we use to make money.

Peter: Yes, this is the time whose outcome lets us survive and get wealth, whatever it is.

Liza: And free time is the time that we don’t work.

Peter: Yes, it’s the time that, in theory, we should be able to use as we want.

Liza: So, go back to the question on the notion of how time explains social inequality.

Peter: For the upper class, managing time is about combining work time and free time in such a way that it could assure them the minimum of work time and the maximum of free time.

John: But some members of the upper class pass a lot of time to work.

Peter: Of course. We're talking about the overall timing of a social class and not some individuals. Their general goal is to get rid of work time as much as possible in order to have extended free time.

John: Why do they prefer such a partition?

Peter: Because more free time means more choices, fewer obligations, and fewer worries on this or that. This free time is a time where you could have opportunity for pleasure, learning, playing, thinking, discussing, and in a word, for blossoming and to flourish.

John: And how do they get more of that?

Peter: If you want to have more free time, you should have to be busy in order to have less work time.

Liza: Yes, and vice versa.

Peter: So, how you could get more free time if you put in a lot of work time?

Sara: You cannot.

Peter: True! So what to do?

Liza: You should use the other people's working time for yourself.

Peter: Right. The more you could delegate your working time to the other people, the more you could have free time.

Sara: And on the other hand, the more you give your time to other people for working, the less you will have free time.

Peter: Correct. So, as you can see, class relations could be explained by how the upper class could expropriate the time of the

lower class in order to decrease its own working time and to increase its free time.

Liza: You mean the upper class buys the time of the lower class.

Peter: Yes. This is somehow the rapport of the capitalist with his workers through remuneration and wages.

John: He pays 100 workers and gets eight hours of their time per day and five days a week. In this way one person gets some 40 hours of time from these workers per week for oneself.

Peter: Yes, and the interesting point is that thanks to these 40 hours of activity, he makes enough money to buy the next, more or less, 40 working hours and meanwhile keeps the profits for himself.

Liza: And with these profits he could increase and enrich his free time.

Peter: Yes, because he could pay a manager to manage these 100 workers and get rid of the management task from his own agenda.

Liza: So, capitalists are all along getting more and more money by which they could buy more working time and increase their own free time.

Peter: And the free time is what they need to organize the expropriation of more time, but also for creativity and accumulating energy to conceive new ways of production and reproduction of society.

Liza: You mean new ways of establishing or keeping the social order and reinforcing it.

Peter: Yes, a creativity that can't psychologically and sociologically exist and be activated if you haven't accumulated enough free time to put your mind in such a restful and inspired state that could be used to invent new mechanisms for the old social order.

Sara: You mean a mind that does not or cannot enjoy mental relaxation can't participate in the production of society's adventure.

Peter: Indeed, a mind that is knowingly or instinctively dealing with basic needs or even is still dealing with existential conditions could never have that degree of ingenuity needed to discover new ways to produce a new society. A revolution is, by definition, a form of production of society. It needs time, money, theory, organization, and leadership. When you are dealing with the basics of life, you can't think about these needed points efficiently. Therefore, you cannot conceive of all the necessary elements of a revolution.

Liza: But we had some revolutions in history, didn't we?

Peter: Yes. If those who don't have the intellectual ability to conceive and design a revolutionary production of society, that would be just a historic collective escapade, deemed to fail and not result in a productive revolution. The causal chain is clear: revolution needs abstraction and abstraction requires a soothing and skillful mind. Here we talk about revolution in terms of a real production of society, a mega-project, forming a new human flourishing social order with appropriate institutional and structural mechanisms of its social reproduction. I don't mean to suggest that revolution is defined exclusively in the sense of an emotional

eruption of oppressed people. Their frustration and anger are understandable but, in their revolutionary action, we are far from this necessary well-elaborated project of shaping a new social world.

John: Is this incapacity of the lower class the reason for which the upper class is so reluctant to increase minimum wages for the working class? Because they don't want to ease the task of the majority in order to give them time and mental space to conceive a new society?

Peter: To some extent, yes. The capitalists could increase the minimum wage, for example, but they foresee the consequences: less free time for themselves and more free time for the lower class. Not only in terms of quantitative scales but also in its qualitative consequences in the long term.

Liza: And they are worried about what the lower class will do with its free time.

Peter: Of course. They know that if you haven't dealt with basic needs, you will think about higher and nobler causes, whereas once you are caught up in the machinery of survival, you can't conceive of anything beyond your subsistence or an iota above that we label as a middle-class lifestyle.

Liza: So, the oppressed class can't change the situation as long as they don't get more qualitative free time.

Peter: Yes, and things get dramatically worse when we learn how the lower class will spend their allocated limited free time.

Liza: Because the quality of the free time is very important in the equation?

Peter: Of course, the upper class uses its free time with intelligence, tact, and purpose so that it could be as well pleasing as well as fruitful.

Liza: And what about the lower class?

Peter: Most of this time for them is wasted by the profit-generating cultural apparatus of the upper class, which aims to fill the lower class's free time with the lowest worth possible.

Liza: How do they do this?

Peter: They finance the so-called cultural products that aren't provocative and don't question the dominant social order.

Sara: So, they just entertain the people.

Peter: Yes, and the people buy it not only out of habits but also because they need it.

Liza: How so? What kind of need you mean?

Peter: Look, it's not only the question of dominating and filling the time of the lower class by the upper class but also managing this time.

Sara: Explain it more, please.

Peter: The density of the work accomplished by the working and middle class is set such that the employees are seemingly forever exhausted.

John: Physically or mentally?

Peter: Both, depending on the job. But working people need long periods of time to recover from the tiredness or burdensome work and tasks they are doing.

Liza: So they need long spans of time for resting.

Peter: Yes, and resting isn't only sleeping time but also spending unproductive free time. The intensity of work requires the existence of this kind of free time with no reflection at all. The physical tiredness and mental fatigue are mixed in such a way that the working class can't heighten the intellectual aspect of its free time, let alone engage in reflection and cerebral efforts.

John: You mean their free time is not as much as "free" as it looks.

Peter: Correct. Free time is to them, first of all, a necessary time for recovering.

Liza: So, free time for the upper class is a potentially constant time for discovery and for the lower class it's for recuperation.

Peter: Yes, while thanks to this discovering time, the upper class finds new ways of keeping its privilege of production of society, recovering time for the lower class is just a needed spell to build up their physical and mental lost force for renewing the habits that are not anything else but the mere reproduction of society.

Sara: So, we are in "Zeno's paradox of the rabbit and the turtle."[ix]

Peter: Yes, the accumulated time the upper class got from the lower class is historically such that the lower class could never get there. The gap is huge, linear, and increasingly deep.

John: Even though the lower class outnumbers the upper class.

Peter: Yes, but the problem is that the upper class is able to convert the accumulated expropriated time into a qualitative one, functioning as a durable warranty of its lasting domination.

Liza: And such a similar qualification doesn't happen with the lower class.

Peter: Not really. On the one hand because of the manipulation and control of the quality of the lower class's free time, and on the other hand, because the lower class is tired, exhausted and can't convert its free time to a qualitative one. The tiredness we are talking about is as physical as mental or should I say, intellectual.

Liza: What do you mean by an intellectual tiredness?

Peter: I'm alluding to the increasing complexity of the system with regard to its management and technicality and whose

[ix] Zeno's Paradoxes: Generally believed to have been thought of by Zeno of Elea, these are a set of problems to support Parmenides's "all in one" doctrine especially the notion that motion is nothing but an illusion. "In a race, the quickest runner can never overtake the slowest, since the pursuer must first reach the point whence the pursued started, so that the slower must always hold a lead."—Aristotle, Physics VI:9, 239b15

comprehension becomes harder for those who aren't at the top of the pyramid of power and wealth.

Liza: This inability to comprehend the technicality of the system's mechanisms is what you call the "intellectual tiredness" of the working class. Mixed with its physical and mental tiredness.

Peter: Yes, and once these combined exhaustions are quantitatively accumulated, they start to cause degraded qualitative changes. While on the opposite point, the accumulated quantitative relaxing free time for the upper class makes an upgrading qualitative alteration for them, assuring a hegemonic position. They have chance and opportunity to institutionalize their domination as an obvious unalterable historic necessity.

Liza: The upper class then has a huge lead over the lower class.

Sara: And I wonder if there will ever be a chance for the have-nots to pull through this lag.

Peter: In a mechanical and traditional way, never.

John: It's mathematic.

Peter: Yes.

Liza: So, no hope at all for the change.

Peter: Remember the causal chain and its infinite possibilities.

Sara: So there is a chance.

Peter: Of course. We said that when we introduce a new parameter in a causal chain we can expect a better effect.

Liza: How could we introduce a new element?

Peter: Let’s think about it for the next meeting.

And they left.

*

Chapter 22

It was now time to see if any chance of change in the dominant system by the dominated class was possible or not.

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Peter: The lower class doesn't have wealth or power to use for change. So, it has to use what it has gotten more of.

Liza: Its time?

Peter: Yes, but not all of it. Time for the lower class is mainly divided into three categories: 1) working time 2) necessary sleeping/physical recovering time 3) free time. For the first two there isn't much maneuverability for the lower class.

Liza: But free time is…

Peter: Yes, this is the key for change.

John: How so?

Peter: If members of the lower class start a requalification procedure of their free time, we would have the grounds for a breakthrough.

Liza: What could the requalification of the free time be for the have-nots?

Peter: Its first step is to free its free time. It means that the people should not allow the upper class's cultural pump to fill up the main portion of this crucial free time. The working class should repossess its time.

Sara: This means they shouldn't use their free time just for drinking alcohol, eating out, using drugs, having sexual encounters, and the like.

Peter: One part of it is normal, but we're talking about the necessity of a significant slice of their free time to be used otherwise, a necessity that can't be apprehended easily.

Liza: Once this portion of free time becomes available, what could they do with it?

Peter: They should naturally fill it out with new ways that could bring them some relaxation at the same time. They need some creative and productive minds.

Liza: So, the lower class should use its free time for self-cultivation.

Peter: Yes, an intelligent and purposeful self-cultivation. Using free time to get knowledge on the depth of the poverty, environmental issues, the future of humanity, and above all, the structural causes of their current situation, and so on.

Liza: What would be the effects of this change?

Peter: An awareness that could lead to a motivation to change.

John: What is the chance that such an idea could be spread among people so that they could free up their free time?

Peter: It's a tough process, but those who want a real change should effectively work on spreading this idea among people and encourage them to do so.

Liza: But people who are tired and uncultivated wouldn't so easily engage in this.

Peter: Totally true. This first step of the process is neither the task of the average Joe nor the mass of people, but the elite's.

Sara: Who are they, this elite?

Peter: Everybody knows that change is not only necessary but also possible. It's a question of those who discovered their own historic role in the reproduction of society and decide to go in a different direction without putting themselves in a delicate situation where the system could confront and eliminate them easily.

John: What can this elite do?

Peter: Work on providing content that could be interesting for folks to take knowledge of what is happening in the world but to also know how they can transform it, to what they can do to transform it, and why they should want to transform it. This is a long and progressive process. But it could succeed since it goes with the obvious things the ordinary people could conceive and understand.

John: Don't you think progressive forces or revolutionary political organizations and classical democratic parties are doing this right now and have been for a long time?

Peter: Yes, but uselessly.

Sara: Why so?

Peter: Because they want to attract the uncultivated masses to make a movement that needs a highly knowledgeable and mindful core of actors. This doesn't fit at all.

Liza: You mean, without this knowledge it's not possible for oppressed people to change the situation?

Peter: Indeed. You cannot make a revolution with socially ignorant people. They don't know why to change, how to change, and what to change. As long as they ignore the substance and purpose of the movement they don't make a move or they are easily misled.

Sara: So you don't recommend an immediate classic revolution?

Peter: Not at all because the result will be identical to previous so-called revolutions.

Liza: And this is also because the system is at present much more complicated and intelligent than them.

Peter: Of course, the system has accumulated billions of work hours of the masses to dominate them, control them, manipulate them, deceive them, and even to repress them. How can they prevail in a system that feeds itself from them and uses them to maintain itself by a subtle process of justified and so-called legitimized reproduction of society?

Liza: It is simply impossible.

John: But what you are suggesting is a hard and difficult way as well anyhow.

Peter: Of course, this looks almost impossible. But there is one thing that could be an excellent opening point.

Sara: What exactly?

Peter: A comprehensive and comprehensible worldview, a worldview that shows a beautiful destination and the way to get there.

John: You're talking about the worldview that we intend to construct?

Peter: Something like that. But we haven't still finished it.

Liza: When will we finish it?

Peter: Remember! We got to this point after reviewing the fact that humanity can touch the reality of the endlessness of the nature and eternal life if it mobilizes all the necessary resources.

Liza: Yes, we saw how we are wasting the resources for the things that aren't really constructive, or not at all.

Peter: So, we could get a better world if we redefine our priorities more intelligently and purposefully.

John: How do we do it when the world and its more than 7.5 billion people are in a quagmire of poverty, war, global warming, inequality, and a frenzy of military and anti-environment self-destruction?

Liza: Yes, the picture is too dark to leave any hope for saving it. Some say that any effort is too little and too late.

Sara: Yes, a lot of people think that it's a useless undertaking and that the end is close.

Everybody was silent for a few moments.

Peter: Listen. I understand this semi-apocalyptic view that invites all of us to be frantic and to surrender. But guys, tell me! We

studied the notion of *infinity* and we saw how a causal chain that is deemed to go until the annihilation of life on earth could also lead to other better outcomes if we change the equation and implement new links in this chain of events.

Liza: You mean some new elements as causes that could bring about the new anticipated effects and then keep going on the right track.

Peter: Yes, it would be always possible to improve and to change it if we do so it intelligently, carefully, and persistently.

Sara: Would it never be too late?

Peter: As long as a brainy being is on the earth, equipped with this view, we can hope.

Liza: And right now we have more than 7.5 billion candidates for that on earth.

Peter: So, we do have still a chance.

John: What is the necessary initial step to trigger this process?

Peter: Well, we need some paradigm shifts.

Liza: Which one?

Peter: We need to change our view on just one concept and then everything could become different?

Sara: Which concept?

Peter: “Scarcity.”

John: Scarcity?

Peter: Yes, this is the most influential concept in shaping the human history.

Liza: More influential than the concept of God?

Peter: Of course, God is a byproduct of scarcity's perception.

Sara: Could you develop that?

Peter: Scarcity means not having enough of something. The idea is that, regarding the necessary resources for mankind, there isn't enough for everybody.

Liza: Why is this concept so important?

Peter: Because all the animosity, conflict, bitterness, war, and inequality come from scarcity.

Liza: But is scarcity a reality or something out of our imagination?

Peter: For Stone Age primitive tribes it was a reality. When people were just hunter-gatherers they didn't have any other resources than the herds that they followed. And if for any reason they couldn't have enough animals to hunt, they started to fight each other over access to resources.

Sara: Because they couldn't conceive any other food resources, right?

Peter: Correct. Or when agriculture began, they couldn't see how much cultivatable land the planet could hold. So they fought with each other for a little piece of land.

Liza: All these fights for scarcity.

Peter: Because of the views of those people in which scarcity was the central, dominant, and determining factor.

Liza: So the foundation of human civilization was shaped by this concept.

Peter: More exactly based on the consequences of this concept. These fights have victors, and the defeated became the first slaves of human history and served their captors/masters.

Liza: Is it from that moment that the accumulation of other people's working time started?

Peter: We can say so. The slave was a working force entirely in service of the master, for free. Thanks to slaves, the masters could accumulate their working time's results and convert it into amassed wealth and power.

Sara: Then we have the social classes.

Peter: Yes, this idea of scarcity is internalized and institutionalized as the key engine of the socio-historical inequality and it keeps going even up to now.

John: And you say that to change our civilization we need a paradigm shift in this concept of scarcity.

Peter: Right. Now we are equipped with what we need to sidestep the notion of scarcity.

Liza: What we are equipped with?

Peter: Technology and a worldview.

Sara: So why we don't move forward with this paradigm shift?

Peter: Because while the technology is there and we could develop it for any purpose, the lack of an appropriate worldview makes it such that the technology hasn't been developed in a good

and constructive direction. On the contrary, we are using it to destroy ourselves with weaponry and chemical pollutants, for instance.

Liza: And this is because of the lack of a worldview.

Peter: Yes, because in the dominant worldview, there is still the strong presence of scarcity as the pivotal and motivation-generating element.

Liza: While you think that we need a scarcity-free worldview.

Peter: Correct. The worldview that integrates *infinity* will bury the scarcity-oriented trend of history and give us the idea that there would be endless resources for an excellent lifestyle and comfort level for every single human being on the earth.

Liza: But we know that the earth can't provide enough resources for such an ambition.

Peter: Yes, but unfortunately we ignore thousands and thousands of other means and methods by which we can get these resources.

Liza: Why are we ignoring them?

Peter: Because we don't want to believe it. Because we are prisoners of our obtuse view of scarcity. As Emmanuel Kant recommends it, we need "enlightenment" and this means freeing ourselves from the chains that we've put on ourselves.

John: So we founded our current socio-economic system on the basis of scarcity and this man-made concept prevents us from seeing and finding multiple ways by which we could go beyond any insufficiency.

Peter: Yes, far beyond. We would have hundreds of initiatives across the world to solve each of the problems earth and humanity are facing.

Sara: Why we are not using these potential initiatives?

Peter: Because we waste our money with military, wars, and other destructive behaviors. We waste billions and trillions just to retain and to grasp this irrational system working despite all its lacks and deficiencies.

Sara: If we adopt an infinity-oriented worldview, we will be free of scarcity and its nefarious consequences.

Peter: Of course, because *infinity* means infinite possibilities and immeasurable sources.

Liza: And we could then build up a different world.

Peter: Yes. Imagine that even the concept of God is based on the idea of scarcity.

Liza: How come?

Peter: Primitive people were so frightened of scarcity that they shared part of their food or other goods with an imaginary God that should, in return, assure the endurance of the resources for the life of the community.

Liza: And this is the same God that would be at the source of all the great religions.

Peter: Yes, all the Abrahamic religions are founded on the concept of scarcity and its imaginary termination only on the other world, called “heaven.”

John: This is true. The description of heaven is of a place where all worries go away because there wouldn't be any scarcity, neither for food, nor for lifespan.

Peter: As you see, the religions are just a phony version of endlessness. But the point is that even they referred to infinity as a concept that prevails the scarcity.

Liza: Do you think this worldview, based on *infinity*, would be really operational and useful if it started propagating itself?

Peter: For that, some assertions related to our worldview should be set. First, scarcity isn't a reality but a primitive imaginary apprehension that lasted throughout all human history and is no longer necessary with what we are able to do and have today, thanks to our growing technology and our higher vision in the 21st century. Second, scarcity-oriented behavior brought up the two ideas of religion and social class. Both are among the most damaging components of the human history. Third, all human suffering is caused by religion and class structures that could be avoided with a new worldview that replaces scarcity with *infinity*. Four, infinity, once implemented in our worldview and deeds, will bring about anything that is necessary for the production of a society where everybody, without exception, could live as they want with infinite options and infinite definitions of happiness.

Liza: So in order to put an end to the presence of class structures and religions as two historic aspects that prevent humanity from

flourishing, we should replace the unconscious concept of scarcity with the conscious notion of *infinity*.

Peter: Well said.

Sara: So, is our worldview now ready to be used?

Peter: Almost. Let's review:

- Cause-effect relationships are present anywhere.
- They exchange their places.
- The continuation of cause and effect will create causal chains.
- Causal chains are what is running everywhere at micro and macro levels.
- Causal chains are dynamic and endless.
- The reality of never-ending causal chains is called *infinity*.
- The connectedness of these infinite causal chains constitutes matter.
- *Infinity* is everywhere and in anything (any matter, any phenomenon).
- Understanding *infinity* could change our vision on the material world.
- *Infinity* presents countless possibilities in anything made of matter.
- This concept gives us an idea on how we could prevail on any restriction or limitation remained from the scarcity-oriented primitive ages of human history that have survived up to now.

- If we replace the concept of scarcity with infinitude, we will get rid of restriction-imposing phenomena like religion and social class.
- A classless society without religious fanaticism and free from the concept of scarcity will be a society in which human beings could explore potential infinite possibilities in the universe including their desire for eternal life or access to endless resources.
- The exploration of the infinite resources of the universe will open the door for limitless and endless prosperity and flourishing of human beings.

John: So, let me clarify this. You think if we look at *infinity* in anything, as the basis of our view on the world, it would change our behavior with regard to our suicidal attitude?

Peter: Let me set in this way: when we look for *infinity*, we could seek it in several ways. First, in ourselves: This will make us discover our limitless capacities to do anything we want without any bounds or limitations. We become then a living being, equipped with intelligence, ready to understand, to know, to discover, and to do anything we would like, compatible with ruling laws of the matter. Second, in other people. We could then believe in the same capacities in any other person, without any exception of age, gender, religion, social status, and see them as infinite sources of goodness for ourselves and for the whole of humanity. Third, a society in which collective capabilities are seen as unlimited could open horizons that make any ambitious project possible for the well-being

of all mankind. This could help us to change our civilizational gradation and heighten our existential trajectory. Fourth, in nature, where we will look for the process by which we could make natural resources endless and unbounded. This will give us what we need to live happily and to realize our micro and macro projects for doing anything we want, as a collective of human beings. This approach will respect the sustainability of nature and the life of other beings. Finally, there is the fifth idea. We could look for infinity in the world and in the universe, where the immeasurable known and unknown resources will wait for us to be discovered and explored and used for our prosperity and progress. And all of this for us and also for any intelligent beings we might encounter later.

Liza: Based on what you have just said we don't have any real and material limitation to whatever we need to live as an omnipotent, creative, and creator god.

Peter: Exactly, this worldview doesn't recognize any limit or bounds for human beings to become god-like with all the powers imaginable.

Sara: All of this because matter is infinite.

Peter: Absolutely. The structure of matter is just the infinite number of structures that are not themselves but the infinity of these structures. These latter are just composed of the infinite causal chains that are themselves constituted of the structures and so on.

Sara: And this is true at both macro and micro levels.

Peter: Yes. So, the absence of limitedness and endlessness is the substance of the matter makes everything interminably possible. Therefore, by founding our worldview on *infinity* we are just creating the most material and then, the most objective methodology possible regarding the existence, I mean, regarding everything.

John: By this worldview we could free ourselves from any stress or anxiety that spring from the idea of scarcity and endlessness. The shortage is more our imaginary invention than the reality of the matter.

Peter: Correct, and this freedom will assure us an ability to flourish that emboldens happiness, which will thrive as humanity makes more discoveries, inventions, and surprising creations.

Liza: So, I think we accomplished our mission. We have our worldview with its core principle: There is no limit anywhere, so look for the limitlessness anywhere and in anything and explore it!

Peter: Yes, we have to just look for *infinity* methodically to find it in anything, in human beings, in society, in nature, in the world and in the universe.

John: How should we name our worldview?

Peter: I think the best suggestion would be "*infinitism*."

Liza: *Infinitism* is a beautiful call for a worldview based on the infinity. I like it.

Peter: Yes. *Infinitism* will be the search for the infinite in anything and everywhere in order to use it for a better existence.

Sara: An endless quest for the endlessness.

Peter: Indeed. *Infinitism* is a theory that will thrive as humanity looks for and finds infinite possibilities in the universe to change and elevate its existential conditions, continuously and relentlessly.

John: A permanent progression with an accumulation of quantitative changes for producing the qualitative ones that will heighten the successive levels of our existence.

Peter: Certainly. And we are just at the beginning of this never-ending adventure.

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John: I have a question. Now that we've reached our goal, I mean of building up this worldview of *infinitism*, are we going to stop these gatherings and discussions?

Sara: That will be so sad.

Peter: Of course not. To discover and discuss *infinity*, there is no finite point. We could continuously meet and discuss the infinite characteristics and features of *infinity.* We can call it *Infinitylogy*,[x] a multidisciplinary field composed of philosophy, science, and technology.

Liza: So, we will have our discussions on the *infinitism*, which is the search for *infinity* in everything and anywhere based on the *infinitylogy*, which is the knowledge of *infinity* by coalescing philosophy, science, and technology.

[x] www.infinitylogy.com

Peter: Yes, our weekly discussion on *infinitism* and *infinitylogy* can continue next week. And we can bring new, interested people in our group progressively.

They left, satisfied with their worldview and happy that their long-run discussions on infinity will keep going. *Infinitylogy* had now its first students and *infinitism*[xi] its first activists.

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[xi] www.infintism.info

Annexes

- **Annex A:**

On the Body's components and Their Interconnections

- **Annex B:**

On the ecosystem and its huge elements' interactions

- **Annex C:**

On Space Telescopes from the Perspective of Earth

Annex A

On the Body's components and Their Interconnections

(Followed from page 135)

… They wanted to see how the different components interact in the human body.

Sara: We said that in our body there are twelve systems and we named it.

Liza: I have the list.

Sara: Now, let's see how they interact.

Peter: Go ahead.

Sara: We know that all of these systems work together to ensure that our bodies work correctly.

1. the cardiovascular system,
2. the digestive system,
3. the endocrine system,
4. the immune system,
5. the integumentary system,
6. the lymphatic system,
7. the muscular system,
8. the nervous system,
9. the reproductive system,
10. the respiratory system,
11. the skeletal system, and
12. the urinary system.

Liza: Let's talk about the first one, the cardiovascular system.

Sara: Yes, the cardiovascular (or circulatory) system transports blood, oxygen, and nutrients throughout the body.[140]

Liza: And this system is composed of several components.

Sara: Yes, several organs including the heart, blood vessels, arteries, veins, and capillaries.[141]

Liza: And how does this link to the other twelve systems?

Sara: Well, the circulatory system works closely with all other systems in our bodies. It supplies oxygen and nutrients to our bodies by working with the respiratory system.[142]

Liza: These two work together.

Sara: They all work together. For instance, your heart pumps blood through a complex network of blood vessels. When your blood circulates through your digestive system, it picks up nutrients your body absorbed from your last meal. Your blood also carries oxygen inhaled by the lungs. Your circulatory system delivers oxygen and nutrients to the other cells of your body then picks up any waste products created by these cells, including carbon dioxide, and delivers these waste products to the kidneys and lungs for disposal.

Liza: So the circulatory system is present everywhere.

Sara; Yes, and they give and take particles and information from each other.

John: Thousands and thousands of connections are done at each second of time.

Sara: Yes, meanwhile, the circulatory system carries hormones from the endocrine system, and the immune system's white blood cells that fight off infection.[143]

Peter: This amounts to even more interconnections.

Sara: Yes. Each of your body systems relies on the others to work well. Your respiratory system relies on your circulatory system to deliver the oxygen it gathers, while the muscles of your heart

cannot function without the oxygen they receive from your lungs. The bones of your skull and spine protect your brain and spinal cord, but your brain regulates the position of your bones by controlling your muscles. The circulatory system provides your brain with a constant supply of oxygen-rich blood while your brain regulates your heart rate and blood pressure.[144]

Liza: Marvelous. All our body's functions are based on the interconnection between systems and organs.

Sara: Yes, even seemingly unrelated body systems are connected. For instance, your skeletal system relies on your urinary system to remove waste produced by bone cells; in return, the bones of your skeleton create structure that protects your bladder and other urinary system organs.[145]

Peter: The connections are mutual and reciprocal.

Sara: Yes, or your circulatory system delivers oxygen-rich blood to your bones. Meanwhile, your bones are busy making new blood cells.[146]

John: And these interactions are in reality the interrelations between the organs, right?

Sara: Yes, the organs and the cells. Trillions of cells interact with each other so that the organism can stay alive and function.

Peter: What about studying one of these interactions closely?

Sara: Let's take the example of red blood cells.

Liza: What are they exactly?

Sara: Red blood cells carry fresh oxygen throughout the body.[147] Here you can see an image of them. (Figure 20)

Liza: There are also white blood cells as I see.

Sara. Yes. Red blood cells are round with a flattish, indented center, like doughnuts without a hole.[148]

John: And how do they work?

Sara: Well, hemoglobin is the protein inside red blood cells. It carries oxygen. Red blood cells also remove carbon dioxide from your body, transporting it to the lungs for you to exhale.[149]

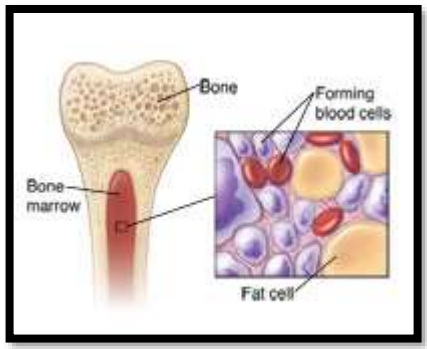

Figure 20

Liza: Where are they made of?

Sara: Red blood cells are made in the bone marrow. They typically live for about 120 days, and then they die.[150] Look, here this is the bone marrow. (Figure 21)

Figure 21

Peter: Honey! Could we know how they are made? I mean the mechanism? Or, how they bring oxygen and remove carbon dioxide?

Sara: The process is very technical and complex. Here's an image that helps to show how the different stages occur in the bone marrow to shape a red blood cell. (Figure 22)

Sara: Thousands of interactions are at work during these stages so that one red blood cell could be produced.

Liza: And how many red blood cells we have?

Sara: Just A drop of blood, the size of a pinhead, contains approximately five million red blood cells.[151]

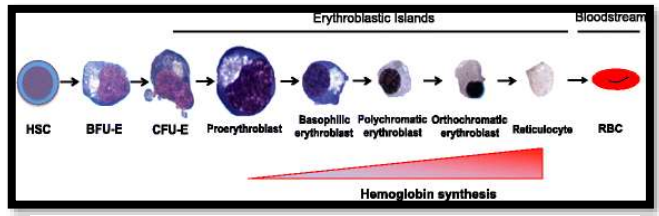

Figure 22

Liza: Jesus.

John: And how many do we have in our whole body? Sara: Well, as the blood moves throughout the body, it circulates about 20 to 30 trillion red blood cells.[152]

John: It means that the process that you showed us in the last picture should be done 20 to 30 trillion times to produce enough red blood cells?

Sara: Yes, at each stage of this process we have complex mechanisms interacting that make the production of red blood cells possible. And this occurs at least 20 to 30 trillion times.

Peter: We are facing a huge number of interactions.

John: Just incalculable.

Sara: Now, we should not forget that inside of a red blood cell there is a matter called hemoglobin.

Liza: This is what makes the blood red.

Sara: Yes, but it's more than that. First, look at how beautifully it's presented. (Figure 23)

Liza: Yes, it's beautiful. Is this the hemoglobin structure?

Sara: Yes, it is. This is the structure of human hemoglobin.

John: How are its components structured?

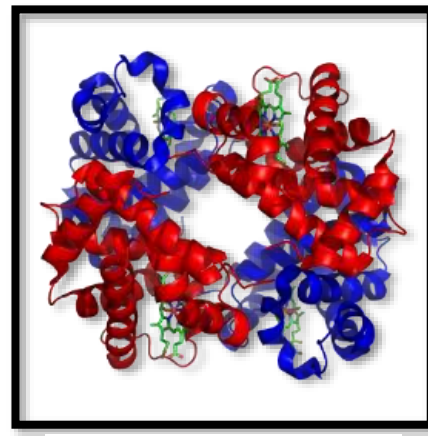

Figure 23

Sara: Hemoglobin has a quaternary structure, characteristic of many multi-subunit globular proteins.[153]

Liza: What is a quaternary structure?

Sara: Well, this is a generic name for talking about the complex structure with protein. In fact the quaternary structure refers to the number and arrangement of multiple protein molecules in a multi-subunit complex.[154]

John: And if we dig in some more we will discover what the protein molecules are.

Sara: Well, if you zoom in at the molecular level, we can see that proteins are made up of carbon, hydrogen, oxygen, and nitrogen atoms.[155]

Liza: And they interact with each other to shape a molecule?

Sara: Exactly. These atoms bond together to form molecules. And the molecules fit together to form the subunits of proteins, which are known as amino acids.[156]

Liza: Wow! So complicated.

Sara: Let me illustrate that. Take this example of an amino acid: (Figure 24)

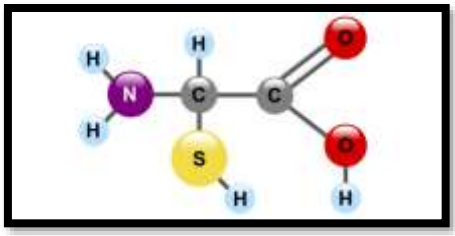

Figure 24

Liza: And what stand for these letters?

Sara: Well. The way the amino acids (and other molecules) are drawn is like a secret code. Here's how to break the code:

- Every "C" is a carbon atom
- Every "O" is an oxygen atom
- Every "N" is a nitrogen atom
- Every "S" is a sulfur atom
- Every "H" is a hydrogen atom
- Every "Se" is a selenium atom[157]

John: And are all of these elements divisible in their turn to give us more complex sub-structures?

Sara: Of course. For instance for carbon, the atomic number is 6, and the atomic mass number is 12 (6 protons plus 6 neutrons).

Liza: So, we have 6 protons and 6 neutrons interacting with each other to shape one atom of carbon.

Sara: Yes, like this:[158] (Figure 25)

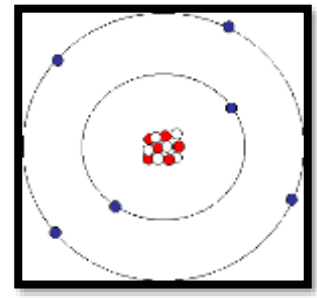

Figure 25

John: Do we want to go over protons and neutrons structures and components too?

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Annex B

On the ecosystem and its huge elements' interactions

(Followed from the page 169)

…

Liza: What are the elements of an ecosystem?

Sara: In general, we can say that two main components exist in an ecosystem: The abiotic components are the properties of the environment and the biotic components are the life forms that occupy a given ecosystem.[159]

John: The abiotic are the structural elements of the ecosystem and biotics are somehow the guests of this structure.

Sara: True. We can also say, abiotic components of an ecosystem consist of the nonorganic aspects of the environment that determine what life forms can thrive.[160]

Liza: Could you give an example of abiotic elements?

Sara: Sure, temperature, average humidity, topography and natural disturbances.[161]

Peter: And these are the variable things.

Sara: Of course, temperature changes by latitude, for instance, or the humidity influences the amount of water and moisture in the air and soil, which, in turn, affect rainfall.[162]

Liza: And topography?

Sara: Ah yes, topography is the layout of the land in terms of elevation. For example, land located in the rain shadow of a mountain will receive less precipitation.

Liza: And what do natural disturbances mean?

Sara: Well, they include tsunamis, lightning storms, hurricanes, and forest fires.[163]

Peter: All these elements cover a variety in themselves that will add to the number of exchanges that they will cause with biotics.

Sara: Yes, absolutely. First let me remind you that the biotic components of an ecosystem are the life forms that inhabit it.[164]

Liza: Like the animals that live in a forest.

Sara: Exactly. The life forms of an ecosystem aid in the transfer and cycle of energy.

John: So they use the energy accumulated in the abiotic elements and they participate in the renewal of the energy at the same time.

Sara: Well, the biotics are grouped in terms of the means they use to get energy. Producers such as plants produce their own energy without consuming other life forms; plants gain their energy from conducting photosynthesis via sunlight. Consumers exist on the next level of the food chain.[165]

Liza: And who are these consumers?

Sara: You know, there are three main types of consumers: herbivores, carnivores, and omnivores. Herbivores feed on plants, carnivores get their food by eating other carnivores or herbivores, and omnivores can digest both plant and animal tissue.[166]

Peter: Now. What's interesting for us in this subject is the interactions between the components of an ecosystem.

Sara: Of course. We know that biotic components and abiotic components of an ecosystem interact with and affect one another. If the temperature of an area decreases, the life existing there must adapt to it.[167]

Liza: In order to see how many interactions happens in an ecosystem we should take a concrete example.

Sara: You are right. This is what I was going to do.

John: Great.

Sara: But before working on an example we still need some concepts.

Peter: Which are?

Sara: Well, we should know that an ecosystem is bound together by the network of influences that species have on one another.[168]

Liza: Could you develop that, please?

Sara: The idea is whatever affects one species also affects many others. We call it the "balance of nature."

Peter: Interesting notion: "balance of nature."

Sara: Yes, and we build an understanding of communities by examining the two-way, and then the multi-way, interactions involving pairs of species or many species.

John: So, we have several kinds of interactions in an ecosystem.

Sara: Yes, the first type is called mutualism.

Liza: And what is this?

Sara: It's when two species benefit both from the interaction with each other.

Liza: It's positive for both.

Sara: Yes. Then we have commensalism. This is when one species benefits from something while another remains unaffected.

Liza: Ok, commensalism. It's positive for one and neutral for the other.

Sara: Indeed. The third type is competition. This is when each species are affected negatively.

Liza: Negative-negative.

Sara: Yes, and finally we have predation, parasitism, and herbivory.

Liza: And what are these?

Sara: It's when one species benefits and one another is disadvantaged.[169]

Liza: Positive-negative.

Sara: Yes. I want to be precise with these types of interactions so that we know that we have different quantitative levels of complexity for each one.

Liza: So, let's start with an example of mutualism.

Sara: Sure. One example of a mutualistic relationship is that of the oxpecker. This is a kind of bird a little form of the woodpeckers, and the zebra.[170]

John: How a bird is in mutual relationships with a zebra? (Figure 26)

Sara: Well, it's simple. Oxpeckers land on zebras and eat ticks and other parasites that live on their skin. The oxpeckers get food and the beasts get pest control.[171]

Figure 26

Liza: Here, in this case study, we have only a small action-interaction between oxpeckers and zebras, right?

Sara: Right, but only if we keep our study to what is ostensibly going on. I say this because behind the scenes, before the patterns of relationships between them take shape, there were lots of other interactions that needed to happen in order to establish this particular exchange and trade-off pattern.

Liza: You mean it's not something that they do naturally?

Sara: No.

Peter: So, they acquired it.

Sara: Yes. At a certain moment it was necessary to both of them to discover this mutual arrangement and then to get used to it and then finally to transmit this tradition, generation to the generation.

Liza: You mean first the Zebra should realize that they had a problem with parasites.

Sara: Yes, and on the other hand, the oxpeckers should discover where they can find a good source of nutrient for themselves.

Liza: The parasites on the zebra's body.

Sara: Yes, and then they need lots of time, attempts, misunderstanding, and conflicts to eventually find a common understanding.

Liza: To oxpeckers that they could find the nutrients there…

Sara: …And to zebras to discover that they could get rid of the parasites if they let the oxpeckers peck away on their backs.

Liza: So you might call this mutual aid.

Sara: Yes, but some other animals are not so inclined to accept the presence of these birds on their back. For instance, some oxpeckers hosts are intolerant of their presence. Elephants and some antelope will actively dislodge the oxpeckers when they land.[172]

John: In this case, it took lots of time to establish such a common understanding between oxpeckers and zebras for them to reach an agreement, so to speak.

Sara: A lot. And then oxpeckers had to transmit this knowledge to their progenitors.

Liza: You mean the young oxpeckers should learn that they could land on the back of zebras and find delicious bugs and parasites. At the same time they should learn that they could not do it with all other animals.

Sara: Yes, because oxpeckers studies show that they have a selectivity in their choice of herbivore. This means that in oxpeckers, however, a nested structure suggests a non-random assignment of birds to their mammal hosts.[173]

Liza: It's because the others don't do a selection.

Sara: Well, here we are talking about nestedness.

Liza: What does it mean?

Sara: Well, nestedness is a measure of structure in an ecological system.[174]

John: What is use of?

Sara: Look! A system, usually represented as a matrix, is said to be nested when the elements that have a few items in them, locations with few species, species with few interactions, have a subset of the items of elements with more items.[175]

Liza: Can you give us an example?

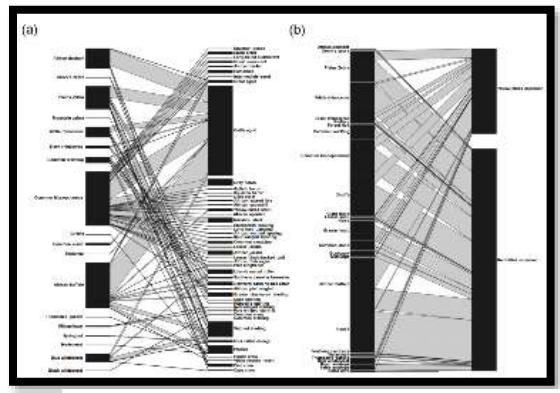

Figure 27

Sara: Of course. Imagine a series of islands that are ordered by their distance from the mainland. If the mainland has all species, the first island has a subset of mainland's species, the second island has a subset of the first island's species, and so forth, and then this system is perfectly nested.[176]

John: You said a few minutes ago that in the case of oxpeckers, however, a nested structure suggests a non-random assignment of birds to their mammal hosts.

Sara: Yes. If you look at this diagram you can see how for oxpeckers relations with mammals are regulated while for other birds in section A, the web looks chaotic. (Figure271)

Peter: Interesting.

Sara: You can see how oxpeckers avoided some mammals since they didn't have a skin thick enough to be picked to get parasites.

Peter: This shows a regularity in their selection that involves lots of interactions with the chosen animals, in this case, the zebra: start a trial and error process, gather data, use them actively, reach a conclusion, get used to new habits, transmit the habits, perpetuate them, and so on.

Sara: Yes, they are also interested in some other mammals, all of them being among the largest herbivores in Africa—and with the same process of getting familiar and being hosted by these selected and welcoming mammals.

Peter: All these regularities are shown when the case is studied and the quantitative data are explored, right?

Sara: Yes, masses of data are gathered and analyzed attentively to discover the complexity of the behavior of these little birds.

Peter: Amazing interactive complexity for these birds, just as one species. Let's imagine that for all the species living and interacting in a big ecosystem or even on the surface of earth. How many species do we have on earth?

Sara: We already know 1.3 million species but the most accurate estimation talk about some 8.7 million species of plants and animals

on the earth. We should also know that for each species how many individuals we have. For instance, with regard to ants the scientific estimation is "10,000,000,000,000,000 individual ants [are] alive on Earth at any given time."[177] So imagine ten thousand trillion ants interacting with each other and with other living beings.

John: Based on the complexity of the nestedness of this little bird, we could imagine the number of interactions that these 8.7 million species and their individual cases are producing to survive.

Peter: Here we are. When you see that even the simplest ecosystem has thousands of interactions at its core, you could imagine the number of interactions of highly complex ecosystems with thousands species, plants, the landscape, and their elements.

John: And then all the interrelatedness between the ecosystems themselves.

Peter: Once again we are in an infinite perspective of the connections.

Liza: So we have some proofs of the *infinity* at this level as well.

Peter: Yes, nature has this infinity for sure and we could cross exam this claim by looking at more examples in the ecosystem.

Sara: To stay objective and before we go further in the confirmation of infinity, I would like to bring up another example to our discussion.

Peter: Go ahead, honey.

Sara: I saw a study on wet meadows as complex environmental systems.

John: Interesting!

Sara: It's about the "wet meadows and their changing snowpack as complex environmental systems" in the Sierra Nevada mountains of California.

Peter: A perfect example of an ecosystem and lots of interactions.

Sara: Yes, and they presented this scheme as the main relations between the general parameters. (Figure 28)

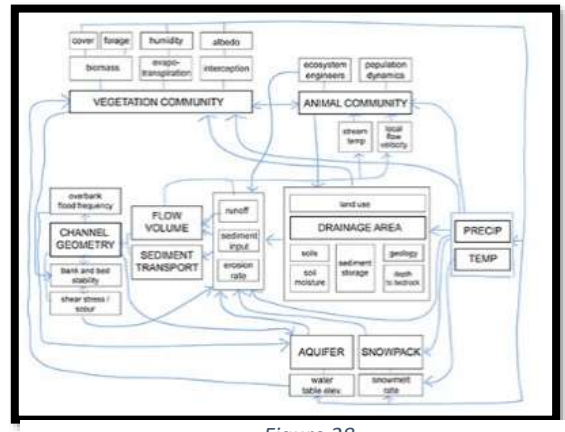

Figure 28

John: Well, I see some links between the components of this ecosystem.

Sara: Yes, there are 38 links in the scheme, I think.

John: And each of these components comprises lots of elements.

Sara: Yes, you can imagine just how many animal interactions happens there.

Peter: So, we don't know how many.

Sara: Yes, but if you put any number for each one, and as we saw for just one example of the birds and zebras, there would be thousands and thousands of interactions in each of these levels.

Peter: Yes, hundreds of thousands interactions.

Sara: Imagine that we have to multiply that by 38 interlinks between them. And then, with each interaction in a parameter, all these networks change instantly.

John: So we have to consider 38 multiplied by millions of interactions for each second.

Peter: And then, calculate each for a minute, for an hour, for a day, for a week, for a month, for a year…

Sara: And for thousands of years in this case.

John: We are far from any imaginable sum.

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Annex C

On Space Telescopes from the Perspective of Earth

(Followed form the page 175)

…

John: Ah, you know, this is a point directly behind the Earth from the Sun's point of view, where the gravitational forces of the Earth and Sun balance in such a way that a satellite can remain in a stable position relative to the Earth-Sun system.[178]

Liza: I think the study of complexity of interactions could start with this L2 point.

Peter: Correct. Lots of interactions happen there so that the balance could be established.

John: Affirmative. We should know L2 is one of the so-called Lagrangian points, discovered by mathematician Joseph Louis Lagrange.

Liza: What are they?

John: Lagrangian points are locations in space where gravitational forces and the orbital motion of a body balance each other.[179]

Liza: We need to know the mechanisms and interactions these mechanisms of balancing represent.

John: It is very complex actually because we have in such a point the intrusion of the gravitational forces of the two large bodies,

the centripetal force of orbital motion, and (for certain points) the Coriolis acceleration, all match up in a way that cause the small object to maintain a stable or nearly stable position relative to the large bodies.[180]

Sara: So, there are gravitation, centripetal forces and Coriolis acceleration in interaction to each other to create a Lagrangian points like L2.

John: Yes.

Liza: But what are these three forces are and how do they communicate with each other?

John: Good question. Let's start with what we already know: gravitation.

Liza: Yes, what is it exactly?

John: Simple, gravity or gravitation, is a natural phenomenon by which all things with mass or energy, including planets, stars, galaxies, and even light, are brought toward, or gravitate toward, one another.[181]

Liza: It's clear. What about "centripetal force"?

John: Well, a centripetal force is a force that makes a body follow a curved path.[182]

Liza: And finally, the "Coriolis acceleration"?

John: In physics, the Coriolis force is an inertial or fictitious force that acts on objects that are in motion within a frame of reference that rotates with respect to an inertial frame.[183]

Sara: The definitions are done. But the question is how these three forces interact in such a way that a small object could maintain a stable or nearly stable position relative to the large bodies.[184]

John: The complex formula of the interactions between these forces are each running at thousands of second and renewing themselves constantly to maintain the stability of an L2 point where an object like our Webb telescope could be positioned.

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Infinitism means: search for infinity, find it, and use it.

www.infnitism.info

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