## Chapter 1 : Decision Matrix Analysis - Decision-Making Skills from www.nxgvision.com

*If space is continuous, then there is no underlying grid that guides the direction of cosmic rays â€" they should come in from every direction equally. If we live in a simulation based on a lattice, however, the team has calculated that we wouldn't see this even distribution.*

The other rows are obtained similarly. The columns are the components of the unprimed unit vectors in the primed system, and are cosines of the same angles. Such a table is conveniently written as a matrix, without the column and row headings, and the individual matrix elements are identified by subscripts giving the row and column. Since the vectors are unit vectors, the sum of the squares of the elements in any row or column must equal 1. Since the vectors are orthogonal, the sum of the products of the elements in any two rows or any two columns must be zero. Considering the rows, we have six conditions connecting nine elements, leaving three independent values, which checks with the three parameters that specify a rotation. It is the same considering the columns. It is clear that none of the elements can be greater than unity, and that they cannot all have the same sign or else the products could not sum to zero. As an exercise, write the matrices for rotations about the 1- and 2-axes. A positive rotation about the 3-axis is taken as one that would advance a right-handed screw along the 3-axis. Actually write this down, so that it is clear how the elements of the rotation matrix are used. There is a much neater way to write this down, using indices. The vector x is represented by $x_i$, where the index i takes the values 1, 2 and 3. The rotation matrix A is represented by $a_{ij}$, where i is the row index and j is the column index as in the table above. When an index is repeated, as j is here, we assume a sum of terms for each possible value of j. An index that is summed over on the right-hand side of an equation cannot appear on the left-hand side. The letter used can be replaced by any letter you wish that is not already used in the expression. Such an index is called a dummy index. Note carefully the order of the indices i and j in $a_{ji}$. When i and j are equal, they are, of course, equal--simply the diagonal elements of the matrix. The transformation from the primed to the unprimed system is the inverse of the transformation from the unprimed to the primed system. We have just shown that the matrix of the inverse rotation is just the transpose of the matrix of the direct rotation. Any such matrix is called an orthogonal matrix, and describes some rotation. We have also learned an important rule of index manipulation: We can change a dummy index, and we can choose a single index that appears on both sides of an equation arbitrarily, however. More general coordinate transformations can also be considered. If the transformation is not orthogonal, stretches and inclinations of the coordinate axes may be involved. Contraction can occur only with one contravariant and one covariant index, and it is necessary to define metric tensors $g_{ij}$ and $g_{ij}$ to change indices from contravariant to covariant and vice versa. These complications are not necessary except in relativity, so we will not mention them further. One extension that is often useful, however, is to inversions, so that the more general rotary inversions can be included in our transformations. All the diagonal elements are -1, all others zero. The behavior of tensors under inversion is either to change sign or to remain unchanged. A rank-n ordinary tensor changes by a factor -1 n under inversion. A pseudotensor changes by the opposite sign upon inversion. These are not just any old three quantities--they must respond to rotations in the way specified, and since they do, they are analogous to displacements in some sense. We can have nine quantities that transform like this that do not have to be the products of two vector components, represented by $t_{ij}$. Such a quantity was the original tensor, with two indices. This concept can be extended to any number of indices, and the sets of quantities are said to represent a tensor of rank n, where n is the number of indices. A vector is of rank 1. The objects we have just considered are of rank 2. A quantity that does not change at all under rotation is called a scalar, and is of rank 0. A matrix has elements tagged by two indices, but it is necessarily no more a tensor than three arbitrary elements are a vector. A tensor is defined by its transformation properties, not by how it looks. A rank-2 tensor is often represented by a matrix, and matrices have interesting properties and algebra, but this relates solely to representation and manipulation. Matrices are, in fact, used to represent rank-2 tensors and to work with them.

Many matrix operations are much more easily and unambiguously carried out by indices, however. If $v_i$ and $u_i$ are vectors, then the outer product $u_i v_j$ is a rank-2 tensor, while the contraction $u_i v_i$ is rank 0, a scalar, called the inner or scalar product. Contraction is one of the primary means for producing one tensor from another. The Kronecker delta is a rank-2 tensor whose components are shown at the left. To show that it is a tensor, we transform it: It has the same components in every coordinate system; we can say that it is spherically symmetric. The pressure tensor in a liquid is a multiple of this tensor, expressing the property that the pressure is independent of direction. The tensor is not affected by rotation, but it is not a scalar. A scalar is a single element unaffected by rotation. Here we have nine elements. The Kronecker delta, therefore, has a right to call itself a tensor. The matrix that represents it is the unit matrix, of course. As an exercise, let us show that the magnitude of a vector is preserved, or invariant, under rotation. The square of the magnitude of a vector $x_i$ can be expressed as the contraction $x_i x_i$, which, of course, implies this. By working with $x_i x_i$ instead, we can prove the same thing for a sum over the columns. The sum of the diagonal elements of a rank-2 tensor is called its trace or spur. It is immediately obvious that since the trace is $t_{ii}$, it is invariant under rotation, because this expression is a rank-0 scalar. As an exercise, you may want to prove this explicitly, using the rotation matrix elements. Since the trace is a scalar, it is invariant under rotations. Another scalar invariant of a rank-2 tensor is its determinant, which will be defined below. These are the only two invariants of a rank-2 tensor. If $a_{ij}$ is a tensor, so is its transpose $a_{ji}$. The first combination has six independent elements, and is symmetrical across the diagonal. The second has three independent elements, the diagonal elements are zero, and elements similarly placed on each side of the diagonal are opposite in sign. Any rank-2 tensor can be resolved into symmetrical and antisymmetrical parts in this way. Many physical quantities are symmetrical tensors, while the three elements of an antisymmetric tensor can be identified with the three components of an associated vector, as we shall see. If a tensor is a function of position in space, the result is a tensor field. For example, the temperature $T$ $x_i$ in a region is a rank-0 or scalar field, since it does not depend on the orientation of the coordinate axes. The velocity $v$ $x_i$ in a liquid is a rank-1 or vector field. The stress $S_{ij}$ $x_i$ is a rank-2 or tensor field. Here, $x_i$ stands for the usual x,y,z. The partial derivative is used because there are three independent variables, and we are taking the derivative with respect to only one of them. Differentiation can, therefore, create a tensor index. In most cases, however, we will use the partial sign instead of the comma convention. If you are familiar with vector fields, you will recognize many old friends expressed in index notation. Again, note the sum. We can express a partial derivative with respect to time, if these quantities are considered to vary with time, by a subscript t. Time differentiation has no effect on the tensor properties. We emphasize that there are two kinds of indices in an expression: No index should appear more than twice, and if it appears twice, it is a dummy or summation index. Free indices may appear only once. A particular component is identified by an index 1 to 3. Anything that looks like a tensor index but is not, should be put in parentheses. Dummy indices can be chosen at will so they do not conflict with any other indices. The letters chosen for free indices are, of course, arbitrary, but when they appear on opposite sides of an equation they must be changed simultaneously. An index always implies tensor transformation properties. The range of an index must always be agreed, and is 1 to 3 unless otherwise specified. Of the 27 possible elements, only six are nonzero. This object is called the antisymmetric tensor density, or the alternating tensor. Like the Kronecker delta, it is indeed a tensor, which can be discovered by transforming it. For given values of i,j,k the right-hand side is just the determinant of the matrix $a_{ij}$. The most-used property of the antisymmetric tensor density is the result of contracting a product of antisymmetric tensor densities on one index. Note that the Kronecker deltas are the product of those with corresponding indices j,s and k,r minus the product with alternate indices j,r and k,s. It may help to begin by permuting the indices cyclically so that the summation index is first in both tensors.

## Chapter 2 : Los Angeles Times - We are currently unavailable in your region

*The Art of Jumping Time Lines. This has little to do with your location in time and space, but more to do with your vibrational state. but then showed up in.*

OK, this is linear algebra lecture nine. The space they span. And then the dimension of that subspace. So this is the day that those words get assigned clear meanings. And emphasize that we talk about a bunch of vectors being independent. A bunch of vectors being independent. A bunch of vectors spanning a space. A bunch of vectors being a basis. And the dimension is some number. OK, so what are the definitions? Suppose I have a matrix and I look at Ax equals zero. Suppose the matrix has a lot of columns, so that n is bigger than m. I have more unknowns than equations. Let me write that down. More unknowns than equations. More unknown x-s than equations. The conclusion is there are some non-zero x-s such that Ax is zero. There are some special solutions. I mean, it sort of like seems like a reasonable thing, more unknowns than equations, then it seems reasonable that we can solve them. And the point is here there will be some free columns. The reason, so the reason is there must -- there will be free variables, at least one. That we now have this -- a complete, algorithm, a complete systematic way to say, OK, we take the system Ax equals zero, we row reduce, we identify the free variables, and, since there are n variables and at most m pivots, there will be some free variables, at least one, at least n-m in fact, left over. And those variables I can assign non-zero values to. I can take them to be one or whatever I like, and then I can solve for the pivot variables. So then it gives me a solution to Ax equals zero. So now I want to say what does it mean for a bunch of vectors to be independent. So this is like the background that we know. Now I want to speak about independence. I can give you the abstract definition, and I will, but I would also like to give you the direct meaning. So the question is, when vectors x1, x2 up to -- Suppose I have n vectors are independent if. These are just vectors in some vector space. I can take combinations of them. The question is, do any combinations give zero? So what do I mean by that? No combination gives the zero vector. This is when all the c-s, all the c-s are zero. But the question is, does any other combination give zero? If not, then the vectors are independent. If some other combination does give zero, the vectors are dependent. Are those dependent or independent? One vector is twice as long as the other, so if the word dependent means anything, these should be dependent. Of course those are dependent, because two of these first vectors minus the second vector is zero. OK, that was clear. Suppose I have a vector and the other guy is the zero vector. Suppose I have a vector V1 and V2 is the zero vector. Then are those vectors dependent or independent? You could say, well, this guy is zero times that one. This one is some combination of those. But let me write it the other way. Let me say -- what combination, how many V1s and how many V2s shall I take to get the zero vector? If, if V1 is like the vector two one and V2 is the zero vector, zero zero, then I would like to show that some combination of those gives the zero vector. What shall I take? How many V1s shall I take? Yeah, no, take no V1s. But how many V2s? If one of those vectors is the zero vector then I could always take -- include that one and none of the others, and I would get the zero answer, and I would show dependence. Now, let me, let me finally draw an example where they will be independent. Those are surely independent, right? Any combination of V1 and V2, will not be zero except, the zero combination. So those would be independent. But now let me, let me stick in a third vector, V3. Independent or dependent now, those three vectors? So now n is three here. How do I know those are dependent? How do I know that some combination of V1, V2, and V3 gives me the zero vector? I know because of that. I take the matrix A that has V1 in its first column, V2 in its second column, V3 in its third column. V2 looks like it might be one two. V3 looks like it might be maybe two, maybe two and a half, minus one. Those are my three vectors, and I put them in the columns of A. Now that matrix A is two by three. Sorry that my little bit of art got in the way. Do you see the point? The columns are dependent if there is something in the null space. The columns are dependent because this, this thing in the null space says that c1 of that plus c2 of that plus c3 of this is zero. So in other words, I can go out some V1, out some more V2, back on V3, and end up zero. V1 up

to Vn are the columns of a matrix A. They are independent if the null space of A, of A, is what? And these columns will be independent if the null space of A is the zero vector. So I could express this in other words now. The rank r of the, of the matrix, in the case of independent columns, is? So the columns are independent. So how many pivot columns have I got. So this would be the case where the rank is n. This would be the case where the rank is smaller than n. So in this case the rank is n and the null space of A is only the zero vector. And no free variables. And this is the case yes free variables. But most of the time, this is -- the vectors we think of are columns. And we can put them in a matrix. And then independence or dependence comes back to the null space. Can I just, yeah, let me go on to spanning a What does it mean for a bunch of vectors to span a space? You remember, if we had a columns in a matrix, we took all their combinations and that gave us the column space. Those vectors that we started with span that column space. So spanning a space means -- so let me move that important stuff right up. So vectors -- let me call them, say, V1 up to -- call you some different letter, say Vl -- span a space, a subspace, or just a vector space I could say, span a space means, means the space consists of all combinations of those vectors. So now I could say in shorthand the columns of a matrix span the column space. Because any space with those vectors in it must have all the combinations of those vectors in it. So if I think of a, of the column space of a OK.

## Chapter 3 : Dimension of the null space or nullity (video) | Khan Academy

*The Infinite Information Matrix. The information that represents every aspect of every moment of the past, present, and future all exists simultaneously, eternally, and NOW.*

How can this be you ask?: Sure you can read about quantum physics and chaos theory in a book. But trying to understand it is no simple task. I promise not to make you do any math. First and foremost, my beliefs on the nonexistence of time began very early. In grade school math class, I did a project for extra credit. I described a four dimensional cube to my class. Not all that difficult; hypercubes have been part of math, physics, and geometry for hundreds, if not thousands of years. After the extra credit project, I began wondering about higher dimensional objects. I started thinking about shadows and lower dimensional objects. As I made my way through high school, I read a few other books about metaphysics. Eventually I formulated a few wild eyed ideas of my own. Time simply does not exist. I guess you could call me a materialist. Try to describe time, without using time as a reference. Are there any machines that can measure it? What does a clock measure? The movement of its own hands? What does a clock really measure? Is time defined by the motion of our planet around the sun? If time does exist when was it created? Did it always exist? Did it exist before man came along? Does time really slow down if an object approaches the speed of light? I seriously doubt it. Where does time slow down? Does all time slow down? Just the time around the object moving near the speed of light? I thought time or for that matter the speed of light were supposed to be universal standards. On with some explanations Others have already tried that. I tried to follow their math, but all it did was give me a head ache. If you want proof, you might want to try a simpler subject. The basis of my crazy little ideas can best be defined through the basics of quantum mechanics and theoretical physics. These theories about time not existing rest primarily on the belief in the existence of Multidimensional Universes, and the Simultaneous Coexistence of these Multidimensional Universes. You know that you exist, right? You have height, width, and depth. Objects in our immediate plane of existence can be defined as having 3 dimensions. Humans can detect objects that coexist in the same dimension multidimensional universe as them. We exist in a universe which is defined by 3 specific dimensions. Everything in this universe can be defined through expressions of these 3 dimensions. Are you with me? Solid objects in our universe exist within a 3 dimensional framework. They have varying X, Y, and Z dimensions that define their existence. Can we sense objects that do not have 3 dimensions? Sure we can, we can see 2 dimensional objects. We define 2 dimensional objects as having only 2 of the 3 dimensions that we can sense. So, Humans can detect both 2 and 3 dimensional objects. We can detect objects that are not fully 3 dimensional. We can detect objects that are not fully 3 dimensional; objects within a multidimensional universe which overlaps ours, but we cannot detect objects that exist wholly outside our subset of 3 dimensions. If something casts a shadow on a 3 dimensional object the two coexist simultaneously. The shadow occupies the same physical space as the solid object without displacing it No sidetracking on the other effects at this point. So here we can see that multidimensional objects can coexist simultaneously within the same space. A 2 dimensional object and a 3 dimensional object can occupy the same physical space. Time to expand on that simple fact. Are there more dimensions than X, Y, and Z? I believe there are. We humans are simply not capable of sensing these other dimensions. We have no biological capability to sense these other dimensions. Perhaps shadows are objects which consist of dimensions W, X and Y, but we can only sense the X and Y dimensions of these objects. They overlap our universe in dimensions X and Y, yet exist fully in a different universe. One that is slightly offset from the universe that we exist in. Overlapping, simultaneously coexisting, multidimensional universes. You may have noticed that shadows are duplicates of 3 dimensional objects in all but one aspect. They lack a 3rd dimension, or that 3rd dimension cannot be detected by us. This adjacent, and partially detectable universe is nearly identical to ours. What if these coexisting multidimensional universes differed from ours in relation to their dimensional divergence? Our universe overlaps these other universes, but we cannot detect them. They coexist within the same framework,

but are separated by dimensional frequencies. Our universe resonates at dimensional frequency XYZ With the separate dimensional components mixed as a whole , and other universes resonate at different dimensional frequencies. How many are there? I believe that the number is very large, but I do not believe that it is infinite. Humans perceive the passage of time as a continuous, contiguous series of linear experiences. We experience time as being continuous. We experience it as contiguous. Skipping forward or back to the points that interest us. Humans also experience time as being linear. We can only experience things in a linear fashion. Moving continuously in one direction, without the ability to reverse direction. Without time how do you explain human experience? I explain it in the following terms. A series of experienced, but simultaneous nows. Your consciousness travels in one direction down a specific probability path. Your life experience is the contiguous progression of your consciousness from one simultaneously coexisting multidimensional universe to another. Each node in the probability tree is a different multidimensional universe. This experience is also continuous or experienced as being continuous. Our consciousness is in constant motion. A continual state of experience Or is it? The measurable change of matter or energy. Without change there is no motion. Without change there is no time. See illustration at left What is this probability tree that I mentioned? There are many possible reactions to any action. A probability tree is a map of all possibilities for any given event. Try to envision the probabilities inherent when a coin is flipped. The first node of this probability tree is the point where the coin is flipped. After the coin is flipped three new probabilities at least three branch out from the initial node. The probability tree shown at the left is a crude illustration of a very small subset. It maps out a very small number of possible events.

## Chapter 4 : Gaussian Elimination

*The Matrix is a science fiction action film written and directed by The Wachowskis and starring Keanu Reeves, Laurence Fishburne, Carrie-Anne Moss, Hugo Weaving, and Joe Pantoliano.*

These real-life "glitch in the matrix" experiences and hundreds more first-hand accounts of reality shifts aka: Special issues focusing on particular types of reality shifts such as: The reality shift phenomenon is documented in the best-selling book, Reality Shifts: When Consciousness Changes the Physical World. Glitch in the Matrix Experiences Neo: What did you just say? Nothing, I just had a little deja vu. What did you see? A black cat went past us, and then another that looked just like it. How much like it, was it the same cat? My friend and I had stopped at a traffic light next to a bike store while taking a road trip, when I saw the strangest thing. A young man came out of the bike shop wearing brightly colored clothing, and got into his car. As we sat at the light, I turned my head to chat with my companion. The SAME young man, dressed the same way, came out of the store and got into his car in exactly the same way! Not enough time had elapsed between these moments for the man in question to have been able to get back out of the car, return to the store, and then come back out of the store. The passage of time between these moments of me seeing him come out of the store once, then again was not more than a few seconds. My own "action replay," or perhaps a reality shift, or perhaps stepping out of time. On one particular Thursday this year, I noticed another door facing me while I walked down the very same hall. I was so startled that I actually stopped in my tracks. I have never noticed this door before. Not once in five years! Now I admit to the occasional brain fog, but five years worth?! As I reached that wall, where the hall takes a 90 degree turn to the left, I looked closely at the wall and door frame to see if it looked as if it had just been put in overnight. The door frame even has dents, scuffs, and nicks in it. I asked some of my coworkers about the door, and they seemed very surprised and amused that I had apparently not seen this door before. So I think I have finally experienced a reality shift. We had parked on the 2nd floor in a busy parking garage. As always, we each made a mental note of where we parked. We returned about 4 hours later, and began walking up to the level we parked in. We both commented on how weird it was that there were no cars anywhere, and how everything seemed so quiet for a very busy downtown day. We arrived at the 2nd floor and noticed there were no cars to be found, including ours. We figured we were in error, and commented on how odd it was for us both to be wrong about where we parked. We proceeded up to the 3rd floor, to our amazement, no cars. We were beginning to feel uncomfortable about this, I said jokingly, "We are either in the wrong parking garage, or in the Twilight zone. Finally the 5th floor, much to our relief was full of cars, including ours. We felt happy to find the car, but were so baffled by our experience. We then proceeded to drive down to the exit, then by sheer horror noticed that every floor level was full of cars! We were both quite bewildered. I wanted to go back to reevaluate what we had experienced, but my friend was emphatically against it. Normally, I would have attributed this experience to a glitch in my brain. The fact that two of us experienced this brought even more validity to it. I know for certain that we used the same entrance of the garage, same elevator section, and used all the same doors. We could also see around the whole level of whatever floor we were on. It was not staggered. I will never know what really happened that day. These are things that make you go, "hummmm". Falling in Slow Motion A Reader in California A few years ago, while doing camera work at a public meeting, I managed to trip over a piece of equipment which another technician was moving. I felt myself falling in slow motion, then landing "softly" on the floor. When I got up, a few people who had not yet left the meeting were staring at me strangely. I said, "Hey, didnt you already know what a klutz I am? One man said, "I cant believe it -- you seemed to be falling in slow motion. I think all of these incidents are relevant, if only to illustrate how just about anything and everything is possible when it comes to reality shifting. I was in line, and girl at the table looked at me and went to the back of the truck and came back and said, "We are out of eggs. It was certainly a "head scratcher" most of that day. I rarely eat meat; only dab of chicken or seafood every so often, so I was probably needing some protein. Some trees grow

fast, but not within a matter of two days! I just never noticed the tree before And I swear there was no maple tree there before! We went to a local park for a new type of long-jump. Neither of us had been in track or sports for at least a year. We set up some sticks in front of a hill for us to jump over. Fear, doubt, disbelief [and love explained later ]. This went on for 20 minutes before I looked at how far our last successful jump was. From only jogging if we ran, we only got half-way , we both successfully jumped 16 size 13 feet! As in, take a size 13 shoe, and step 16 times, heel-to-toe. Quite a long way for jogging, huh? I swear we flew for at least a few feet as well, when we did it right, because sometime in mid-air, I felt completely joyful, and closed my eyes. My theory involved letting go, as explained above. No "finding lost objects" techniques ever worked for me, not even using my awesome "third eye manifestation". So, soon after I started thinking of the body as a "shell", I said "shell, find my book. Then my towel, then another book, etc. So I consider it a function, not even a physical thing this is important in letting go. Then, sometime after that, I began experimenting more, and learned to stop thinking. In order to obtain this state, I decided to use the Buddhist practice of mindfulness. It clears the mind quite well. Remember people telling you "not to think about it so much"? Now, one last thing. I believe this is explained somewhere on realityshifters. Love is also the energy to live, fly, etc. What I have learned is something others have also felt and written about. Reading Communion With God and Illusions helps a lot in understanding this. Remember to just let it go, and let it flow. Most importantly because you have to stop thinking once you start running is to trust yourself. Find a place to start I started on a small hill. Let go of all fears, doubts, worries, etc. Tell your body to jump the distance. Trust your self, AND your body. Be mindful, and clear your mind. The speed of your run does NOT matter. Trust you will fly. Repeat until you want to stop.

## Chapter 5 : RealityShifters | Glitch in the Matrix Experiences

*Replying in the same place here if I might, it was you know like a church, people gather there with a belief, in this case it was the top medium's house, now I learned a lot about spiritual stuff and I can see it was a very dark thing going on there, I didn't know then but do now.*

How to Use the Tool Decision Matrix Analysis works by getting you to list your options as rows on a table, and the factors you need consider as columns. While this sounds complex, this technique is actually quite easy to use. Start by downloading our free worksheet. Then work through these steps. Step 1 List all of your options as the row labels on the table, and list the factors that you need to consider as the column headings. For example, if you were buying a new laptop, factors to consider might be cost, dimensions, and hard disk size. Step 2 Next, work your way down the columns of your table, scoring each option for each of the factors in your decision. Score each option from 0 poor to 5 very good. Note that you do not have to have a different score for each option â€" if none of them are good for a particular factor in your decision, then all options should score 0. Step 3 The next step is to work out the relative importance of the factors in your decision. Show these as numbers from, say, 0 to 5, where 0 means that the factor is absolutely unimportant in the final decision, and 5 means that it is very important. These values may be obvious. If they are not, then use a technique such as Paired Comparison Analysis to estimate them. Step 4 Now multiply each of your scores from step 2 by the values for relative importance of the factor that you calculated in step 3. Step 5 Finally, add up these weighted scores for each of your options. The option that scores the highest wins! This may be a sign that certain factors are more important to you than you initially thought. Also, if an option scores very poorly for a factor, decide whether this rules it out altogether. Example A caterer needs to find a new supplier for his basic ingredients. He has four options. Finding This Article Useful? Factors that he wants to consider are:

## Chapter 6 : Thanks for signing up for the Quantum Jumping Introductory Program

*For the longest time I wouldn't believe it, and then I saw the fields with my own eyes. Watched them liquefy the dead so they could be fed intravenously to the living. Morpheus: And standing there, facing the pure horrifying precision, I came to realize the obviousness of the truth.*

Tests could reveal whether we are part of a giant computer simulation â€" but the real question is if we want to know The action really begins when Neo is given a fateful choice: But if that were true, the very laws of physics that allow us to devise such reality-checking technology may have little to do with the fundamental rules that govern the meta-universe inhabited by our simulators. To us, these programmers would be gods, able to twist reality on a whim. So should we say yes to the offer to take the red pill and learn the truth â€" or are the implications too disturbing? Worlds in Our Grasp The first serious attempt to find the truth about our universe came in , when an effort to calculate the resources needed for a universe-size simulation made the prospect seem impossible. To repeat them, and generate a perfect facsimile of reality down to the last atom, would take more energy than the universe has. In such a makeshift cosmos, the fine details of the microscopic world and the farthest stars might only be filled in by the programmers on the rare occasions that people study them with scientific equipment. That realization makes creating virtual universes eerily possible, even for us. Beane develops simulations that re-create how elementary protons and neutrons joined together to form ever larger atoms in our young universe. Legislation and social mores could soon be all that keeps us from creating a universe of artificial, but still feeling, humans â€" but our tech-savvy descendants may find the power to play God too tempting to resist. Yang They could create a plethora of pet universes, vastly outnumbering the real cosmos. Since there seemed no way to tell the difference between the two possibilities, however, bookmakers did not have to lose sleep working out the precise odds. Learning the Truth That changed in when John D. Barrow, professor of mathematical sciences at Cambridge University, suggested that an imperfect simulation of reality would contain detectable glitches. Last year, Beane and colleagues suggested a more concrete test of the simulation hypothesis. Most physicists assume that space is smooth and extends out infinitely. But physicists modeling the early universe cannot easily re-create a perfectly smooth background to house their atoms, stars and galaxies. Instead, they build up their simulated space from a lattice, or grid, just as television images are made up from multiple pixels. The team calculated that the motion of particles within their simulation, and thus their energy, is related to the distance between the points of the lattice: And as it happens, astronomers have noticed that cosmic rays, high-speed particles that originate in far-flung galaxies, always arrive at Earth with a specific maximum energy of about electron volts. If space is continuous, then there is no underlying grid that guides the direction of cosmic rays â€" they should come in from every direction equally. If physicists do see an uneven distribution, it would be a tough result to explain if the cosmos were real. Astronomers need much more cosmic ray data to answer this one way or another. For Beane, either outcome would be fine. Unfortunately, our almighty simulators may instead have programmed us into a universe-size reality show â€" and are capable of manipulating the rules of the game, purely for their entertainment. In that case, maybe our best strategy is to lead lives that amuse our audience, in the hope that our simulator-gods will resurrect us in the afterlife of next-generation simulations. The weird consequences would not end there. Our simulators may be simulations themselves â€" just one rabbit hole within a linked series, each with different fundamental physical laws. This cosmic ray test may help reveal whether we are just lines of code in an artificial Matrix, where the established rules of physics may be bent, or even broken. There is no turning back, Neo: Do you take the blue pill, or the red pill? Glitches caused by our simulation being patched up could also be at the root of truly bizarre results that defy the normal rules of physics. One such possible effect appeared in , when physicists working on the OPERA experiment in Europe made headlines as they claimed to have measured subatomic particles called neutrinos traveling faster than the speed of light, considered the universal speed limit. Unfortunately, neither case proved a slam-dunk for a virtual

universe. Independent tests could not back up the fine-structure constant data, and the speedy neutrinos turned out to be due to a faulty experimental setup. But there is a more fantastical explanation: These inconstant-constants may have instead been simulation glitches, glimpsed just before our programmers fixed them.

## Chapter 7 : Linear Independence and Span

*Hence when we say that a non-square matrix is full rank, we mean that the row and column rank are as high as possible, given the shape of the matrix. So if there are more rows than columns (), then the matrix is full rank if the matrix is full column rank.*

Maybe you wanted to be a world-class chef, or an inventor, or a writer. Maybe you still do. And then what happened? The same thing that always happens. You were made to walk the path of what you should do, and in turn moved further and further away from the path of what you could do. Bills and responsibilities started pouring in, and before you knew itâ€¦ Your childhood dreams had vanished into thin air. But open your mind for just a few minutes. And that within these universes, alternate versions of yourself are living out their lives, just as you are. Learn their skills, their experience, their wisdom. Find out how they became successful. How they discovered their talents. How they generated massive wealth. Remember the movie, The Matrix? Remember how people were able to instantly download skills and experiences into their minds? They became kung-fu masters, helicopter pilots, engineering expertsâ€¦ all in a matter of minutes. Skills that normally take years to master were theirs in the blink of an eye. Yes, The Matrix was a movieâ€"but what if that part of it was real? And what if, without having to live in the future and fight giant robots, you could experience it too? I have with me, a technique that makes learning new skills, discovering new ideas, and achieving remarkable feats a matter of saying yes or no. That technique is called Quantum Jumping. It is a highly advanced visualization technique that allows you to vividly visualize meeting alternate versions of yourself in alternate universes â€" and using them to help engineer your ideal existence. Think of how you could benefit from all their experiences, learn their skills and make better decisions. I see it as discovering your true potential. The more creative you. What the mind can believe, it can achieve. But before I go further into how it works and what it can do for you, I find it right that you should know a little bit more about myselfâ€¦ Instructor Profile Meet Burt Goldman: I had a Korean-American buddy who told me of a mystic he had met while he was wandering around the outskirts of Seoul. I got to meet that mystic. In that small home of Mr. I learned about Qi, or energy, and Li, the control of this energy. Suddenly Korea turned into much more than just a place to bide my time until I returned to the States. I was fascinated by what I had learned in Hawaii and wanted to know more but there were no Kahunas in the US at that time. After my discharge from the army, I heard of a great swami and my curiosity led me to Paramahansa Yogananda. I learned the art of meditation at the feet of this great master, who brought meditation and yoga to the West. After Yogananda passed on in , I sought other ways to fill my cup with knowledge. I read everything I could on the subject of the mind and the variety of ways to use it. Next, I explored hypnotism and was fascinated by it. I practiced it for many years, all the while researching and learning. By then I had also become proficient in hand acupressure, a component of acupuncture without puncturing the body. My teachings at the time were for small groups, or individuals. I had not yet gotten the idea of world travel, or gathering large groups of people. At this point in my life I heard about Jose Silva, and tried my hand at helping him run his mind control seminars. After injecting some of my own techniques I became his number one instructor and remained in that position until I left the organization. At my peak I conducted seminars for Heads of States, European Royalty and amassed audiences numbering up to  The internet allows me to share my knowledge with the world, and enable people like you to easily tap into the latent power of your mind. I offer nothing but proven, time-tested techniques that have been conceived, tested and fine-tuned with hundreds of thousands of participants throughout the world. Techniques that could very well change your life for the better. I relish peace and quiet, I love spending time with my grandchildren, and enjoy nothing more than sitting down to a good book. Today, many of my paintings hang in museums around the globe. Since , the website has continued to grow and now has a community of over , members. Sarah was a housemaid in Cleveland, Ohio. Sarah came to one of my classes and was fascinated by the concept of her having other selves in other dimensionsâ€"who were exactly the same as her, with the same

husband, same parents, same friends, same children—but who was very successful. So one day as she went into a Quantum Jump, she decided she would visit a successful version of herself, in a business that she loved. She jumped through and suddenly, she reported, she saw her alternate self, and she visualized herself walking over to this twin. Her intent of course was what influenced her thoughts. She imagined herself talking to her alternate self. I asked if she cleaned any houses that were for sale and she said no. She was suddenly very quiet and thoughtful as the class went on. Sarah was now paying no attention to me and during a break I asked her what was going on? With my permission she got on the stage and asked if there were any real estate salespeople in the room. Sarah said she is starting a company that will clean spotless and decorate those run down houses so that they will sell. I could almost write a book about Sarah and her husband Peter because Sarah wound up with more than she could handle and hired 2 girls, then 3 more, then 7, and soon she had 87 women working with and for her. All thanks to Quantum Jumping. The only prerequisite is an open mind and the power of intent. What if you could talk to the creative you and find out exactly how to effortlessly conjure ideas — even if you regularly struggle to find inspiration? All you need to do is sit down and follow my lead as I guide you through each and every technique to mastering Quantum Jumping, from beginner level visualizations to highly advanced exercises. Absorb the principles and history behind each and every one of them. Listen as I inspire you with tales of success, and how you can make them yours. And finally, smile as you realize your life is about to change forever. The Ultimate Quantum Jumping Course A collection of powerful and easy-to-use Alpha exercises designed to guide you into a deeper state of mind, so you can effortlessly communicate with your alternate selves. Eye-opening lessons for a better understanding of the concepts behind Quantum Jumping, so you can fully immerse yourself into your practice, and enjoy better results. Powerful meditative techniques to amplify your Alpha Exercises. These will help you experience more vivid and controllable Quantum Jumps that better serve the area of your life you want to improve. Cutting-edge insights into the innermost workings of your mind, so you can finally realize the full extent of your inner potential and think and act like the most extraordinary achievers. Fascinating case studies that will help you understand the limitless possibilities of Quantum Jumping, and give you ideas for new ways to use it in your own life. This part of the program will help expand your mind with the concepts, history, and scientific evidence behind Quantum Jumping. Burt shares his story and interactions in an old Korean farmhouse in , which sparked his journey to discover Quantum Jumping. Burt explains the idea behind this powerful statement and the science and spirituality behind Quantum Jumping. Stories about how Quantum Jumping has helped Burt unlock extraordinary abilities in singing, photography and visual art. Your first quantum Jump — a short jump into the relaxed alpha state of mind. Jump Into Abundance Abundance is present all throughout the universe. The only problem is many of us feel guilty asking for it. I did too, until I realized that abundance, along with material possessions like money or wealth, can manifest in many other exciting and incredible ways. It gives you and your family the life you deserve whilst having a steady stream of income that allows your creative soul to flourish. This module will aim to create the freedom and space to do what you want to do, while giving back to the community you love. Learn how to access the abundance of your twin-self and bring it back into this universe with you. Learn and practice attracting abundance with 4 powerful Quantum Jumps — jump into an abundant mindset, jump into a lucky you, jump into a savvy investor and finally jump into ultimate wealth. Jump Into Ideal Health I need you to know this age is merely a number. Health is just an extension of your belief system, the same as aging. In this chapter I will show you how to extend your energy and lifespan while slowing down your aging, so you can make these next decades the most exciting yet. Enjoy Ideal Health — how to change your attitude toward your health — so that when you have it, you see it as something deserved and valuable. Improve your health and attract your ideal body with 4 powerful Quantum Jumps — jump into your ideal body, jump into your energized self, jump into invincible health, jump into a healthy mindset. I am getting married for the second time after my wife passed away. Love is as vital to our soul as water is to our body, the problem is most of us are too scared to bring it out. Here I will show you step by step how to mold yourself into a dream lover. Cultivate Healthy Relationships — the basics of what

makes relationships work. Attract your ideal mate, strengthen relationships you already have with 4 powerful Quantum Jumps â€" jump into loving relationships, jump into attracting the ideal mate, jump into fun friendships, jump into healthy family dynamics. Put simply, success is the combination of freedom and the ability to express your creativity while contributing back to the world. We all have a different definition of success.

*In "OUT THERE: A Scientific Guide to Alien Life, Antimatter, and Human Space Travel (for the Cosmically Curious)," (Grand Central Publishing, ), www.nxgvision.com senior writer Mike Wall tackles the.*

Some of the hidden meaning is easy to find - other stuff is buried so deeply or only briefly referred to that a lot of the fun is digging around to see what you can find. You can skip ahead to a specific topic here: By day, a computer programmer for a large, generic software company; by night, a hacker, providing the fruits of his labors to other troubled souls. It is the voicing of this question that begins his transformation into The One. Morpheus has sent Trinity to contact Neo, believing he is The One of prophecy. Morpheus explains it to Neo in this way: It was this man who freed the first of us and taught us the truth - When he died, the Oracle prophesied his return and envisioned that his coming would hail the destruction of the Matrix. It is with both great anticipation and extreme dread that they "wake" Neo to the real world, knowing the path he has ahead of him, and the potential conclusion. He is the Chosen One, the reluctant hero, the savior, and the one who will lead his people to freedom. In order to do that, he must sacrifice himself, and rise from the dead. He faces progressively greater challenges through the course of the movie, and as he begins to believe in himself, he is able to overcome these challenges, including besting his ultimate adversary, Agent Smith. Through much of The Matrix, Neo is our doppleganger. The discussion with The Oracle is no exception. As Neo struggles to find meaning in her words, the audience struggles along with him. So what did Neo need to hear? What exactly was the Oracle telling him? So is this the same Oracle that made the prophecy? And she knows what, everything? She would say she knows enough. Try not to think of it in terms of right and wrong. She is a guide, Neo. She can help you to find the path. This is a critical context for the scene that follows. The Oracle is guiding Neo with every word she says. What did she tell you? That I would find the one I told you I can only show you the door. You have to walk through it. Make yourself at home, Morpheus. Neo, come with me These are the other potentials, you can wait here. The potentials are other candidates waiting to meet with The Oracle. Do not try and bend the spoon. Instead only try to realize the truth. There is no spoon. There is no spoon? The Oracle will see you now. Be right with you. Not quite what you were expecting, right? An elderly woman baking cookies in an average urban apartment But do you have confidence in her words? How did you know? Clearly she can tell the future when she wants to. She can be specific. But the real key here is her last statement. Here The Oracle is already guiding Neo. She planted something in his mind and he immediately responded. Was this a test to see if he was open to suggestion? Or was it simply a display of her pre-cognitive power? I can see why she likes you. Not too bright, though. You know why Morpheus brought you to see me? So, what do you think? You know what that means? Being The One is just like being in love. She opens the door but Neo has to choose to believe it for himself. Well, I better have a look at you. Open your mouth, say Ahhh. Your next life maybe, who knows? The next life comment is particularly prophetic given that Neo is killed at the end of the movie and resurrected with the help of Trinity, whereupon he kicks some major Agent butt, exercising the power of his newfound belief. He is The One. But what is Neo really waiting for? What do you mean, without him? Are you sure you want to hear this? Morpheus believes in you, Neo. And no one, not you, not even me can convince him otherwise. One of you is going to die. Which one will be up to you. You have a good soul, and I hate giving good people bad news. And this is what The Oracle needs to happen: Here, take a cookie. Lots of interesting theories on the cookie. Since this is all a computer program, some strongly believe the cookie is a literal browser cookie. Is it an extra push down the path? Is it just what she says, something to help Neo feel right as rain?

## Chapter 9 : Time does not exist

*For example, if A is a 3-by-0 matrix and B is a 0-by-3 matrix, then AB is the 3-by-3 zero matrix corresponding to the null map from a 3-dimensional space V to itself, while BA is a 0-by-0 matrix. There is no common notation for empty matrices, but most computer algebra systems allow creating and computing with them.*

Development[ edit ] In , the Wachowskis presented the script for the film Assassins to Warner Bros. After Lorenzo di Bonaventura , the president of production of the company at the time, read the script, he decided to buy rights to it and included two more pictures, Bound and The Matrix, in the contract. The first movie The Wachowskis directed, Bound, then became a critical success. Using this momentum, the siblings later asked to direct The Matrix. To prepare for the wire fu , the actors had to train hard for several months. Yuen was optimistic but then began to worry when he realized how unfit the actors were. He was still recovering by the time of pre-production, but he insisted on training, so Yuen let him practice punches and lighter moves. Reeves trained hard and even requested training on days off. However, the surgery still made him unable to kick for two out of four months of training. As a result, Reeves did not kick much in the film. Matrix digital rain In the film, the code that composes the Matrix itself is frequently represented as downward-flowing green characters. This code uses a custom typeface designed by Simon Whiteley, [32] which includes mirror images of half-width kana characters and Western Latin letters and numerals. Path of Neo , and its drop-down effect is reflected in the design of some posters for the Matrix series. The code received the Runner-up Award in the Jesse Garson Award for In-film typography or opening credit sequence. During the testing of a breathing mechanism in the pod, the tester suffered hypothermia in under eight minutes, so the pod had to be heated. The actors needed to perform martial art actions in their costume, hang upside-down without people seeing up their clothing, and be able to work the wires while strapped into the harnesses. The filming helped establish New South Wales as a major film production center. The bullet-time fight scene was filmed on the roof of Symantec Corporation building in Kent Street, opposite of Sussex street. She stated that she was under a lot of pressure at the time and was devastated when she realized that she would be unable to do it. During the filming of these action sequences, there was significant physical contact between the actors, earning them bruises. The scene was shot successfully a few days later, with Reeves using only three takes. Yuen altered the choreography and made the actors pull their punches in the last sequence of the scene, creating a training feel. The set was built around an existing train storage facility, which had real train tracks. Another stuntman was injured by a hydraulic puller during a shot where Neo was slammed into a booth. The helicopter was a full-scale light-weight mock-up suspended by a wire rope operated a tilting mechanism mounted to the studio roofbeams. The helicopter had side mounted to it a real minigun, which was set to cycle at half normal full rounds per min firing rate. The visual effect of the helicopters rotating blades was effected by using strobe lighting. The scene in which Neo fell into the sewer system concluded the principal photography. A scene would be computer modeled to decide the positioning of the physical cameras. The actor then provided their performance in a chroma key setup, while the cameras were fired in rapid succession, with fractions of a second delay between each shot. The result was combined with CGI backgrounds to create the final effect at 0: As for artistic inspiration for bullet time, I would credit Otomo Katsuhiro , who co-wrote and directed Akira , which definitely blew me away, along with director Michel Gondry. His music videos experimented with a different type of technique called view-morphing and it was just part of the beginning of uncovering the creative approaches toward using still cameras for special effects. Each camera is a still-picture camera not a motion picture camera, and it contributes just one frame to the video sequence. When those pictures are shown in sequence, they create the effect of "virtual camera movement"; the illusion of a viewpoint moving around an object that appears frozen in time. Instead of firing the cameras simultaneously, the visual effect team fired the cameras fractions of a second after each other, so that each camera could capture the action as it progressed, creating a super slow-motion effect. Because the cameras circle the subject almost completely in

most of the sequences, computer technology was used to edit out the cameras that appeared in the background on the other side. The photo-realistic surroundings generated by this method were incorporated into the bullet time scene, [60] and linear interpolation filled in any gaps of the still images to produce a fluent dynamic motion; [61] the computer-generated "lead in" and "lead out" slides were filled in between frames in sequence to get an illusion of orbiting the scene. The ripple effect in the latter scene was created digitally, but the shot also included practical elements, and months of extensive research were needed to find the correct kind of glass and explosives to use. The scene was shot by colliding a quarter-scale helicopter mock-up into a glass wall wired to concentric rings of explosives; the explosives were then triggered in sequence from the center outward, to create a wave of exploding glass. It also led to the development of "Universal Capture", a process which samples and stores facial details and expressions at high resolution. With these highly detailed collected data, the team were able to create virtual cinematography in which characters, locations, and events can all be created digitally and viewed through virtual cameras, eliminating the restrictions of real cameras. Music from the Motion Picture Dane A. Davis was responsible for creating the sound effects for the film. The fight scenes sound effects, such as the whipping sounds of punches were created using thin metal rods and recording them, then editing the sounds. The sound of the pod containing a human baby closing required almost fifty sounds put together. Davis focused on this theme of reflections when creating his score, alternating between sections of the orchestra and attempting to incorporate contrapuntal ideas.