DESIGNING THE MULTIVERSE
BACKWARD CAUSATION AND HOW THE FUTURE INFLUENCES THE PAST?

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Imagine you decide to create something complex and beautiful out of wood or stone or metal. Perhaps it is a musical instrument, or a statue, or some kind of vehicle. Of course no one can instantly transform raw materials into a violin, a fine piece of art, or a bicycle. You have to carefully plan and organize and put a great deal of work into your creation. You have to affect the world around you in specific ways to make your future creative goal a reality. Essentially you have to influence the present in order to make something happen in the future. In this same way the universe itself has intent, it has a specific goal in mind, a future destination, and that future in order to make itself happen must reach into its past and influence events.

An inevitable future has a wonderful way of making things happen. Imagine that at exactly noon in one month's time you will be at the top of the Eiffel tower in Paris. That one event in the future is set in place. It cannot be avoided. The event is as certain as if it has already happened. In fact it has happened, but of course you are not aware of your predestined future. You don't know that some distant place is calling to you and pulling you in that direction. At least initially, everything seems normal because your immediate future is still open to the usual range of events. Almost anything can happen early in the month's time, as long as it's not something that will stop you from eventually making the future journey.

Yet behind the scenes, suddenly your life is anything but normal. The ordinary probabilities of your life are being redirected. Suddenly an event in your life must be designed and planned and made to happen. Some particular series of events must organize itself in a coordinated effort to bring you to Paris. Of course there isn't just one way to travel to Paris, so behind the scenes, in a very non-local processing of potential events, all the various ways of traveling to Paris are probabilistically competing with one another. While simultaneously, all the futures where you don't visit Paris are disappearing from possibility. The chance of visiting Paris was always there in your life as a possible future, but now that journey is the top priority of your life. It is only a matter of time before it happens.

We can imagine many of the unique events that could arrange and bring about your future visit. You might just decide you need a vacation and your spouse conveniently wants to go to Paris. Or it might be that you win the lottery and want to celebrate. Or you might find a job in Paris. Or your visit might be a planned romantic interlude with someone you met online who lives in France. It isn't difficult to imagine unique scenarios that will bring you to Paris. They may even seem endless to an imaginative person. They are all possible here. Of course which specific scenario you experience isn't important for our discussion. All that is important is how one moment in your future can cause a series of specific events to unfold in a way that brings you to a specific place in physical reality. An inevitable future must shape its own past to bring itself about.

If winning the lottery is what brings you to Paris, you must first buy a lottery ticket. Then you must realize you won. And then you must collect the prize. If it's a vacation that brings you to the tower, you will have to accrue some vacation time at work. Your employer will have to approve your vacation. You will have to plan and schedule the journey. If a romantic interlude is what brings you to Paris, you will have to meet this person ahead of time, and build the relationship, and it will have to feel important enough to make the trip seem worthwhile. Every possible reason, every possible scenario of you going to Paris will have to set itself up. And so your inevitable future will need to make dramatic changes in the course of your life.

In that the natural course of time inevitably ends at zero, that one single moment of time dramatically influences our lives presently. In the same way that the noon event in Paris makes events related to the future more and less probable, the destined future for the whole universe, even though it will not occur for many billions of years, is currently shaping our present. It literally determines what is allowed to happen in our present. The condition of Omega must set itself up; it must arrange the past in order to happen in the future. In a strange way the future has to construct itself. The physical universe has to evolve in a way that will allow itself to become the Omega state. So in order for our small portion of universe to become perfectly balanced and unify with the greater whole, the future Omega reaches into its own past to organize events in a way that will make that one future happen.

Synchronicity is an unusually coordinated series of events. You may not notice the synchronization of events that carry you to Paris, depending on the makeup of your particular past and present life. You may have always wanted to go to Paris, and may travel regularly around the world or regularly visit Paris on business, so the trip may not seem at all out of the ordinary to you. On the other hand, Paris may be the last place on the planet that you would visit, or you may not have the means to go, in which case the arrangement and character of events that convince you, or help you, or force you, to arrive in Paris may seem outlandishly

arranged.

At first the invisible attraction toward the Eiffel tower is mild. Your immediate day to day experience is still rather open to events that are unrelated to the Paris journey. In the first week it is not yet necessary for anything out of the ordinary to happen, although travel or preparations for the trip are more probable than they would be otherwise, while other events which lead you further away from Paris become increasingly improbable as each moment passes. Behind the scenes of your life, your predestined future necessarily eliminates all alternative futures. The possibility of remote travel, for example, into the wilderness of Alaska, becomes impossible, since it would interfere with the journey to France. Perhaps a trip to Alaska was a very unlikely event in your life, but now it is virtually an impossibility in your life. If you were scheduled to vacation in the Alaskan wilderness something will happen to negate such plans.

In a sense the universe knows where it is going from the very first moment of time. So the matter distribution in stars and galaxies throughout the entire universe has to be within tolerance of that goal, within the degree of randomness and freedom of that particular juncture of time. Within tolerance obviously would not include being the lumpy extreme or the smooth extreme. Within tolerance means the structure of particles and atoms that govern the stars and galaxies and matter will eventually produce Omega. For example, there has to be an equal number of protons and electrons in the universe, so that near the end of time a balance between time and anti-time can ensue. All such planning and coordination is the long arm of the future reaching into the past.

Generally, it is easy to see how the *trip to Paris* analogy dramatically increases the probability of some method of travel to Paris. And as the date of the event approaches, making the journey to France becomes increasingly more likely. You might leave early and tour all over the European continent for work or for play, but the probability of each event is aligned with the precise future moment of noon at the month’s end.

If the journey is delayed, and not instigated early on in the month, then faster modes of travel become ever more probable. A journey to Europe by boat for example is no longer an option. In fact as time passes, the width of the unique events is dramatically decreasing in your life. A large number of events are continuously becoming less likely and finally moving into the impossible realm. Yet the future moment of you standing on the tower is still not dictating a specific means of travel at a specific time. There are still many different pathways of getting to France, different airline flights for example, although the cloud of possibilities is ever more shrunken and focused.

Finally toward the end of the last week, events in your life become increasingly coordinated toward creating your one future. If events earlier in the final week had worked against your trip, later in the week events will seem increasingly synchronized and planned, as if everything is going your way, as if the whole universe wants you in Paris. If you don’t have the money for the trip, it would be a good time to take up gambling. Your destiny is calling you. And the more the defiant or random events occur to resist or divert you away, the stronger forces grow toward aligning you back up again with your course to the tower.

If you still haven’t yet left for Paris, at a specific moment, a certain number of hours before the tower event, all flights except those directly to France become impossible because other routes will no longer get you there in time. Absolutely powerful forces beyond your control now come into play. Some particular direct course across the Atlantic toward the tower now becomes absolutely necessary. You might be kidnapped or arrested and extradited to France, or your plane traveling elsewhere will be hijacked. And finally, at a specific point in time, the scenario of you not having left for Paris is no longer possible. Such worlds don’t exist. In the final hours it is inevitable that you are on your way, because in the future you are already there, so failure is not an option. Resistance is futile.

The Big Bloom
Why Space-time is Systematic and Orderly

As we discover the implications of an absolute zero future, the most dramatic shift in our understanding of time and the cosmos is the recognition that we are now being drawn into a decreasing measure of possibilities, rather than an ever enlarging body. The claim that 'possibilities are endless' is quite incorrect. In fact the direction of time has been facing an ever fewer number of choices for many billions of years.

The known universe is like a giant cosmic foundry. It is as if Omega has something in mind, a goal. Time begins with matter heated up in the kiln of Alpha. Then suddenly out comes the universe into the cold air, and as the matter cools it is guided into shape by the future. Slowly the hot plasma crystallizes into worlds, galaxies, all shaped by the great powers of grouping and symmetry, by the past and the future. This foundry is after all timeless. As the original potential of each time line is hammered out the future interestingly becomes itself, a sort of cosmic blooming that couldn’t be any other way. What ultimately exists, the greater Universe, the 'infinite but bounded' whole, cannot be changed. But when the whole is understood, who cares. Compared to any other scenario, this innate guidance system creates a pretty amazing local

universe.

Stage One: Divergence - The Increasing Possible Futures

In spacetime's evolution toward the balance of zero, there are two unique temporal periods of change. The first phase of spacetime; the initial burst of change, is the period of Divergence. Divergence marks the period when there is an increasing number of unique pathways for time to move in. When time accelerates away from Alpha, it faces a rapidly expanding number of unique futures. For example, using the trip to Paris analogy, a person in Los Angeles at the beginning of the month can take a plane and travel in any direction, north, south, east, or west, since every direction generally leads toward Paris. They might travel first to Asia or Africa. Initially the variety of possible futures is very wide. Divergence generally defines a period of the universe when what is uniquely possible overall is vastly on the increase. But cosmically speaking, eventually the expanding diversity in the direction of greater balance gets used up and begins to decrease.

Divergence ended long ago, possibly even during the early stages of the big bang, or it might have ended about six billion years ago. The outset of accelerating expansion, which was roughly seven or eight billion years after time began, may have marked the changeover between stages of divergence and convergence.

Stage Two: Convergence - Decreasing Possible Futures

If we imagine how many unique tomorrows there are in comparison to the one single present, then it seems like what is possible is an expansion of possible pathways for time to travel in, and not a decreasing set of pathways. But when we imagine the person from LA has one day left to get to Paris, we can see that most of the different ways of getting to Paris which were available early in the week are no longer a part of what is possible. The remaining unique routes to Paris still branch outward from a single specific present or location, but there is no time to drive across the states to New York and fly from that location. There is no time to take a boat through the Panama canal and cross the Atlantic. Only an airline flight will allow the person to meet their date with destiny. There may be many different airline flights leaving from the local airport, but as each hour passes there are fewer options. So the whole of what is possible is decreasing, even if there are still many unique pathways into the immediate future.

Pattern space, the infinite realm of possibilities, in that it is bounded by extremes in all directions, imposes severe limitations on the flow of time, limitations which establish a sensible reality. Just as spatial directions that travel away from the North Pole travel toward the South Pole, all time directions are guided by Alpha and Omega. This is visibly why physical reality itself is not chaotic. It is visibly why the universe is comprehensible. It is visibly why we are able to experience a sensible reality as we do. If possibilities were themselves unrestricted there would be no guidance system, so there would be no sensibility relative to physical reality. But since time has a goal, what was, what is, what will be, is meaningfully coordinated. Randomness and irregularity are kept in check, and the unfolding and enfolding universe remains systematic and organized.

The universe is not just a path of time, but an evolution of content. The evolution from one order to the other is likely the most important single piece of information we will ever know of the universe. Seeing both the divergence away from grouping order and the convergence toward symmetry order changes everything. A grand cosmic evolution makes the universe vibrant, purposeful, and alive. Time becomes a growth process, not a decaying or dying process. This knowledge awakens us to the universe and our own cosmic significance.

Of course a converging future returns us to the question, “infinity means what?” and all the different scenarios we discussed earlier. Objectively, scientists would imagine all the possible methods, and times, of how a person might travel to Paris as a cloud of potential, and beyond that probability cloud we can imagine seemingly normal events which are virtually impossible purely because the one future moment at the tower is destined to happen in a specific measure of time. A single destined future appears to draw a distinct line between events that are possible and events that are impossible even in the multiverse.

There is a distinct line being drawn here that not everyone will want to agree with, however, it is simply not enough to recognize certain events as highly improbable. If ZAT is acknowledged as the universal attractor for time, one has to conclude that there are for example no universes in which the big crunch scenario occurs. There are no parallel universes where gravity overcomes the expansion of the universe, where a whole universe ignores the attraction of the cosmic balance point and returns to Alpha by collapsing. Such a universe is so improbable that it doesn’t physically exist in time.

Convergence means there are fewer possibilities available today than there were yesterday, but a single future moment being inevitable is both limiting and liberating. The collision between past and future does initially dramatically knock down the more radical set of possibilities, but it also can create complex and improbable events. For example, for a person who is a homebody

and would otherwise not visit Europe, it causes exciting and unexpected events to happen in their life. This may seem to be increasing what is possible, but if we consider the entire range of events that are to some degree remotely possible in that person's life, no matter how slight the possibility, then we can see how a predestined future actually reduces the size of a much wider range of possibilities.

Time will find a way to cure the person of their otherwise more probable tendency to stay home, leading the person out into the world of greater experience. But it will do so by eliminating their tendency to stay home, the option that would otherwise dominate the person. It will make things happen, it will cause a person to learn and grow if necessary, by eliminating all other options rather than by creating new options that weren't possible before. The options of a France trip were always there in the person's life, if remotely slight, they just become more probable due to a destiny, as other options such as those we would expect to be more ordinary are ruled out as being impossible.

In this way convergence is an enfolding process in-synch with the idea that the symmetry order of the universe is continually increasing. During convergence each time frame has an increasing multitude of possible histories. Many pasts are ending up in the same future. They are merging together and not diverging apart. This is most evident at the stage where all paths of time reach zero and space becomes flat. All universes and so all possible pasts have arrived at that one time frame. All universes, both the positive and the negative directions of time, have merged and enfolded into a single whole.

The Handshake between Past and Future

Both Alpha and Omega pull at the structure of the world. The location of the person whose future is inevitable, whether it be Los Angeles, or Beijing China, or Sydney Australia, is naturally a defining factor for the course of the future. Also the momentum of events, especially the more recent flow of time, a person's immediate past or history, influences the types of travel and times of travel. The personality, identity, health, wealth, and fortunes of each person we might imagine in the Paris scenario add all types of complex variables to what is uniquely possible and impossible, probable and improbable, for each person in each tapestry of time. A person may have a fear of flying that makes other modes of travel much more probable. They might be more likely to drive to the East coast and then boat across the Pacific, than fly in a plane.

In the same way that the Eiffel tower moment requires specific events to occur weeks before a

person could ever arrive at the tower, the specifics of the past dictate what is possible and probable also. The deep and recent past, and the near and distant future, come together in a sort of collision to define the present. What we know as the forces of nature are part of the guidance system. Forces pull us backward toward the past, while greater forces pull us into the future, and the collision between past and future can be seen as creating all the refined motions of atoms, rhythmic motions of the planets, the falling rain, and waves crashing on an ocean shore.

There is one popular physicist who has for many years recognized the influence of the future within the physics of quantum mechanics. Not too surprising perhaps, there is already a well known interpretation of quantum mechanics, called the Transactional Interpretation developed by John Cramer, which recognizes the influence of the future. Cramer, a long time Professor of Physics at the University of Washington, columnist for Analog magazine, as well as science fiction author, is famous for developing one of the more interesting interpretations of quantum mechanics. Originally based upon what is called absorber theory originated by John Wheeler and Richard Feynman, and the time symmetric Lorentz-Dirac electrodynamics, John Cramer's Transactional model describes all quantum events as a "handshake" executed through an exchange between past (retarded waves) information and future (advanced waves) information, which causes both probabilities to collapse into the present. Cramer himself explains, "The absorber theory description, unconventional though it is, leads to exactly the same observations as conventional electrodynamics. But it differs in that there has been a two-way exchange, a "handshake" across space-time which led to the transfer of energy from emitter to absorber."

Time does not simply roll into the future. From our perspective in the present, we recognize cause and effect in the larger motions of things but to everyone's amazement there is no such motion in the small world of particles. Instead there is a mesh of probabilities where possible pasts and futures meet which scientists correctly call non-local because those probabilities are produced literally from the whole of what is possible. As Cramer explains, "The transaction is explicitly non-local because the future is, in a limited way, affecting the past." Cramer writes: "When we stand in the dark and look at a star a hundred light years away, not only have the retarded light waves from the star been traveling for a hundred years to reach our eyes, but the advanced waves generated by absorption processes within our eyes have reached a hundred years into the past, completing the transaction that permitted the star to shine in our direction."

There is great power behind a model of understanding which recognizes the influence of the future. The river having a specific ending explains why, what scientists call the wave function of the universe, is so specific. If what is possible is thought of as coming from the past only, there is no reasonable explanation for the control of probabilities, such as the wave density of atomic particles. A river only from the past would be flowing outward into chaos. But if time is like a river that flows in between two lakes, from Lake Alpha to Lake Omega, then the universe has a

natural guidance system. The universe has a goal.