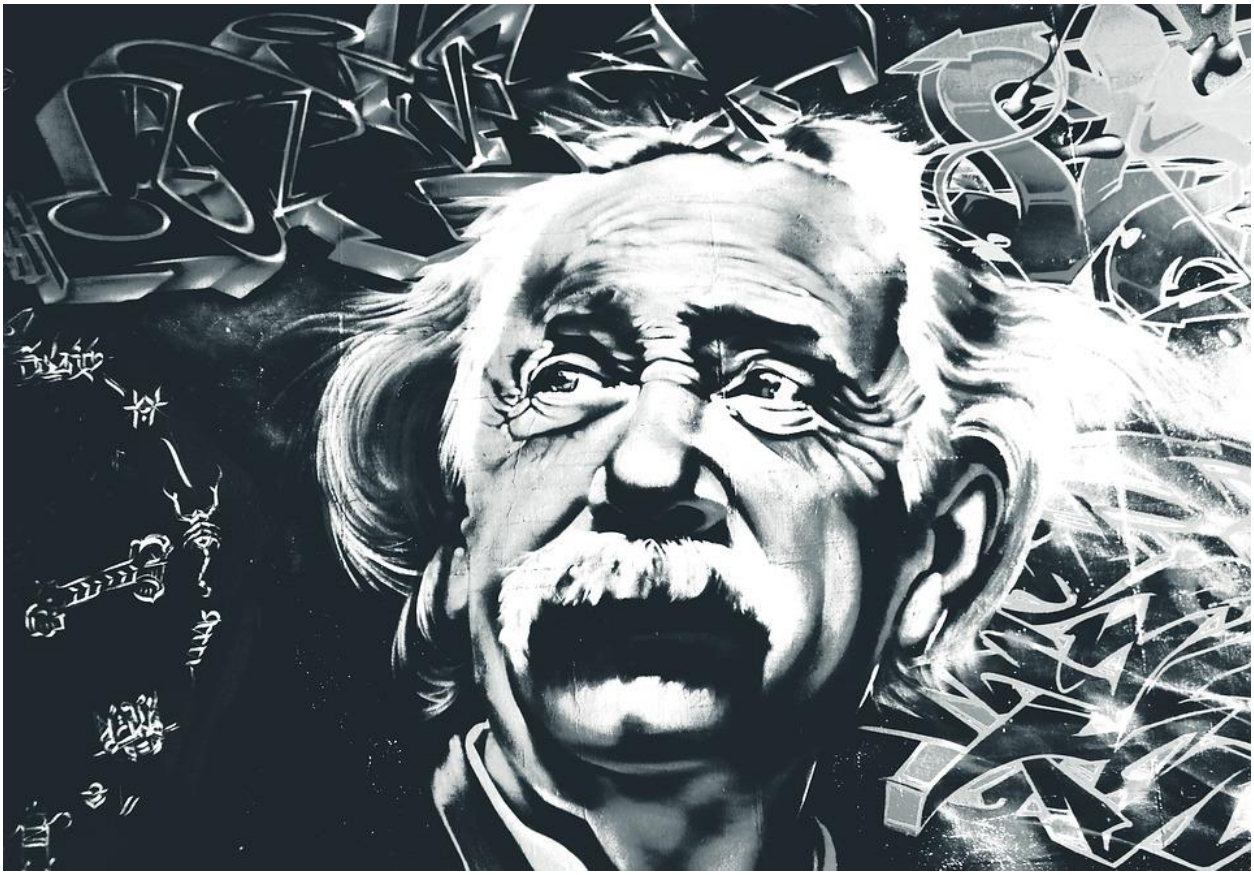
Ask A Genius: Set I

Scott Douglas Jacobsen
&
Rick Rosner



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Dedications

To three generations of women who support and tolerate me - my mom, Ruth, my wife, Carole, my daughter, Isabella.

Rick

To the love in my life.

Scott

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Ask A Genius 1 – Genius in Pop Culture

Scott Douglas Jacobsen and Rick Rosner

You've noted a lot of geniuses in popular media, movies, and television. Recently, what's the deal?

There have always been the kids that wore tennis shoes. Garry Coleman had the 200 IQ. There was *Encyclopedia Brown*. Now, there's a flood of geniuses. I would guess that's because the world is a fast-moving and fast-changing place. Geniuses somehow offer the possibility of making sense of the world, which makes sense in terms of who is selling us the genius.

On TV, it's CBS, which, over the last 2 or 3 TV seasons, has had about 15 shows dealing with genius. You've got *Limitless*, where a guy takes a pill and becomes a genius. You've got *Elementary*. You've got *Scorpion*, which is a crew of geniuses. CBS used to be, and to a large extent still is, the murder network.

There are many shows about people getting killed. Every murder show has one genius detective or forensic expert. *The Mentalist* was a genius in his own genius way. CBS is also known for being the network that skews the oldest among viewers. If my theory's right that people are nervous about how confusing the world is, old people would be even more confused.

They might welcome geniuses more. You have a TV genius explaining what's going on. And it can be clearly explained by them, which can make older people feel smarter about the world. Also, geniuses have a hipster aspect to them.

Geniuses were nerds. Geniuses had no cachet. They were bullied. For the past 30 years, you've had growing numbers of software billionaire geniuses like Bill Gates, Zuckerberg, and others. Now, geniuses are cool. Maybe, CBS is thinking that they can hold the old people and grab the new people with the hipster geniuses.

Some other places include Ron Howard. He is making an Einstein biopic. If you look at the last two Oscar seasons, something like 6 out of 20 best actor or actress nominees portray geniuses. Cumberbatch being in Turing. Redmayne being Hawking. Keira Knightley being a girl genius who wanted to get with Hawking.

They're all over the place.

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Ask A Genius 2 - The Next Two Years

Scott Douglas Jacobsen and Rick Rosner

What will happen in the future - with AI, etc?

One thing that seems to be happening is that people are having somewhat less sex. There's so much other stuff to do, so much stuff to occupy our attention, which makes sex run down from number one in the 70s to not the awesomest thing to do - to only in the top 10 awesomest things to do for a half hour.

The whole next century is going to be about our relationship with information. We love information. The human evolutionary strategy, our niche versus other animals is that we're better at exploiting information. Dogs can go after smell information to find run-over squirrels.

Whereas, we use information to come up with theories of everything. A lot of these theories lead to new inventions, products. Over the next 20 years, we will come up with more effective ways to pipe information in and out of our heads. When you look at things that happened with TV, which went from 3 crappy channels to public TV to HBO and the rise of cable channels in the 80s and 90s.

Anything that you want whenever you want it, and close to thousands of entertainment purveyors now.

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Ask A Genius 3 – Superheroes: Our Last Hurrah

Scott Douglas Jacobsen and Rick Rosner

There have been a lot of superhero movies as of late. What does this reflect in the larger culture? Does this somehow tie to the future?

One thing to have in good superhero movies is good special effects. It wasn't possible to have great science fiction movies until *Star Wars* came out. It was able to deliver convincing and impressive science fiction special effects.

With CG and by spending $200,000,000, and having crews of 2,000 people produce a movie, it has become possible to make a convincing and entertaining movie of superheroes. There's another thing that comes along with that.

You needed entertainment consumers that have seen enough action that they can actually follow the action in a superhero movie. If you took a viewer from the 70s, he would be completely baffled by the action in the current action movies because it's so fast, so complicated, and a lot of these movies have 4-on-4 action.

You've got individuals in spaceships fighting individuals not in spaceships. There's a lot of stuff going on. But beyond technical ability, and the educated and interested public, superhero movies represent some kind of ultimate end of what humans imagine for themselves.

The superness of super heroes is still highly human. They have all of these abilities. Yet, they are still completely concerned with human stuff like relationships. You can't have Peter Parker without his angsty relationships with his Aunt May and he's feeling bad about getting his uncle killed.

His relationships with Mary Jane Parker and Stacy, and whoever else he's always got a thing going with - a girl. He's got work problems. Superman spends most of the day as a human and with a bunch of hassles because he feels the need to be a part of human society.

Fantastic Four and X-Men, most of the time they are dealing with human issues such as relationships and trying to get power rather than fighting bad guys or trying to save the world. Superheroes, it's similar to Greek and Roman gods. They have ultimate power.

All of the power was expressed in human contexts - having sex, feuding, having offspring, and what's going to happen in the non-superhero world in the next 20-200, or 500, years is that we're going to re-engineer ourselves.

We will add to our abilities to think, to our lifespans, and our ability to process information and network with each other. We'll be able to change what our basic drives are when that suits us. The most ridiculous human drive in terms of messing up and making us do ridiculous things is the sex drive.

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Where, what evolution wants for us is to reproduce, find the healthiest partners, partners that are best able to help make offspring and help offspring survive. Often, the drives to reproduce have helped make offspring. They make us go against what we want for ourselves as individuals.

We will have power over ourselves as individuals and over our drives. Huge numbers or percentages of the population will decide to not reproduce because if you can live indefinitely then you want to save resources for yourself. So, the entire human enterprise up until now in history.

You're able to take the most twisted human in history and hypothesize motivations for that humans actions no matter how weird or horrible based on basic human drives - being resentful that you don't fit in, wanting power, wanting sex, but the human enterprise is about to become all smeared in terms of drives and actions as we acquire the ability to mess with those drives.

Superhero movies represent our last hurrah for unadulterated basic human drives taken to their imaginary limits.

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Ask A Genius 4 - The Future

Scott Douglas Jacobsen and Rick Rosner

What will happen in the next 20-25 years?

One thing is the US will keep getting increasingly terrible for most of the 21st century. I think it'll get better. In that, we're talking in mid-August right now in 2016. The odds of Trump getting elected are low, like 1 in 8. If Hillary gets elected, and if she elects some Liberal Supreme Court Justices, then the government starts getting cleaned up.

That means polarization starts being reduced, slowly, and, maybe, the government starts functioning better, which makes it easier for the US to continue to be a place where tech flourishes. Government won't save us, but government might eff things up.

Among the things under tech that start unfolding, or unfolding faster, are things like medicine. A lot of highly targeted therapies for cancer roll out. Overall, it'll become less taboo to talk about anti-aging therapies in general. Medicine will become a lot more effective. Mortality will drop.

Food science may make it so that people can eat food that's delicious, but isn't as terrible for us. In developed countries, we might be able to see life expectancy continue to move up as obesity doesn't drop that much. So, the developed nations will be over 90 for men and women.

A couple decades after that. It will be 100. For people that are conscientious, and have the resources to do so, it could go much, much higher into the middle of the 20th century. Other stuff, entertainment and information will be more directly piped into ourselves and out of ourselves.

Some wearables, Google Glass didn't work because it creeped people out. We will come up with wearable computers. People will be even more connected to social networks than they are now, in more and more intimate ways.

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Ask A Genius 5 - Repressive Takeover

Scott Douglas Jacobsen and Rick Rosner

Let's take the opposite view, let's say Western countries tend to be more free and democratic, etc, people can do more here. With greater science and technology, we have power. That can be a positive thing for general human flourishing and expansion of possibilities. What if it doesn't happen here and happens in repressive areas?

More of this is inevitable, more than people think. Along with the inevitability of tech, there are a lot of large-scale projects that are tech projects. Every big movie involves like a thousand people working on them. In the future, it will be mostly small-scale groups because the technology will allow small groups to do great stuff.

We already have individuals or small groups working together or on their own. Twitter helped take down dictatorial governments in the Middle East. Egypt fell a couple times. I don't know its state now. It was individuals working on their own with technology thwarting the actions of larger groups.

Tech is small. Tech is as small as a thumb drive or a smart phone. So, you won't be able to keep it out of repressive countries or repressive places. Developed countries will keep on being free. Although, privacy will increasingly erode. In England, there's a camera on every street corner and various agencies, or algorithms, are looking for weird behaviour.

Things as trivial as people walking weird. That might betray some suspicious activity. People are going to have to get used to giving up a lot of privacy. Maybe, we'll have islands of explicit privacy with the expectation of privacy most of the time. The general expectation will be that you only have privacy when you walk into your cone of silence.

When you explicitly set up your own privacy, public life will have almost no privacy. One reason we want America to survive is the values that it was revered and known for in the 20th and 21st century. They have been attacked by demagogues and A-holes in government that are willing to talk tough and act like jerks in the name of American safety.

I hope that demagoguery will be defeated. people can see it is preferable to go with the traditional American values of freedom, everyone having a shot, economic mobility, as opposed to sacrificing that stuff for some illusory safety based on terrorist incidents.

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Ask A Genius 6 - The Middle Road of the Future

Scott Douglas Jacobsen and Rick Rosner

What's the middle-of-the-road view about the future?

There's a couple of things. World War II ended in 1945, which was 71 years ago. People might have the idea that we've reached the end of large wars. However, if you look back into history, somebody did a study, and the average period between large international conflicts that suck in entire continents is 150 years.

So, we're not beating any international records in not having large international conflicts. To the Americans, the early part of the 21st century has looked bad. We had 9/11. The Afghanistan War is the longest in US history. We had the Iraq War and its aftermath. None of those things are ending clean or particularly optimistically.

However, if you look at the casualties, Iraq and Afghanistan killed fewer than 5,000 Americans compared to Vietnam that killed 50,000. World Wars killed hundreds of thousands of Americans. Even though, things look dire. The actual net effect on Americans as a statistical whole hasn't been that miserable, except if you're looking at things like unemployment.

It is tough to blame our wars entirely for the employment problems that we've had. Things look terrible because awful stuff that happens in the Middle East doesn't affect that many Americans. Because things haven't been terrible in truth doesn't mean they can't be terrible.

The 20th century was much more terrible in terms of mass death compared to the 21st century. World War I had tens of millions of deaths. The Flu Epidemic in 1919 had tens of millions of deaths. World War II had tens of millions of deaths. Chairman Mao killed millions of people. Stalin killed millions of people. We haven't had that in the 21st century, but could have it.

What if somebody decides to bioengineer something terrible? You could have an epidemic that results in tens of millions of deaths. We haven't had terrible stuff happen so far. However, looking at history, we won't get out of the 21st century without some terrible stuff.

It might be a lot of regional wars because of climate change migration, population pressures, migration, and so on. We're at 7.3 billion people now. At the end of the century, we're probably going to be pushing 11 billion, and mostly in developing countries. That will put pressure on food production and land ownership.

It might push regions into war. Regional conflicts could coalesce into larger conflicts. Some groups say the odds of a terrorist group setting off a dirty bomb aren't that low. It's hard to set off a nuke that acts like a nuke. That does nuclear fission. The bombs that destroyed Hiroshima and Nagasaki. But it's easier to attach nuclear materials onto traditional explosives, and then send that into a city and make much of the city radioactive. That would freak out the world. It's technologically easy. You need the material.

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You have to be able to get into a city. Terrorists have shown the ability to get into Western cities. They could set one off and kill many people. The 21st century looks like it might have some scary stuff happening.

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Ask A Genius 7 - Science Fiction as Science Fact

Scott Douglas Jacobsen and Rick Rosner

There's science fiction turning into science fact. What things that are science fiction might become science fact?

Gender fluidity, I assume gender roles will continue to be less important. There will continue to be more gender fluidity based on individual decisions and these will be helped along by future medicine that makes such fluidity somewhat easier. Perhaps, somewhat more reversible; back in the 80s, I had the chance to make out with a trans person.

They were very attractive, but I freaked out. I couldn't help the lump of flesh in that person's pants. However, if I were 25 again, and I had a similar opportunity, I'd probably make out with that attractive trans person. I think that the overall zeitgeist is pushing in that direction and that medical technology will be increasingly helpful in that direction.

However, it will take a while. It's not that you will take a pill and your penis will turn into a vagina. That's one thing. Another thing will be a more pervasive loss of privacy. Equipment that will track movement, whether cameras or social media stuff. It will shift stuff that keep track of who is around and who has gone where.

That stuff will be more and more pervasive. People will have no expectation of moment-to-moment privacy in their lives. If people want privacy, they will have to explicitly set up safeguards for whatever periods of time they need higher levels of privacy.

Neither of those things are invention-based science fiction things.

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Ask A Genius 8 - Science Fiction as Science Fact 2

Scott Douglas Jacobsen and Rick Rosner

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Ask A Genius 9 - The Future of Popular Culture

Scott Douglas Jacobsen and Rick Rosner

What about popular cultures in the future? What will happen to celebrities in this future world?

What you've seen scripted and on reality TV shows is an opening of all aspects of life to portrayal in the media starting under JFK in the early 60s, it was known to the news media that he was banging a bunch of different people or he had banged some people from time-to-time.

They kept it all quiet. Then Gary Hart, a presidential candidate in the 90s. He was the first guy to get nailed with an affair. Now, when you turn on TV, on ABC match game, there was an implied gay sex joke involving a 10-inch penis. When I was watching TV with my wife, I am amazed at what is part of public discourse.

According to some of the science fiction I read, more and more convincing, Oscar-winning, performances may involve actual sex. Chloe Sevigny in a movie called *The Brown Bunny* actually blew her director and co-star on camera. She's still a respected actress. This was part of the performance.

She had an actual penis in her mouth. There was a director named Michael Winterbottom, who is a respected and legitimate director who directed a movie called *Nine Songs*, where the characters had actual sex on camera and it was part of the story. It wasn't a good movie or involving story.

However, the trend will be to include everything. Respected actors will have close-to-sex on camera if the story requires it, or if somebody thinks that movie can make another few tens of millions of bucks by throwing that stuff into it. You'll have *Boyhood* and *Dazed and Confused* with people actually growing up over many years.

Eventually, somebody will win an Oscar by playing out their disease on camera. Imagine a Meryl Streep in 12 years comes down with some disease, that'll take two years to kill her. Somebody would come up with a pitch for her if that was public knowledge.

Media will become more and more inclusive of all aspects of life. It will become more and more intrusive. More and more people will be hooked up to cameras all the time, the way millions of people have blogs now. A million or ten million people will have their lives available to be observed all of the time.

The thing is, TV and the internet are going to emerge into one entertainment hub. People will have their lives examined hosts and purported experts.

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Ask A Genius 10 - The Future of Money

Scott Douglas Jacobsen and Rick Rosner

What is the future of money, of finance?

Money as an abstract entity made world trade possible by replacing barter. So, you have some means of containing value. Even if you want to buy something, but don't have the specific item that the guy wants who is buying something from you, you can have a trade. All transactions become possible.

Since money is abstract, it is flexible and has held up, even with more rapid transactions and more world-spanning finance ongoing. The pace of financial change will keep accelerating like everything else. It will force drastic changes in how value is stored and companies are financed.

One problem that I see that will become more and more of a problem, and will require shifts in how things are done, is that companies that trade in abstract products like media companies may go through their business cycle of ‘boom-and-bust’ faster than the thing can be turned into securities on the stock market.

There'll still be traditional stores of value like land. There will be oil, applications for oil, even as the world moves away from an oil economy into other means of generating energy. The financial markets may start moving too fast for traditional means of valuing products and companies.

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Ask A Genius 11 - The Future of Wages

Scott Douglas Jacobsen and Rick Rosner

What about wages? Things have been thrown around like Universal Basic Income and Guaranteed Income.

That will be anathema in America because that's socialism. There have been countries that have extensive ones. Nordic ones, Finland have substantial cushions for employment and maternity leave. People that pay high taxes and get a high degree of social services.

People that seem happy, except in the dead of winter. The Sun hasn't come up. And everyone's drunk all of the time. They have beautiful blonde people sex and make future beautiful alcoholics. You're going to see the functional equivalent. The *Idiocracy* equivalent of Guaranteed Minimal Incomes, which is food and clothing proportionate to income.

They cost a quarter of what they did 100 years ago. Our improved technology made it cheaper to make food and clothing. That trend will probably continue as with the trend of falling hours and levels of employment because of technical improvement.

It'll be easier to get by on little or no income, though it won't be great. That's always been a miserable thing. More and more people will be forced into the position of not being what was once considered fully employed, which is the *Idiocracy* situation - except people won't be stupid. They'll be smarter.

They'll be freer to pursue their own interests and enlightenment, but I don't know. It will be less miserable to be poor in the future in highly developed countries in contrast to the 1930s, where all you had was the movies and folding up newspapers to cover up the holes in the soles of your shoes and eating casserole to get by.

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Ask A Genius 12 - The Future of Food

Scott Douglas Jacobsen and Rick Rosner

What about the future of food?

Food will continue to be delicious and will probably continue to get more delicious. Although, we might be reaching some limit there. How much greasy, salty, sweet can you pack into food? It will slowly be engineered to be healthier. That's been a slower process because there's less money in selling healthy food than selling delicious food.

People are more motivated to buy the delicious. In the farther future, people will start to be able to get rejiggered to crave food that is less unhealthy. Food of the future looks pretty good. It will be as or more delicious than now. It will slowly get less for us. We will have more ways of fighting the harm that terrible food causes or rejiggering ourselves to not crave terrible food as we do now.

So, it's a sunny picture. In America, you have a third of the population being obese and close to half of the population being overweight, which is not a problem. If you hate looking at fat, then that's your problem and seen as fat shaming. The only actual problem aside from the aesthetic one, which is justifiably taboo, is being fat makes people not live long.

America is working on a whole spectrum of treatments to help overweight older people. It'll help people live longer, healthier lives. The obesity epidemic will succumb to technical remedies. There will be ways to eat food without absorbing all of the calories. I take carb and fat blocks and fibre gummies.

The trouble with carb and fat blockers is that they cause horrible intestinal distress because you have gruesome poops. The problems caused by unhealthy eating will eventually be pretty decently addressed. People will tend to be on the heavy side, but it won't kill us and eventually what we want out of food and what food will give us will be more in line with health.

It'll be in the next 60 years.

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Ask A Genius 13 - The Future of Sex 1

Scott Douglas Jacobsen and Rick Rosner

You wrote about the end of sex. What about the Future of Sex?

Sex is a primary drive. We evolved to want to keep reproducing and having kids. Those that survive have those drives to reproduce and survive. Our lineage goes back probably a billion years. Sex is often contrary to individual interests. If we want to survive for as long as possible or maximize our odds of survival as individual organisms, sex goes against that.

Sex is a perverse drive. In that, it works against us. As we move into the future, many people will try to control it once that becomes possible to make it a more tractable drive. One that doesn't have to work against us. It doesn't have to make us misbehave, where we hear every year powerful people being brought low by their sex drives.

Old guys who married young women who are after their money and the former or the rest of the family gets screwed over. Once we have the power to control that, a lot of people will control it.

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Ask A Genius 14 - The Future of the Ethos of Science

Scott Douglas Jacobsen and Rick Rosner

What about the ethos of science? Principles, values, what about things like 'simulatability'? The ability to simulate natural processes to conduct experiments.

Science has always been a search for simplicity. Because we'll be able to handle complexity better in the future doesn't mean that it's not still a search for simple laws. Whether the universe turns out to be built on simple laws, or principles, or not, our number one goal in science is to figure how the universe works, or how whatever the universe is part of or part of a set of, what the general principles are.

Those principles may turn out to be simple with a bunch of emergent complexities. We're going to want to figure out the most efficient ways to characterize those principles. What you and I have been doing by talking about how the universe might be arranged is that what can or has to exist is what doesn't have self-contradiction.

Which means that you do get stronger emergent properties, things can exist in a nebulous way, in a half-assed misty, blurry, way for things that don't exist for long or don't have a lot of information, but systems as universes have more and more information, then the things in the universe become more and more highly defined.

So, that more hard-edged principles and laws emerge from higher sets that contain larger amounts of information.

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Ask A Genius 15 - The Future of Scientific Experimentation

Scott Douglas Jacobsen and Rick Rosner

What about the future of science? What principles, values, and so on, will be a part of it? How will technology influence the potentials of science and scientists?

Up to now, we've had great success figuring out stuff about the world using our brains. Our symbolic and information processing technology. Our biological technology, which means our brains.

Plenty of people now are saying our brains have near infinite capacity, but the more brain research that's done. Then it'll be seen that our brains are finite in their capacities. We built a world around those abilities to find regularities in the environment, to dissect what is going on, and figuring out how to exploit the way the world is made to our advantage.

In the future, we are going to augment our current abilities. We are limited in what we can do and what we can think about, and what we are able to add on to the brain. As we more intimately couple data processing and storing capabilities to our thought capabilities, we will be able to think thoughts and do experiments that are much more data intensive.

I always think of the example of Stephen Hawking. When he was unable to use his hands, which meant using blackboards, paper, and keyboards, he had to figure out a symbolic language for physics that would fit inside of his head so that he could keep doing physics with ideas and symbols that he could manipulate mentally.

That's a powerful, but limited, arena. In the future, as we extend that arena and make it more precise in a number of ways, scientific ideas and experiments will become much more data heavy and much more intricate. We'll be able to encompass more variables. We'll be able to tease out subtler relationship.

Currently, our most beloved scientific ideas are really short: E=MC^2, Maxwell's four laws, Newton's laws of gravitation, and inverse square laws. In the future, we will come up with law-like things that are really complicated, but that may describe things going on in the world as the simple laws we have now.

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Ask A Genius 16 - The Future of Writing

Scott Douglas Jacobsen and Rick Rosner

What's the future of writing?

Before discussing the future of writing, we need to discuss the present of writing. To go back to the past, in Shakespeare's time and before, nobody had established hard rules for spelling, for instance. People took the best shot at how words should be on paper based on how it sounded.

People used to stick in extra letters. Shakespearean words came in a bunch of different spellings.

In later spellings, people started building dictionaries and different rules for spellings to get things consistent. Writing between Shakespeare and now has gotten pretty formalized, but within the texting era writing has split into the formal writing that we're used to.

The writing used for business communication and literary writing, and then there's this texty writing that is chaotic and serves to get your point across often with typos and misspellings and with whatever auto-fill or spell check on your phone thinks the word you're going after should be.

Everybody is okay with that. Younger people are more okay with the chaotic kind of writing that comes out of texting to the point where older people or people who use punctuation come across as assholes for putting periods at the end of words, texts, and emails. Present writing has split into the writing that we've been used to for a couple hundred years now.

It is structured and chaotic for the moment. That comes from your thumbs being used for quick communication. There’s a smearing into each other with more formal writing being more and more affected by typos because people can't be bothered.

We're at an exciting and annoying point in writing.

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Ask A Genius 17 - The Future of Women's Rights

Scott Douglas Jacobsen and Rick Rosner

What about the future of women's rights?

From a science fiction perspective, in the medium future, gender will entirely be a matter of choice, which will be at least a century from now, probably closer to at least a few centuries. Gender will be one of a couple or a few things that people will have complete control over how they appear in the world gender wise, and in a lot of other ways.

So, gender will have a lot less inherent implications. When you can choose what gender to be, there will be very little in the way of superiority of assigned gender. If gender is as simple as whether you decide to wear a hat or not, nobody's going to make the, or only idiots will make the, argument that hat wearer's are inherently better than non-hat wearers.

However, during times closer to our own, gender has grown more fluid and in many parts of the world acceptance of gender fluidity has grown. The general trend is for people to believe in gender equality. There are plenty of unconscious and quite a few conscious biases still in place, but they have lessened on average over time.

The tasks in nature and early civilization required a particular gender or seemed to favour a particular gender such as hunting vs. gathering. If that was even how it would split gender-wise, then tasks would favour one gender over another. They have been fading or have been colonized by the other genders.

It's a slow and not-always forward march towards equality an enlightenment

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Ask A Genius 18 - The Future of LGBTQ+ Rights

Scott Douglas Jacobsen and Rick Rosner

What about the future of LGBTQ+ rights?

People will grow more accepting in most places, where people are going to hold back for cultural or religious or political reasons. The US Red States are a reliable way for conservative politicians to rile up a big chunk of their constituencies and getting them worked up about how the US is skipping off to hold hands with Satan if you let trans people pee in certain bathrooms and such.

On average, even in the US, tolerance is increasing. To the extent that I am attractive at all, I think that I have been attractive to gay guys rather than women. Gay guys have sent me more signals that I've been able to understand as receptive than I have perceived getting from women.

So, back in the 80s, there was a trans person who was super attractive. Very much my type except that she'd been born a man, I struggled with wanting to make out with her because I was afraid that the male flesh that I assumed was still between the legs or pretty much knew was between her legs because I knew her during other parts of her life when she was a he, and she went back and forth depending on what she was doing.

Now, thirty years later, I think if I were 26 again and everybody else or everything else was the same. I think I would make out with her and not worry about any junk. That probably doesn't say much, but things do slowly change in me as well as society.

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Ask A Genius 19 - The Future of Children's Rights

Scott Douglas Jacobsen and Rick Rosner

What about the future of children's rights - organisms in development?

You have two perspectives. One is the march towards slow and reasonable equality across the centuries. Children's rights are inherently limited by children's not being fully developed. LA is full of reasonable parents trying to reason with kids that aren't yet at the point of reason. Kids being told to be quiet in a library or being told to leave instead.

A granola mom attempting to have a dialogue with this kid who can't dialogue instead of taking more practical action, just going outside. Restaurants, it's the same deal. Outside of kids' inability to be fully competent, we have a trend towards granting respect to humans of all types.

On a larger, longer, and weirder timescale, you have genetic engineering, advances in medicine, changes to society, and what that will do to the presence and the role of children 100 or 200 years from now. As people live longer and longer because medicine gets better and better, children will have fewer and fewer children, and many will have them later in life.

It could be that people don't have children in their own wombs. It could be that a child is something you set up and have outside of the women. A lot of different stuff can happen. In the near term, kids will get respect and rights that are in line with their rights and how to manage those rights.

We don't have kids working 80 hours a week working on weaving looms, losing fingers and arms. Although, there is still some of that going on at times. There is slow and positive progress towards children not have to go through that kind of labour

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Ask A Genius 20 - The Future of Clothing

Scott Douglas Jacobsen and Rick Rosner

What about the future of fashion?

Future fabrics will be able to do a lot more than they do now. Already, you see fashion shows where people wear clothing that is made of LCDs, primitive versions of video screens so that they can display moving images on the clothing. In the future, that will be more and more doable.

People will take advantage. Clothing will progress. There will be the natural fibre and polyester clothing. Clothing that is made of the same stuff that clothing has always been made out of, but clothing will become made out of a bunch of new engineered materials that can do a lot of new stuff. Athletes wear clothes that are supposed to take sweat out of the body when that's what you want.

But it's still pretty primitive. Eventually, you'll have clothing that is electronic or bio-electronic that will be able to change imagery or characteristics based on whether you're hot or cold, or whether it's raining or not, and then competing with more engineered clothing you'll have people with all sorts of genetically engineered abilities to make their skin do a bunch of new stuff.

It will further change our relationship with clothing. Clothing has always been in addition to being protective for modesty. It has been a social signifier. That should continue to be a thing, but it will get really weird. There's a show on Netflix now called *The Get Down* about hip hop beginning in the late 70s.

One of the themes is the rivalry or competition between disco, which is super glam, and hip hop, which is a different set of signifiers and not mentioned in *The Get Down* is punk coming out at the same time. You've got three new forms of musical and clothing signifiers that are semi at odds with each other.

Also, you have new and to people not in those worlds really weird set ups. The future is going to offer more of that stuff, crazy new signifiers.

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Ask A Genius 21 - The Future of Genetic Engineering 1

Scott Douglas Jacobsen and Rick Rosner
November 25, 2016

Scott: What about the future of genetic engineering - crops, animals, or people?

Rick: Let's talk about people. Science fiction says we're going to do a lot of it. Rich people will own it at first and use it to make their kids extra special, which is felt by many including the writers of this stuff to be anti-egalitarian, anti-democratic that rich people get to hog the resources. Nothing is a bigger resource than your own characteristics.

Other stuff said by science fiction is that gender fluidity will be more easy. Young punky people will use genetic engineering to radically transform their bodies to freak people out like people wearing piercings do now. I have a seen a goth teen a couple times, or a rebellious teen, transform him or herself into a version of T-rex. Some of that stuff will come to pass.

Some of it won't. There's going to be, once any of this stuff gets going to any extent, particularly in America a conservative backlash saying people are messing with something best left to God. People will start doing it to pets and to farm animals, which is a way to do it at a more genetic level that which we've been doing for thousands of years anyway.

Dogs, cats, and all domestic animals are products of genetic engineering, even though we didn't know how genetics worked for most of the time we were doing it. They were still genetic products. The products and will get weirder and more radical, sophisticated, within the next century. With pets, we will get perma-puppies like permanent puppies or kittens for their entire lives, even having 30 year lives, extended lives.

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Ask A Genius 22 - The Future of Genetic Engineering 2

Scott Douglas Jacobsen and Rick Rosner
November 27, 2016

Scott: What about some negative perceptions of these results of genetic experiments on people and animals? It's a truism that every thing about an organism has a genetic component. The results of tweaking will have an effect in some way or other as a logical consequence. Culture, in general, freaks out about it.

Rick: Maybe, one way of showing people that genetic engineering is the work of the Devil. Until the perma-puppy eats your face while you're asleep, but let's assume that they won't do that except in horror movies, a cute, smart puppy that lives for 30 years is going to be fairly irresistible, even by conservatives.

There will be a lot of it. The more radical things predicted in science fiction won't come along for a long, long time. Things like life extension, increased resistance to disease, increased abilities, and so on, are all going to become available. We won't know exactly which abilities will be easily boosted and which will be tough.

We don't know the genetic basis for various abilities. You can imagine that if we're going to have people colonizing Mars, then those people should be genetically tweaked to do better in conditions on Mars.

If we're going to terraform Mars, which is a project that will take hundreds of years to transform Mars' thin atmosphere without people having to live in a dome, we'll need people to live in the Earth equivalent of high altitudes and be more resistant to radiation. The trip to Mars will not have the atmosphere to block the radiation.

You might be less susceptible to cosmic rays.

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Ask A Genius 23 - The Future of Genetic Engineering 3

Scott Douglas Jacobsen and Rick Rosner
November 29, 2016

Scott: What about the business of genetic engineering?

Rick: Genetic engineering will be a gigantic industry. I don't know if one or more companies will dominate the industry as Apple has dominated its segment of the hardware industry and Microsoft has dominated software.

Companies that can successfully do genetic engineering will make money. It might start with the ability to extend lifespans, even indefinitely. The ability to change drives and abilities, that stuff is going to be more valuable than real estate or cars, or anything.

Some economists have tried to calculate how many extra months or years of life are worth to people, and that's a tough calculation to make, but the answer is at its roughest a hell-of-a-lot.

If you are 70 years old, and you have assets of a million-and-a-half dollars as bunch of Americans and others in developed countries have earned or saved to pay for their retirements, those people might pay 5% for each of those accumulated assets for each extra year of healthy life.

I think if you do the math on that right there, then that's trillions of dollars. Companies will try to get that money. So, a lot of other stuff like a bunch of genetic engineering will be market driven, which is both good and bad.

It will lead to the same kinds of weirdnesses and excesses that other market driven industries offer. When people in the 60s talked about what we might use computers for, it was serious. It had nothing to do with the Candy Crush games or the Angry Bird stuff.

It had nothing about what people do with computers all of the time. We can extrapolate that among the side stuff of genetic engineering of extending lives or curing disease. There will be a lot of foolishness, awesome foolishness.

If people can make dogs that use them, then people might make dogs with hands. They might open refrigerators to get bottles, whatever's in the bottles like olives.

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Ask A Genius 24 - The Future of the Big Bang

Scott Douglas Jacobsen and Rick Rosner

December 1, 2016

Scott: If you look at the Big Bang, one thing that might puncture holes in it is if you find extremely large, young objects in the universe or things not expected in the early universe.

Rick: Obviously, according to the Big Bang, time started with everything as a single point-like object and then rapidly expanded to a hypersphere that expands everywhere until we have the size of space that we do now, which is something like 30 billion light years in circumference or diameter, or some damn thing with an apparent age of 13,800,000,000 years.

In a big bang, everything had to begin with a certain level of homogeneousness. Otherwise, you get clustering or swathes of the universe where all of the matter is clustered. You need exactly the right amount of anisotropy, tiny clumpiness, to get the galaxies that we have today.

What you wouldn't expect, and this would be a fairly convincing disproof of standard Big Bang cosmology, is a lot of old junk in the early universe, by "old junk," I mean collapsed matter. Matter that takes a long time to collapse. For a star to burn out and collapse into a black hole, depending on the size of the star, takes tens of millions to tens of billions of years.

That process takes a long time. If you find black holes in the early, early universe, there are chances to have black holes like the matter clumped up in a certain way, but that tends to go against the expected clumpiness such as finding a bunch of black holes.

If a large percentage of dark matter, assuming that it exists and there are good arguments for it, neutron stars, black holes, brown dwarfs, old burned out stuff, then somebody would have to raise his or her hand and say, “This stuff looks like it's older than what we think of as the first moment of the universe.”

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Ask A Genius 25 - Informational Cosmology

Scott Douglas Jacobsen and Rick Rosner

December 3, 2016

As a preface to all of this, we're two guys having fun, think for yourself on this. Regardless, if it's true, then it's true, conceptually with a little math at the moment. Informational Cosmology is an extension of BB cosmology, which comes from digital physics, not entirely...

Let me interrupt you right there, one problem with digital physics is that no one has made a convincing argument as to how it matches up with the daily business of the universe, the moment-to-moment business of the universe.

At some point, people can say the universe is a giant information processor or giant computer. There has to be a scheme that fits how our electrons locking into orbit around protons looks informationally.

What are protons locking together in nuclei through fusion? What is that informationally?

This is for large-scale cosmic structures as well.

Yea - what's a black hole informationally?

Galactic groups, clusters, superclusters, filaments, even the Cosmic Web.

Yea, and what are we? We're people doing people stuff. But how does people doing people stuff fit into a scheme where the universe is a computer. Does that mean if our minds are information processors then do we have primitive homonculi little people - Minecraft version people doing Minecraft business? It's hard to say. But IC, at least, offers a framework for saying this might be a deal.

A conceptual mapping with a little math at the moment.

Conceptual because I'm shit at math. I'm okay at math. I'm a guy who when I was supposed to be taking math classes. I was in a bar and being a stripper. If anything offended me in a math or physics class, then I would blow it off and take a dance class to be a better stripper. My founding in Hamiltonians, action potentials, and quantum matrices is bad. If I weren't so bad at math, there might be more math and less energetic hand waving.

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Ask A Genius 26 - Informational Cosmology 2

Scott Douglas Jacobsen and Rick Rosner

December 4, 2016

Scott: What form would the math of IC take into account? What would it describe informationally? How would this involve metaphysics?

Rick: A lot of stuff in math and science works independent of ultimate framework. Eugene Wigner said one of the most basic things is the unreasonable effectiveness of mathematics in describing the universe. At some point, as science and philosophy become better, the surprising effectiveness of math would have to be explained, but all we need to know short of and independent of that explanation is that math works to a great extent in describing a great variety of things.

Ideally, there needs to be an explanation as to why that stuff works. However, we know that stuff works. We know things boil down to the simple, practical methods that we've developed and have survived for centuries. For instance, everything in Newtonian Mechanics.

Newton had a vague theoretical framework. He explained how things worked mechanically. He didn't have much of an explanation as to why, only a little bit. Over the past 100 years, we've understood Newtonian Mechanics as a subset of Einsteinian Mechanics, when you're not dealing with extreme velocities or other extreme conditions.

We understood Newtonian Mechanics within the framework of Einsteinian Mechanics, but why Einsteinian Mechanics are the ones that rule the world, the non-quantum world, isn't understood very well. People go with Einstein's half-explanation that the equations are beautiful and simple, and that somehow God, by which Einstein means some principle of simplicity and elegance in the universe which favors simplicity and elegance. Obviously, it is a circular explanation.

So, we're used to using scientific ideas and method without knowing why they work at some deep level. Although, you and I, if we're at all right, looking at IC, we see a tendency for persistent structures to persist within a temporal framework.

The processes we see being effective in the world are effective across the unfolding of time and we are creatures who live, and our existence is, pinned to the unfolding of time, which favours persistent structures – and persistent structures tend to be self-consistent and simple like a lot of mathematical structures. It seems circular, but not really because persistence is a process that requires that property in the things that participate in persistence.

I would argue that things that persist embody principles that are durable and persistent as time unfolds. They are effective at working within a temporal, cause-and-effect, self-consistent framework.

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Ask A Genius 27 - Informational Cosmology 3

Scott Douglas Jacobsen and Rick Rosner

December 5, 2016

Scott: One thing comes to mind. The separation in magnitudes between the quantum and the relativistic. Persistent structures such as electrons being locked into orbit around nuclei, protons and neutrons. Those are informationally something. Higher-up, you can get larger persistent structures.

Rick: That's another deal. Where macro world stuff has particular claim on existence, you can't have whatever you want. What you have are things that can exist sitting on a foundation of quantum randomness, the only things that can successfully exist on a macro level are things that can exist in a way that are consistent with quantum laws by taking advantage of the statistics of large numbers.

Where if you can't count on a single atom behaving in a particular way 100% of the time because it is a quantum thing, because it is incompletely defined, and that incomplete definition that allows for a range of possible outcomes, the only way that something can exist at a macro level is by being part of a system that has so many quantum parts to it that quantum uncertainty is statistically dampened to near zero.

So, the same way Hamiltonians and cause-and-effect can exist in a persistent world, a time-based world, because they embody persistent principles, so do macro objects; they can exist in a macro sense across large spans of time, and definitely in space because they have worked from a quantum foundation. They have existence in a way that defies quantum uncertainty. The basic principles of existence and non-existence. The things that get to exist are those that are consistent with those principles, which we have some idea of – but not a complete idea of.

Scott: In the macro world, there is fraying of the information that is locked down too. I mean, disorganization happens. Things break down.

Rick: Hawking had the inkling of a theory about 30 years ago. There is the theory of knots. Knots are a weird thing theoretically. The existence of a knot is not quite a thing in itself. It is a thing defined by logical constraints in the structure of a thing that wraps around itself in three dimensions. Hawking - knot theory was popular a couple decades ago, postulated some theory based on knots in space ad the weave in space, which, I believe, is the interactions among particles seen as woven timelines of these particles.

I think it is a legitimate point of view. That you have particles that are woven together by history of interaction, which is entanglement – almost literally, or literally. If you have enough entanglement among particles, it creates a durable weave of causality and persistence that generates a durable, persistent world, but is still woven and still, as you say, can unravel at the edges.

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Where most things are fairly well-defined because of their history of interaction and most macro interactions and because of their continuing interactions, but you can pull at the weave experimentally; you can isolate and magnify uncertainties to make situations and objects arbitrarily large. You can pull causality away from them to create islands of uncertainty if you want to do an experiments with uncertainty.

Also, you can create islands of super-certainty. There's a natural level in our world given the scale of our world of pin-downedness, of definiteness, but you can mess with that. You can manipulate that according to the laws or principles of quantum mechanics. There is always a potential unravelling. When you talk about entropy, you have these examples that there is always a non-zero chance that you'll suffocate because due to random motion all of the air molecules will be not where you are.

They'll always be in the opposite corner, but the odds of that are so low that it has never happened.

Scott: Terence Tao has worked on formulations to see if water can spontaneously blow up.

Rick: It probably can, but by can you're stipulating. A lot of things can happen, but that depends on a definition of can including everything that a non-zero probability. Once you limit can to anything that has enough of a probability that it can happen within a reasonable universe, then not everything can happen. The math on the air molecules or the math on water exploding is low enough that it can't happen or won't happen within the lifespan of the universe.

Scott: So, can is spatially and temporally variant. It depends on the number on time and the number on space. How much space? How much time? Rick: They diamonds aren't really forever. (Laugh)

Rick: They really have a lifespan. Because they are tightly packed, there's a lot of binding energy. That carbon molecules tend to pop off the surface at a certain rate. It is like tempered glass – Pa-ting! Pa-ting! Pa-ting! The rate at which carbon molecules pop off is such that even after 4 billion years. You've still got a diamond. It hasn't evaporated, but if you had a trillion years then it would largely evaporate.

Scott: That would amount to a medium world object with fraying at the edges. Same with DNA. Macro objects would be galactic clusters shedding off stars, planets, galaxies, and so on.

Rick: The universe itself is subject to fraying from two points of view. From the universe as we experience it, being in it, there are various catastrophes that could happen with low probability as far as we know, which is collapse in heat death. It is the loss of all information in the universe. We get obliterated along with all of the information in the universe. Then there's the framework where the universe is an information structure within the armature world.

Based in some kind of hardware somewhere, that fraying, that loss of the universe, is a low probability possibility across any framework from which you view the universe – as hardware, as

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a self-consistent mass of information, and as the place in which we exist. It is not guaranteed to continue to have existence. As long as you characterize guarantee the way you characterize can, you can't guarantee anything that has a non-zero chance of happening.

I mean, you can guarantee the existence of the universe for the next 2 minutes because the probability of the universe winking out in the next two minutes is infinitesimally, almost, small. It is the same issue with can as with guarantee.

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Ask A Genius 28 - Informational Cosmology 4

Scott Douglas Jacobsen and Rick Rosner

December 6, 2016

Scott: If "guarantee" and "can" have similarity there, the winking out you're talking about is imperceptibly small, to us, moments linked together with an implied past and set of possible futures.

Rick: The way I look at it is to see if a consciousness-based theory of the universe makes sense. If each of our awarenesses can be expressed as an information space, can you express the physics of what happens to consciousness when somebody is shot in the head with a bullet and their brain is basically exploded?

The physics of that, looking at the information map of a brain that's suddenly obliterated, is all that information collapses into a super-hot, primordial, zero-information, system. Suddenly, everything becomes undefined, the Planck wavelengths of everything expands effectively a quadrillion-fold, everything overlaps everything else, and there's no longer any available information.

What happens at the speed of light, since nothing can happen faster than the speed of light, though effectively, since everything is happening at the speed of light, maybe, if the universe evaporates at the speed of light everywhere, you probably don't have to wait for the evaporation to happen in one place and wait for the evaporation to reach you.

The universe loses any capacity to hold information. The tendency of things is to not expand at the speed of light due to quantum interaction and entanglement with other quantum things. Suddenly, nothing is entangled. Everything expands at the speed of light and everything is erased.

Though, I don't know how that looks for a strict physics point of view. We know what the agent is working on - the hardware that contains the information, but there needs to be an assistant picture of that happening to the information – even though you don't know what is actually happening to the hardware.

But it seems like a physically plausible thing that that could happen. Maybe, there are limits on how predictive physics can be from within the universe. In that, we have existed for, maybe, trillions or quadrillions, based on the apparent age of the universe, of moments, what we consider moments.

Based on that, there is an expectation that for each further moment then it is the end of moments, but, maybe, there is a limit to the predictive validity of something like that given that the universe's existence under this is dependent on the continued existence of hardware that is perceived by us from within the universe or by the universe itself.

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Scott: Effective theories fit here. You can describe individual particles. You can describe momentum, spin, etc. It is impossible, in practical terms, to explain that with current and near future technology.

So, that puts a limit on our descriptive capacities about clouds or water. Collections of atoms of things. Effective theories are what we have. We have theories effective enough to describe clouds without having to describe every particles' properties and interactions.

I think it can be expanded. It can be expanded to most disciplines that are serious such as physics, chemistry, and biology, even in some social sciences like psychology and neuroscience. Where you aren't describing every particular thing, but you are getting degrees of accuracy by going with effective theories. So, based on these general principles, these general things will unfold and these formulations will provide varying degrees of predictability, validity, and accuracy about the phenomenon.

We don't have infinite accuracy about even orbits of planets, but we have a high degree of accuracy – much more so than orbits of bodies in other solar systems. I think it can be spread across fields. For instance, we've talked about artificial intelligence. We talked about Neil Degrasse Tyson brains in an artificial intelligence or a synthetic intelligence that is 90% accurate.

Let's say the technology in the future gives more than 90% accuracy to one instantiation of Neil Degrasse Tyson's brain. That's an effective theory in neuroscience of a Neil Degrasse Tyson brain. I think IC is about that in a lot of ways. It just takes a highly informational framework for it.

Rick: It is an offshoot of that. It does, in a hand wavey way and in a perhaps less hand wavey way later, explain the way things work. It gives a rough framework for why stuff might exist and why certain things might work and why simple patterns work in a variety of contexts. They are the things most likely to exist and persist. Let's talk about Neil Degrasse Tyson's brain.

When I'm not totally freaking out about Trump, I view Trump as at least a part of technical change causing social upheaval in a way that perhaps has not happened to this extent before. Social media is partially responsible for the results of this election. Besides that, there is the job upheaval due to AI and increased abilities of mechanization to replace human work.

We're not always going to elect Trump. Hillary Clinton got about 2.7 million more votes than Trump, but it is just due to the distribution of those votes that Trump won. It took a lot of stuff for Clinton to not get elected: campaigning style and strategies, Russian interference, fake news whether it came from Russia or not. There's a lot of stuff.

Trump is not inevitable. So, we will not always be electing clowns. However, from now on, science fictioney social disruption, societal disruption, will be a part of the political landscape, even though politicians are fairly slow to acknowledge that. Not only social and political disruption, we're going to have, not 'existential' because it can mean a lot of different stuff, but existential disruption.

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I mean by that the discounting of consciousness. If you created a Neil Degrasse Tyson simulation that was 90% accurate, then you told Neil Tyson, "This is all you're going to get. We're going to kill you, but we built this 90% accurate version of you." He would say, "This is not good enough." But if you said to him, "This one is 99.1% accurate." By this point, Neil Tyson is in his 80s. He might say, "I can pass on feeling okay with that."

But that's one manifestation of what I see as the discounting of consciousness, that we have a world in which human consciousness is fairly well understood and there are a bunch of alternate consciousnesses and augmented consciousnesses at various levels of sophistication comparable to human consciousness and even go beyond human consciousness.

The value we place on human consciousness will probably become discounted. It is similar to the way that we don't give that much of a crap about pig consciousness, chicken consciousness, or cow consciousness. We kill 40 billion chickens per year. If we cared about the consciousness of chickens, we wouldn't do that. Mostly, we don't think about that.

Pets, most people with pets acknowledge pets have an inner life, an emotional life, and we feel bad when a pet dies or when they are too old to be living well. But we don't feel overwhelming angst at the cessation of a pet's consciousness. So, the angst that is attached and the emotional import that we attach to human consciousness may be discounted.

Somebody arguing with a Neil Tyson, say the heirs to Neil Tyson. He's 86. He wants to spend another $2.2 million to upgrade his simulation from 99.1% accurate to 99.7% accurate. His heirs are like "that in our minds is bullshit because you're spending all of this money to have slightly more accurate memories about what happened to you in high school and college. Really, why? You'll have memories.

They'll be .6% less accurate. You'll have memories, but they won't be as potentially accurate as your brain would provide. But so what? You don't recall what car your friend drove back in the day. You're a hoarder, a mental hoarder and using all of this money."

So, I feel as if these kinds of issues will eventually erode our foundations of human society. It doesn't mean it will be replaced with chaos, but it will be replaced with something else that will be perceived as a kind of a 'fuck you' to traditionalists of our era. Again, the Trump thing is at least in part a reaction to change, whether or not people are conscious of it. You can read all sorts of documents on these sorts of things. The people who are voting Trump are voting against their best interests, or voting for illusions.

I'd argue some of that pressure is sci-fi pressure. Weird-world-coming pressure.

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Ask A Genius 29 - Informational Cosmology 5

Scott Douglas Jacobsen and Rick Rosner

December 7, 2016

Scott: What about the unification of the operations of the universe under a scientific framework?

Rick: Starting around the time of Newton. Galileo did some stuff under the scientific umbrella, but Newton was the first creator of a truly effective unified theory: Universal Gravitation. It described things from the falling of a bowl of porridge to the motions of planets. Universal Gravitation was the first effective universal theory. You might go to Kepler and planetary dynamics. Although, when did people invent the idea of the clockwork universe? There might have been some obscure Greek guy, but it was until Newton.

People thought, "Hey, the universe can be a coldly mechanistic set of articles and bodies moving in completely deterministic ways." That's not exactly Newton himself because Newton was fanatically religious. So, whatever he thought about determinism, he thought about a universe ruled by God.

But people coming after him that looked at his work, in the 3 centuries after him, a lot of scientifically-minded people see a cold universe with nothing, no creator, behind and no processes other than cold valueless physical processes with nothing in charge. It is processes that happen due to the laws of physics.

But what you're going to see, I think, is a change from nothing really mattering – you've got the mid-20th century existentialists saying, "Life is absurd," which you can't wholeheartedly say unless you don't believe in God and begin to embrace the cold scientific idea of nothing mattering – and everything playing out, not exactly in a quantum manner because quantum mechanics makes things not entirely determinate but still playing out in a mechanistic manner according to some basic rules of physics, to information being in charge.

Throughout the 20th century, science tried to account for how life could arise through cold, physical processes without a Creator, without teleology. Some powerful being getting in there and pushing things around and making stuff happen. To the extent that everyone thought would be achieved, life was this afterthought. Not necessary for the universe to operate; not having much to do with the business of the universe, it was a thinking froth. A meaningless icing on the cold face of empty space, largely, empty space.

In existence, with the universe eventually expanding out to cold nothingness as stars spend their fusion energy and burn out, you have the entropic death of the universe. That point of view – life is an accident and doesn't matter in the big affairs in the universe, and there's no powerful outside observer, where things play out – will be erased in the next 2 or 3 generations with the view that information is in charge.

That is, information based structures are able to persist across time. In fact, it is due to the formation of information that things can persist across time. It is impossible for things to exist

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without being part of a self-consistent information containing system and information containing systems have some agency.

They have some role to play in even the very largest structure of things. It does a couple of things. There has bee a struggle over the past couple centuries to bring things into the fold of physics based processes. It has been tough to bring life into it. However, more scientists say, "Yea, we have a handle on how things work and how life could have arisen through physical processes with some of the holdouts being consciousness."

Consciousness is still tough to fold into confident science. If you ask most science-minded people, they might say, "We don't know yet, but we will figure out how consciousness arises from basic physical processes without spiritual hocus pocus, or hidden forces or realms, independent of physics."

It is nice to have everything under a single, non-mystical umbrella. It is probably helpful to the advancement of science. It might be helpful in eventually mitigating and limiting belief based assholery.

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Ask A Genius 30 - Informational Cosmology 6

Scott Douglas Jacobsen and Rick Rosner

December 8, 2016

Scott: What about information rather than nothing?

Rick: The idea of information being in charge rather than nothing is more hopeful. If everything is part of information contained in some consciousness, if consciousness is the containing framework of information, then that's not as bleak as there being no overall consciousness, nothing in charge, basically nothingness with life and consciousness being accidental.

It is less bleak, but it has some bleak aspects. If everything is structured, if every consciousness is subject to the same constraints of our consciousness, then, perhaps every conscious being comes to an end. No matter how vast, which means we are subject to the universe coming to an end in the vast future. We are still stuck with no absolute permanence. Only the permanence embodied in vastness.

The bigger something is, the more likely it is to persist given its high level of self-organization.

Scott: We talked about a narrative structure to the universe.

Rick: If consciousness is the vessel containing information, if largely self-consistent information systems can't exist without a ride-along consciousness – which is the experience of information being shared in a large system among all of the sub-systems in a real-time manner, then you have a narrative.

Generally, each consciousness or systems of consciousness – in fact, we're probably moving towards something like that with budding and moving of consciousness unlike unitary consciousness for decades like human consciousness; we grow up in our skulls. We stay in our skulls our entire lives with limited melding of minds our entire lives.

The best we could do for most of human history was talking and writing. We are getting more and more intimate ways of communicating. In the next couple of decades, as we get less islandy, as we get to move consciousness around and share it, there are narratives for isolated consciousnesses such as ourselves moving through the world. There are more complicated narratives you can imagine related to budding and collapsing consciousnesses moving through the world.

Scott: There is a beginning, middle, and end.

Rick: Narrative is going to be attached to all of that stuff. Narrative is attached to cause-and-effect worlds of linear time. Plus, if consciousness is unavoidable as an aspect of information, then that makes narrative more unavoidable. A cold universe with nothing in charge is a shitty narrative. It blew up from a point, then it's going to keep expanding forever, get cold, then inert.

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Or, it is going to run out of expansive energy and collapse back into a point, losing all information as it collapses, then will expand again. There aren't that many narratives. They aren't that exciting. They are only exciting insofar as they explain the dynamics of the entire universe. They are pretty bleak.

Scott: Information, as you're positing it, as we're positing it, implies both gradual increase in complexity dependent on the amount of time, amount of space, and amount of stuff in the universe with the eventuality of consciousness. Is there a bias towards increasing complexity? If you take three variable: space, time, and stuff.

Rick: Is there a bias in the universe towards the unfolding of a narrative with the idea of a narrative being increasing complexity and the universe's increasing ability to support beings that understand it or the universe? Are there processes that resolve non-information to information?

Scott: Yea, a negentropic bias.

Rick: Yea, it is slightly off it. I have been thinking about it. Time is seen as one-dimensional. It is obvious because we move from moment to moment to moment along the timelines. However, it is reasonable to imagine that as we get more complicated or whatever we become in combination with artificial intelligence.

That one major function of consciousness is to provide safety by creating and weighing alternate futures and choosing the best future among them. That is one way of saying it. A more natural way of saying it is one function or the function of consciousness is to make choices moment to moment.

Scott: By analogy, if you're reading a book, as you're going through the story, you're taking relevant information, more or less, into account as you read the text, but you're also putting up hypotheticals about what the next section or chapter will bring.

To me, you're putting up hypotheticals about the probable paths, but then you read the next section or chapter and then you collapse the probabilities into certainties.

Rick: It is collapsing possibilities into a single present moment, but the present moment still contains a lot of possibilities. Your immediate circumstances have been collapsed into definiteness. The idea that we'll have quantum computers riding on our bodies helping us simulate a range of possible futures and then help us choose what next steps to take for the more favorable moments. We already do that without seeing it as that kind of thing.

It is a little less than 2 miles for me to drive to the closest gym in Ventura Boulevard in Studio City. There are so many asshole drivers along this stretch. Not as many if I go the other way because I have a cycle I go through. I go on the counter-clockwise cycle. It is a less than 2-mile trip going East 2 miles on Ventura Boulevard. You encounter a bunch of A-hole drivers. If you go left to the West, it is a short drive along douche alley. It is only a few blocks. In douche alley, you've got people walking about with yoga mats, stopping in the middle of the street for no reason.

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Either way, whether you go down douche alley or 2 miles down Ventura, it is like a video game of asshole driving. Yet, you're constantly forced to anticipate what stupid shit people are going to do around you, and to figure out what stupid shit you're going to do to win at driving versus the people around you.

But then I thought about when the constant process of avoiding accidents on Ventura Boulevard suddenly locks into an inevitable accident. I have had some. There's a time when it is probably like half of a second, but it seems like longer. Once you're locked into this thing, all of your attention is locked into this thing that is going to happen.

You spend a significant amount of time locked into inevitability. That is a weird feeling because you're used to not inevitability. You're used to having to run a perception plus thought framework about possibilities to choose from. Those possibilities can be seen as incompletely sketched future worlds or future sets of circumstances. They are all nebulous and smeared out. They are all based on risks and possible rewards.

But when your breaks are locked and you're skidding inevitably into the front of another car or the back, the loss of possibility is usually dreadful because you're about to get into a wreck. It is weird. I don't know if it dreadful because you know it will suck when you hit the car, or if it partially dreadful because the loss of the possibility or the resolution before the actual future hits is inherently dreadful.

But regardless of where the dread comes from, it is weird not to be in a position of having a smeary, vague realm of different possible futures. Even in the middle of a wreck, you're don't know exactly what will happen – but that pins everything down.

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Ask A Genius 31 - Informational Cosmology 7

Scott Douglas Jacobsen and Rick Rosner

December 9, 2016

Scott: In informational cosmology, what is the bias towards complexity, towards information, towards order – negentropy?

Rick: I think one of the biggest discoveries in physics was the discovery of entropy, which is the measure of order or disorder within a system and entropy being the tendency of things to move from order to disorder.

However, understandings of entropy can be a little wobbly. That can happen when you talk about negentropy, which is the increase in disorder in a system. Negentropy is even more wobbly than entropy. I am not sure how pinned down beyond the definition people's understanding is. I am sure for most people it is not even a word.

In an even more general sense, we are talking about the increase in order in a system, which strikes scientifically minded people as wrong because they have the idea of increasing entropy or disorder pounded into their head that a cup of coffee can't heat up for no reason. That it has to be lukewarm or the temperature of the room.

That the universe will keep expanding, keep cooling down, and stars will run out of energy and the universe will have a lukewarm death. So, the idea that order can increase, even though we live on a planet where order has increased to create us, life, and everything else on the planet, it strikes people as weird.

Entropy applies to closed systems, in systems in which order can increase involves open systems in which you can shed waste heat that sheds noise. If you can get rid of the waste heat, you can have nice stuff like us.

Entropy is such a powerful idea that it has been extended to the entire universe and even though entropic characteristics of the universe are somewhat contradictory. The universe seems to have some very unentropic characteristics. It, according to the Big Bang, exploded from a point or expanded from a point, but even at that young, chaotic age had to have gone from being a big hot mess to being a very ordered place.

Things mostly don't crash into each other like galaxies in which life arises, at least like ours. There are arguments to be made that you can set up a universe-scale system, or systems, that can be unentropic as long as you're able to get rid of excess energy.

In fact, the universe has ways of getting rid of excess energy. That is the loss of energy via photons as they traverse billions of light years. Photons turn red as they traverse the gradient of space.

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Ask A Genius 32 - Informational Cosmology 8

Scott Douglas Jacobsen and Rick Rosner

December 10, 2016

Scott: Are most photons not captured by other things in the universe? They traverse, lose energy.

Rick: The craziest statistics that nobody knows. There's many of them, but one of them is that only one trillionth of the night sky is covered by stars. That means if you shot a photon into empty space, then you would need to shoot a trillion of them to have a good chance of hitting a star. Most sight lines in space don't end up at a star. We can talk about Olbers' Paradox. We don't have time to talk about that.

It is like standing out in the middle of a forest, but only having a trillionth of your sightline has a tree in it. If you shoot a trillion bullets and only hit one tree, then those trees are fairly sparse. It is the same with space and photons.

Most photons are not intercepted within a couple billion or ten billion, or the vast percent, of photons don't run into matter within the first ten billion light years of their travels. There are certain caveats.

We are in a Solar System, where we have the star that takes up a huge amount of the sky relative to the amount of the sky that stars usually take up. Still, even in daylight, if you're looking around and in the orbit looking at the Sun, the Sun doesn't even add a percent of the sky covered.

So, yea, most photons get away. They go, and go, and go, and go. We can probably assume that they eventually run into something, but I'm not sure that's a necessary assumption. It rests on the curvature of the universe, where as the photon zips across everything.

We've got this theory where T=0 is spatially different from where we're at. So, things are going to be more compactified in an actual future as opposed to the past of a big bang. Things start getting mushed together in a T=0 area. So, a lot of photons will be captured.

What you can say whether you believe in a T=0 with the rest of the universe, most photons get loose. They keep going. They get redder and redder. Their wavelength gets longer and longer as they traverse space that is large enough to be subject to the Hubble Constant, which Big Banger says is velocital.

But if you believe the universe is informational, you can say it is gravitational or structural. In an case, photons lose energy. It is that loss of energy that makes the increase in order possible and helps breed large-scale order. Order on the scale of galaxies and all of that stuff and actually helps determine the Arrow of Time

Scott: IC in that framework has two separate theories. Two distinct from standard Big Bang cosmology. One, where T=0 is apparent T=0, large collections of matter functioning as storage. Where time is virtually frozen, that would be global negentropy. Two, we have

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global entropy, but localized negentropy with the shedding of waste heat in persistent structures like solar systems.

Rick: If you can segregate information that is not actively being used, if you can store it around T=0, that is a nice sink. I don't know exactly how it works, but it is part of a system that is negentropic.

Scott: In general, that would be storage. That storage would be subject, like all storage systems, to information decay, but over extraordinarily deep cosmic time.

Rick: In the cosmology that we've been poking at, we live in an information space. It is not our information. It is information that is the universe. You've got storage, but it is information that is supported by an armature that is a material support frame like a hard drive or a CPU some place in a universe not our own – like the brain. Some place that can store information because information can't store itself.

The information we have in our brains. That information can't store itself. It is stored in our brains. The information in computers is stored within computers. Information stored within the universe, if it is made of information, is stored someplace else.

The material thing that supports our information universe is, we can assume, subject to having stuff happen to it. Stuff happen to our brain. Stuff happens to our computers. Information is lost when the system brains, whether permanently or temporarily.

With us, our information is way, way lost when we get Alzheimer's or die. In the case of a computer hard drive, it depends on what is going on. It is based on information. In decay that is based on information, that decay that can be both within the information as information contradicts itself and you have to rejigger everything as new information comes in.

But more importantly, information can decay because the vessel for that information is subject to decay. That looks like the heating up of the universe. A negentropic universe goes from tiny and hot to cool – to 3.7 degrees above absolute zero. That being the average temperature of interstellar or intergalactic space.

That 2.7 degrees being the temperature of the background radiation. But if you want to erase information, you raise the temperature. Things get hotter. Information contained in the universe is contained in spatial segregation and clustering. Things join up.

Subatomic particles join up. Atoms join up. On a planet and star, individual atoms form planets, to form stars, which are part of solar systems, which are part of galaxies, which are part of superclusters and filaments.

The universe is a bunch of matter that is collapsed via us being closely associated with other matter. The universe is a bunch of clumps of matter at various scales. If you want to get rid of the information that is contained in the clumping, you heat up the universe. Things start breaking

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apart and the Planck wavelengths probably get longer and things get fuzzier, and you start losing the empty space between things.

At the point where all information is gone, all things are back to a hot, fuzzy mess with everything overlapping everything else, but nothing has a distinct existence and has the look of a Big Bang proto-atom or proto-whatever it is. A big, tiny, fuzzy point, that can be seen as a fuzzy point out of which everything, if conditions were right, could spring.

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Ask A Genius 33 - Informational Cosmology 9

Scott Douglas Jacobsen and Rick Rosner

December 11, 2016

Scott: How would you estimate the information in the universe?

Rick: There are various estimates. You could look at the average density in the universe. Some people have estimate that the number of particles, basically hydrogen atoms or protons, in the universe is around 10^{80} (plus neutrons).

You could look at 10^80th in other ways such as the ratio of the diameter of a proton to the diameter of the universe is 10^{40}. Those ratios, even if I got it wrong, are some measure of information in the universe. It takes a lot of information to specify this much space where a proton is only 10^{40} as big as the universe – where a proton is so well-defined it is only one 10^{40} the size of the universe.

In IC, galaxies are some kind of information. They have specific informational roles, either as information processors or as a concept cluster that expresses an idea or the name for an object in the mind of the universe. You have 10^{22nd} of these things, whatever they are in terms of information.

If 10^{22nd} stars, if 10^{11th} galaxies, then galaxies might be the concept clusters. It doesn't seem unreasonable that we're living inside of an information space of a system that has 10^{11th} components on a galaxy-size scale with each of those galaxies considered as a concept cluster – maybe being a word in the informational consciousness that is inherent to the universe.

But if you want to do a similar analysis on us, people and their information spaces have vocabularies of between 10,000 and 25,000 words. Maybe, each word or most words are associated with little concept clusters in our information spaces.

There's a word for most of the things that we think about. You can argue that there are things that we have senses of, which we don't express in word unless we make it explicit. We have the ability to take things is perspective, like when something is in front of something else.

I am looking at a plant in front of bricks in front of a box of DVDs. I have this whole deal where I can tell because my brain has trained to tell. I understand without thinking about it much at all – on top of, in front of. I understand when I am in a room that is roughly cubicle and how the various corners work.

There are some right-angles in what I am viewing, but there are many more angles that don't look like right-angles to me. But I know because I stored them. So, I can walk without falling over, so does a 2-year-old. I don't need to put all the thoughts of walking into words. A 2-year-old definitely couldn't.

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A lot of people would have a lot of trouble of putting the dynamics of walking into words. There are a lot of things we don't need or have words for. But it makes sense and is reasonable to think that the number of concept clusters in our brain is on the order of 100,000.

If you have a memory, it is not necessarily encapsulated a lot. If you use that memory a lot, like first memory, my first memory is being in my basement looking at Raggedy Ann and Andy curtains probably in 1962. I can put it into words because I've accessed that memory a lot.

When you access it a lot, it is easy to put a word tag on it. Most tags are not tagged with a when. It is triggered when some associations are popped up. Now, you can characterize that time a put up a big goober in the vista cruiser I was driving.

If you live to 100, you live 36,500 days. In the future, people will have brain buddies that record every single moment, so you can remember what you were doing on ay given hour on any given day. If you were to pull up a brain buddy on somebody 100 years old and with a functioning brain, you could cue them up for every adult day of their life.

You say, "Remember when you were, remember when," They say, "Oh yea, they were wear that dress with brass buttons." You're able to pull up memories when enough cues from that memory are cued.

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Ask A Genius 34 - Informational Cosmology 10

Scott Douglas Jacobsen and Rick Rosner

December 13, 2016

Scott: What about concept clusters?

Rick: The concept clusters, or the chunks of information in your brain, are in the order of 100,00 things in your brain. The concept of running. The concept of farting. It includes the word fart and all of the variations on it. Scoffing! If you watch TV with the closed captioning on, scoffing is one of the hugest things people do on TV. Some character is always scoffing at another. Although, in real life, there is not nearly as much scoffing.

But on TV, there's a bunch of scoffing. I have a concept cluster in my brain somewhere that include scoffing. The idea that I say something and somebody reacts to it, visibly, as if it is bullshit. That may be a concept cluster that is reflected by a bunch of or a swirl of information in information space. A galaxy of information. There may be around a 100,00 of those if you could map our information spaces.

That seems like the right magnitude. It could be less. It could be that we form our concepts on an impromptu basis with concept clusters, where maybe we don't have concept clusters that are reserved specifically for pomegranate because we don't use it much. But to get pomegranate. We need a bunch of them.

Or it could be that real estate development in our brain is easy as pie and we could throw up a million of them or every little thing, where you have 100,000 plus or minus one power of 10. It seems like a reasonable guess at the size of our mental universe if you could map it informationally – which we'll be eventually able to do and you might have a 100,000 galaxies.

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Ask A Genius 35 - Informational Cosmology 11

Scott Douglas Jacobsen and Rick Rosner

December 15, 2016

Scott: Matter in the universe represents structures. Information-based structures representative of external structure, a material framework.

Rick: You and I have been poking at what are the matter equivalents of informational structures. Looking at our universe, if our universe has an informational structure, then galaxies have to perform a very important and fairly informational thing because they have to be a specific informational thing as there are so many of them and their arrangement is so extensive across the universe.

Stars within a galaxy have some kind of sub-speciality. That is fairly well-defined because there are 10^22nd stars.

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Ask A Genius 36 - Informational Cosmology 12

Scott Douglas Jacobsen and Rick Rosner

December 17, 2016

Scott: Persistent structures at all scales in the universe have evolved to be resistant to decay, informational decay. They're like buffers – like the shielding of solar systems from the interstellar medium because of the heliosphere. What about these informational decay buffers?

Rick: Solar systems are stable orbitally for the most part because all of the stuff that has crashed into stuff has either been knocked away from the solar system or agglomerated into planets or settled into stable orbits across the 5 billion or more years that the Solar System has taken to form.

The Solar System has been formed during the 99% of that time. During the initial 1% or 8%, there was crashing into everything all of the time. However, over time, that became more stable. The universe has solar wind coming and knocking some stuff away. The Earth is protected. One reason we're able to live reasonable lifespans on Earth is because of the Van Allen Belt.

We've got a rotating iron core that generates a massive field that deflects incoming radiation, cosmic rays, away from the temperate parts of Earth and towards the poles. There are protective deals, shields, and dynamic systems that contribute to continued stability. It is structures like solar systems and galaxies, where an average galaxy consists of $10\text{^}11^{th}$ stars. The vast majority of which are not crashing into each other at any given time.

The vast majority of galaxies are not crashing into each other at any given time too. This happens at various scales. In a time-based system that includes increasing order, persistent things persist. That seems to be a base deal. There are reasons why persistent things persist. The big reason is that they are resistant to outside disturbance.

The Solar System is resistant to disturbance because it, over a period of time, got rid of most of the disturbing objects. Also, the Solar System is part of a universe that is itself persistent and part of the universe's persistent nature is there is an ass load of space.

With all of this space, it makes it less likely for things to have to crash into each other because there's so much space for things to not crash into each other. If you look at the night sky, if you viewed the night sky as a sphere, as a globe, only 1 trillionth of the globe is painted star color. That is, it has the disc of a star there. The rest is pretty much empty space.

Empty space, where a photon can go 10 billion light years without crashing into anything, but I think it can; once something can become gravitationally deflected, it can probably get diffracting in some ways by passing through clouds of sparse matter without getting absorbed, but they can get messed with.

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Living in a persistent universe, living in a universe with an apparent age of 13.8 billion years, there are things that you can look at as contributing to the persistence of that universe with the major things being gravitational locking and clustering in vast and mostly empty space.

For most things, there's a combination. If it's gravitational locking, it is something that happened once among the things that collided and locked together. Now, they're stable together – either on increasingly large scales or as planets, or stars. Then you have a bunch of systems that are stable because they're locked together in orbit.

They're not going to crash into each other in the few billion years because the bodies that are part of an orbital system, and are orbiting bodies, have sufficient kinetic energy to keep themselves from crashing into the things that they are locked to. You have permanent locks from things that lock together and form matter clusters.

And then you have permanent locks in the things that form systems, in a big empty universe, that are highly persistent. The closest star from us is 4 light years away. I don't know what the average distance between galaxies is. But it is probably millions of light years, I guess.

At the very least, many, many tens or hundreds of thousands of light years. Even if 2 galaxies are on a collision course, it is going to take 400 million or a billion years before they crash into each other. Even when they do crash, all of the stars in a galaxy have sufficient kinetic energy that they don't fall into the center of the galaxy. Galaxies themselves are sparsely enough stringed in space that even when 2 galaxies crash into each other the vast, vast majority of stars do not slam into each other. They spin around each other and have different trajectories and things are chaotic, but those settle down.

First, into a new globular galaxy, then over a few billion years of getting things figured out, then a spiral galaxy.

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Ask A Genius 37 - Informational Cosmology 13

Scott Douglas Jacobsen and Rick Rosner

December 19, 2016

Scott: If the universe is net negentropic, what happens a quintillion or quadrillion years into the future? What if the universe is net entropic?

Rick: The universe is defined, I believe and quantum mechanics suggests, by its interactions. An entropic universe or heat death universe, or open universe, keeps getting bigger and bigger. How does it define itself? If things get farther and farther away. There's less and less energy. All of the photons have already flown away.

If the universe is basically a giant gun fight among all of the particles and the particles understand where they are versus everything else - pa-choo, pa-choo, pa-choo, pa-ting, pa-ting, pa-ting, then an entropic universe can't even be defined because there's very little exchange of defining information via radiation. Everything is too far away and too cold. So, F- that universe.

A negentropic universe is defined by the information in it as long as that information is interacting, where if the universe is a giant gun fight then you can have the active center where everybody is communicating with everybody else via radiation.

You've got the more collapsy T=0 outskirts, where information is preserved even though it's not part of the gunfight. There's not enough time for that stuff to need to be defined. The lack of stuff going on means a lack of time, which means the information doesn't have time to break down.

So, you've got a cold storage, which is near zero-time storage. If you had the best refrigerator, the best one you could have, it would be a silver sphere where you put your Chinese food in it and no time passes within the sphere. It doesn't even have to cool down. Put the food in, it is a stasis sphere.

You go on vacation, comeback 3 weeks later, take out the Chinese food that has experienced no time. So, the food is still fresh because it has experienced no time. T=0 is like storage. You might be able to store inconsistent information in a stasis sphere, basically, because say the universe knows more.

Our brains know more than we can know at any given time. We have more information stored than we access at any given instant, and given that the information is accurate within different contexts - one aspect of persistence is the absence of contradictions because everything fits with everything else, but with contextualized information, maybe, you store the stuff that is, the stuff you know, known within a specific localized context.

Your brain can only know so much at any given time even though you only know so much in the aggregate because you can only know the aggregate. There might be, if not inconsistencies in the aggregate, then at least contexts in which things are known that require the limited contexts at the time because the contexts cannot all be known at the same time.

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Your brain doesn't have the information processing capacity to present your complete knowledge at any given moment. The size of your brain's limited capacity to know stuff at any given moment. There may be informationally based reasons why not all information can simultaneously exist.

That there is some kind of contradictory structure to information in the aggregate, so non-pertinent information has to be stored in a relativistically rotated, zero space and zero time, or limited space and time, or attenuated space and time, context, which would naturally be around T=0.

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Ask A Genius 38 - Informational Cosmology 14

Scott Douglas Jacobsen and Rick Rosner

December 21, 2016

Scott: When I think about structures like the Sun or the shell, the very hot shell, of things being sucked in or rotated around the black hole, or even the radiation that it has, in a way, over long periods of time, it is like having a heater in your room.

It is keeping things at a certain relevant temperature for some balance between order and disorder that might be necessary for certain types of information processing that are more efficiently done, from our perspective, temperatures or, from the universe's perspective, kinds of information processing. It could be the speed of processing. It could be the complexity of processing. It could be the precision of processing.

Rick: It's like you're asking, "What might be the information processing nature of the universe as seen in solar systems, and other places, that has consistent long-term inputs of energy?"

Scott: Yea, big, definite, durable structures - solar systems, suns, planets, galaxies, upwards to filaments - big stuff relative to us. Some of them, like the Sun, are keeping heat. They're keeping things - things are still cold - relatively warm. Like emotional values, they aren't precise. They are fuzzy. There might be a helpfulness in fuzziness in some informational valuations rather than high levels of precision.

Rick: In terms of solar systems and the development of increasing levels of order in the creation of life, you need an energy gradient. You need an energy source. Energy needs to flow through a system to generate order. It can't stay in the system. Energy has to enter the system, do work that increases order which also creates waste energy, which has to leave the system before it swamps the system with disorderly waste energy.

One way of looking at it is Maxwell's Demon. It is imaginary. He is like the less well-known version of Schrodinger's Cat. He is an imaginary being you use to discuss a scientific idea. Maxwell's Demon works to reverse entropy. Let's say you have a coffee cup, your coffee cup is divided between the outside and inside. Put in a barrier to divide the coffee, and say your coffee is lukewarm, you hire Maxwell's Demon that is able to grab hot coffee molecules, dump them on one side, and cold ones and dump them on the other. He does a bunch of work and after he does a special amount of work. You have warm molecules on one side and hot molecules on another side and you can enjoy your coffee.

The deal is, if you can do the math on that and can imagine Maxwell's Demon doing that, if you're in a closed system, say there's a dome over the coffee cup, by the work the demon does separating the cold and the hot molecules generates so much waste heat that everything heats up and when you're done you don't have a cold side and a hot side. You've got everything hot because the demon has created so much waste heat separating the molecules.

The deal is, the work it takes to increase order and separate hot from cold itself generates disorder. You need to attach a vacuum hose to the demon's suit, say space suit, that sucks away

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waste heat. Otherwise, that waste heat contaminates the work you've done and in fact negates it. It is part of the deal that in a closed system disorder can only increase. If you have a demon that only increases order, the work he does by increasing order actually creates waste heat that destroys the work, you need an open system, which we have and solar systems are.

Heat comes from the Sun, is absorbed by plants, is stored in chemical bonds via chlorophyll. Photons from the Sun build energy storing molecules that can be tapped later to release energy to do other stuff, for movement and thought and for plants to be able to build the plants bigger to be able to store more energy, but when you build the molecules via absorbing photons there's waste energy from doing that.

You got to get rid of it, which the Earth does by radiating waste heat out into space. So, when you have climate change, schmutz in the air, C02, blocks a lot of the waste heat from escaping. You have problems on Earth if you can't dump waste energy. The Earth, the Solar System, are open systems that can dump energy into space. Space itself can dump energy by photons traversing space and it too can be considered an open and entropic system.

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Ask A Genius 39 - Informational Cosmology 15

Scott Douglas Jacobsen and Rick Rosner

December 23, 2016

Scott: Why isn't arbitrarily large prohibited?

Rick: Multiple Worlds Theory is annoying because it implies all of these worlds have to exist, but IC is similarly annoying in that it has a large set of permitted worlds. We don't have to deal with them because we live in a definite world that we know to exist and we don't have to give every possible world in the set that same consideration of the world we live in ourselves, but you have to give it a mathematical existence. If it is not prohibited, it has to exist. That is an annoying part of multiplicity. Also, the Ladder of Minds if all universes need a containing armature, then they need a ladder all the way up.

You can say that parsimony is only applicable in certain contexts in the way entropy is only applicable in certain contexts and you get trouble if you overextend it.

Scott: Because it is a principle not a law, and Ockham came up with it in the 14th century. He came up with it in a conceptually simpler universe.

Rick: But it is a good law because it works all of the time. In most cases, it works. Entropy is similarly a powerful concept. It allowed human thought to move forward, but it doesn't mean that those principles apply in every single context.

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Ask A Genius 40 - Informational Cosmology 16

Scott Douglas Jacobsen and Rick Rosner

December 25, 2016

Scott: Define T=0.

Rick: In Big Bang physics, in any reasonable physics, the farther away you look into the universe on huge scales, many millions and billions of light years, the further away you look the further away a star and galaxy is then the more in the past you're seeing it because the light has taken millions and billions of years depending on the distance to get to you.

Since you're looking at something in the past, you're also looking at something younger. The universe is suffused with Big Bang radiation, which consists of super old photons that are close to 13 1/2 billion years old and they come from a time when the universe was very small and very young, close to what we're calling T=0.

But under Big Bang physics, the whole universe ages and expands at the same rate, so even though you're getting photons from a young universe. There is no young universe to be found anywhere in a big bang universe. By the time you got to the place, to the star that you saw as being very young, it would take you so long to get to the star plus other effects, the star would be at least the same age as where you left.

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Ask A Genius 41 - Informational Cosmology 17

Scott Douglas Jacobsen and Rick Rosner

December 26, 2016

Scott: What does this definition of T=0 imply under IC? It's an older universe.

Rick: In fact, a lot older because it would take many millions of light years to get to that star, but under IC we suggest that T=0 is not simply an echo of olden times close to when the Big Bang was, but that the Big Bang expands part of the universe at a time. There is more than one Big Bang. The universe is a series of biggish bangs that open up parts of that universe from across time. It is a series of expansions and contractions, not an oscillating universe, but more like a boiling universe.

Different parts of the universe bubble up over time, but there is always kind of an active center that is the bubbled up part. Some parts of which are always existing in the center because they are made of bubble power because they are relevant informationally. They were part of the outskirts that are bubbled up into activity as it is needed, as the information they contain becomes relevant and the stuff that is not bubbled up exists in a space and time that we call near T=0, where it looks like the conditions are time is slow, space is more collapsed, and it looks more like the beginning of the Big Bang around a time 13.8 billion years after the Big Bang. We talk about T=0 as an entity that exists more or less simultaneously with us.

By the time you would get back to T=0, it wouldn't work because it would take you 28 billion years even travelling at the speed of light before you got anywhere near T=0. I started thinking about this stuff in 1981. I saw that there should be at least a metaphorical relationship between the structure of the universe we live in and the structure of the information in human consciousness or any consciousness. Ideally, there would be more than a metaphorical relationship.

There would be an exact mathematical tool set to translate from physical space and time and its rules (the rules of universe) to the rules of information within a conscious entity, or within a self-consistent information processing entity. One promising metaphorical aspect is that the neighbourhood around T=0 – the apparently young part of the universe – looks like it would be a good place to store information, which is contained in a system of information – but that isn't relevant and active given the current set of information being processed in the active center of the universe.

Like your brain, you have a bunch of apps in your brain that are running and relevant to what you're doing or experiencing, and then you have a bunch of other apps that don't apply to your current situation or current needs. The information contained in the dormant apps may not even be consistent with the information contained in what you're currently processing.

Inconsistent information systems can become consistent if you bubble them up and crash them into each other. F. Scott Fitzgerald said the mark or the sign of an intelligent mind is being able to keep simultaneously contradictory ideas in mind. You can entertain contradictions.

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Ask A Genius 42 - Informational Cosmology 18

Scott Douglas Jacobsen and Rick Rosner

December 27, 2016

Scott: With respect to the galaxy-size, so we're going to scale down and away from apparent T=0 to individual galaxies, those are in either of two classifications: proton-rich and neutron-rich, which are new.

Proton-rich are likely to be younger, active, and not burnt out. Neutron-rich are after all of the proton energy has been burnt out. When you're burning high-proton galaxies, and they are alight, they expand space and time moves fast(er).

But over time, the space they inhabit collapses, over deep time, and the protons run out, and they neutrons fill them up. You get a neutron-rich galaxy, like embers left burning after a fire.

Rick: The universe has roughly 10^11 galaxies. New research says it might be more than that by a factor of 10, and the average galaxy contains about 100 million stars. If you're developing a model of the universe as information processors, you'd expect galaxies to be some kind of processing unit.

Given that there are so many galaxies, and they fall roughly or have a not completely wild variation in structure, a galaxy is a blob of stars. The blobs can have a number of different structures. They can have gas and lots of other stuff going on.

But a galaxy is a relatively definite agglomeration of matter. You'd expect, if the universe is an information processor, then a galaxy has fairly specific roles with the processing and storing of information. It seems like it could be a given. There are other units that fit, if indeed the universe is an information processor.

Galaxies are made of a hundred million stars on average and other stuff like interstellar gas, quasars, blackish holes, and stuff like planets. A bunch of stuff within galaxies. One thing you definitely have in galaxies, for sure, are stars. Stars have a specific information processing role, and stars are made of atoms. So, atoms have a fairly specific information processing role.

You've got cars made out of atoms. Atoms stick together in specific ways that are useful for making your car go. Tires, the tire assembly that include the wheel too. Altogether, the car works like a car. But you can break down the cars functions are various scales to talk about the roles of tire atoms. Atoms in a tire are linked together flexibly so the tire can grab the road.

The atoms in the engine block are linked together fairly rigidly so the engine can work like the engine. But you can talk about the various components and their various functions and how they fit into some larger thing. You would expect galaxies to have some larger function in the overall business of the universe.

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You were talking about new galaxies that were burning protons through fusion, nuclear fusion, which means you take an element that is richest in protons, which is hydrogen. It is close to 100%. Its nucleons are close to 100% protons.

When you can burn it through fusion turning it into helium, where its nucleons and helium, around half of the nucleons are now neutrons, they are protons who have fused and become neutrons. You can't burn neutrons.

But you can probably do somethin' with them in a neutron star, but under normal physics a neutron is basically a burnt proton. A young galaxy, according to big bang theory, starts out being a bunch of gas, interstellar or intergalactic gas, that has come together – tighter and tighter and tighter as it forms a blob gravitationally.

And that gas is roughly ¾ hydrogen and ¼ helium left over from the big bang and some trace elements, as the gas further coalesces into proto-stars the gas clumps up even further to the point that the pre-star.

There's enough gravitational pressure, the pre-star coalesces, and eventually there's enough pressure to cause nuclear fusion when you start turning protons into neutrons when you smash them together under tremendous pressure.

Hydrogen nuclei quickly progress from deuterium. A hydrogen nucleus is one proton, and you can fuse them and make deuterium which is one proton-one neutron, and then tritium which is one proton-two neutrons.

Then you hit a stable point when you get to helium, which is two and two. When you do enough of this, you can burn helium and turn them into even heavier elements. Under most circumstances, depending on the size of the star, oxygen is a stopping point for a lot of stars and iron is a stopping point for a lot of larger stars.

And then you've run out of fuel. Same way, you can only burn a piece of paper once. All of the chemical potentials to release energy have been released and now the paper is ash. You'd have to turn the ash into something that can burn, chemically. You have new young universes that are proton-rich, able to light up and burn all of their protons.

Then you have all of these neutron-rich universes in which everything is burnt up, and burnt out. You've got white dwarfs, brown dwarfs, blackish holes. This is after 20, 40, 50, 100 billion years. Most of everything is burned out.

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Ask A Genius 43 - Informational Cosmology 19

Scott Douglas Jacobsen and Rick Rosner

December 28, 2016

Scott: Why blackish hole rather than black hole?

Rick: Most galaxies have a huge friggin' blackish hole at the center. Big Bang physics says black hole, which is just a thing which has so much matter in so small a space that even light can't escape. It doesn't have more suck power than something of similar mass, but large diameter.

But anything sucked in is not getting out because it would have to move faster than the speed of light to get out. It is a super suck thing if you happen to fall into it. Under IC information processing view, even though black holes are the ultimate suck things, Hawking showed that stuff can still escape, kind of, through Hawking radiation.

It is where a black hole exerts so much force on space or tension that the tension can be relieved by turning some of that tension into matter, where something right on the horizon of the black hole.

The space on the horizon of the black hole can get pulled in half, into a couple particles. One of which escapes the black hole and the other is sucked into it – like a snapping rubber band, like - ba-ding! It hauls ass away from the black hole.

It reduces the black hole's mass until eventually over ridiculous amounts of time, which can include quadrillions and quintillions of years, a black hole could evaporate via particles created by the tension that the black hole exerts on space because the tension contains energy.

Even a Hawking black hole is only blackish, it is not fully black because stuff can't escape because in a crazy event horizon, or some horizon, creation. Where else would it be? Under IC, black holes are even less black and more blackish.

In that, the gravitational, extreme gravitational, field that the black hole exerts on itself and surrounding space under IC is a collaboration between the black hole and surrounding space. Some aspects of black holes' extreme gravitational force are attenuated because the clack hole itself has pulled itself out of the affairs by having a lot of interactions just with itself.

You could view the blackishness, the degree of blackness of a black hole, is a measure of the ratio of physical interactions just within the black hole, and those physical interactions going on between the black hole and the rest of the universe.

Since it is a ratio of a finite physical interactions inside of the black hole and a finite physical set of interactions outside of the black hole, that guarantees you'll never get the number needed to get to the infinity. That's why blackish rather than black hole.

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Ask A Genius 44 - Informational Cosmology 20

Scott Douglas Jacobsen and Rick Rosner

December 29, 2016

Scott: How heavy are the blackish holes – compared to the Sun? How many stellar masses? Also, why so dense and old? How does this correspond to the armature?

Rick: Black holes at the center of galaxies run anywhere from a million stellar masses, masses of the Sun, to probably tens of billions. It is a bunch. It is as if you took up to 10% of the mass of a galaxy existing just in the black hole in the center, though not usually 10%, probably 1% or less.

Still, it is a huge number equivalent to the number of stars in just one thing. Under Big Bang physics, you'd be able to argue, I guess, that this thing formed because you had a galaxy 12 billion years ago, and things formed as they crashed into each other.

They gave up all of their mutual kinetic energy without the orbital energy in the center of the galaxy. This happened a lot in the early life of the galaxy. In the early life of large sets of orbiting bodies, you have chaos that gets straightened out by mutual collisions and interactions until in an old solar system like we have, which is probably 5 billion years old.

You don't have crashes that often. You had crashes until things straightened out. They crashed until they formed the planets and the Sun, until things worked out. Same thing for a galaxy. Things coming together, clunking up, falling into the center.

You'd expect for there to be some totally big thing at the center of the galaxy for a lot of the early crashes on an early scale. I don't know if that's enough to explain the massive size of the black holes at the center of the galaxy.

Under IC, the massive black hole exists because the universe is older by many factors. If those central blackish holes in the center of galaxies had more than 12 billion years to aggregate – we also argue blackish holes are able to interact with the galaxies that contain them.

You'd expect under standard physics something different because the gravitational well is attenuated and is mediated by the exchange of information between the black hole and the stuff that surrounds it.

I suspect that galaxies have roles in processing information. Looking at your brain as it processes information, some your apps are always on when you're awake. These are always running. Those that help you move through and understand your surroundings.

Then there are other apps that only come on when needed. How to behave when you feel as if you are in danger. Well over 99% of the time, unless you've got some crazy life, you don't feel as if you're in danger. So, your danger apps are not usually on.

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Ask A Genius 45 - Informational Cosmology 21

Scott Douglas Jacobsen and Rick Rosner

December 30, 2016

Scott: With this 'app', with this set of persistent information processing ongoing in the structure or the material framework, how does this tie back into blackish holes and the principles of existence under informational cosmology?

Rick: Your hoping to get laid apps are probably triggered, especially if you're a young man – but they aren't always on. There is a zillion of them. Whenever you are awake, you are having words spontaneously form that are relevant to your moment-to-moment experience of the world.

I suspect most people have some sort of internal dialogue to help them contextualize their surroundings, things. If you're walking down the street, you see and hear stuff. What you see and hear are a part of your consciousness, walking along, you say, "Wow, those are some ugly shoes," or, "I hate that music blasting out of that asshole's car."

You don't say those things. But there is a general word sense on. Some people have more semi-impressions of words. Your word apps are mostly on. If you were looking at, or arguing that the, universe is a model of the information that is in an information processor with our consciousness being a model of such an information processor, you would argue, or I would argue at least that, some physical presences, which would include bunches of galaxies, are always going to be a part of the active center.

The equivalent of word apps or the moving through physical space apps. You're always going to need those when you're awake. Those will always be in the active center. You'll need mechanisms. Galaxies that use up their fuel will go out of the active center.

So, you'd think central black holes in galaxies might have some role of keeping galaxies lit. In that, you'd expect that a goa that is always part of the active center would have been lit for many tens of millions of years, which would mean the central black hole in IC sees a more expansive view.

Hawking, and other people in his area, has spent much of his career trying to figure out what can or can't happens to information around and inside of a black hole because there are principles of conservation of stuff. You shouldn't be able to get rid of all of your shit by dumping it down a black hole, or maybe you can.

No where in the universe can you erase information that you can by dumping it down a black hole, which seems to scramble it. But there are new theories that information is frozen as holograms in the event horizon. Hawking has spent decades trying to figure out and arguing with people about what happens to information going in and out of a black hole.

Under IC, with its looser rules, it is easier than standard physics to get in and out of a blackish hole. You'd expect black holes to have more flexibility in terms of what is going on in them with regards to information, from black hole to black hole across galaxies.

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Ask A Genius 46 - Informational Cosmology 22

Scott Douglas Jacobsen and Rick Rosner
December 31, 2016

Scott: In standard Big Bang cosmology, the issue is early universe galactic formation including the black holes, which become massive – 10% of their galaxy in mass relative to the stellar masses in all of the stars in their respective galaxy.

In IC, the issue is new ideas like ultra-deep cosmic time, proton-rich and neutron-rich galaxies, and the persistence of galaxies over ultra-deep cosmic time, and the persistence representative of information processing over similar time scales. There's a cycling of galaxies and in information processing. How do these galaxies stay lit?

Rick: One solution is that galaxy could stay lit if a black hole is constantly vomiting energy or information into the galaxy. If a galaxy is a big 'ol information processor and stars are little sub-processors, then maybe the central black hole is spitting out an information feed in the form of matter, which is agglomerated by or absorbed by the rest of the galaxy and processed via how stars shine, via fusion.

That turns out to be a hard argument to defend because if you end up with a central black hole spitting up information for a hundred million years. You'd have to also figure out. You've got a lit galaxy, but there aren't some galaxies a million times bigger than some galaxies. You might have a few, but not commo.

The ratio of the smallest galaxy to the biggest galaxy is probably not more than 2 orders of magnitude, say 100 times bigger than the smallest galaxy. If the central black holes are spitting out energy, there has to be a way for a whole unused chunk to not be part of the galaxy.

Maybe, it would fall into the black hole. It doesn't seem that unreasonable to me. You've got an information feed across tens of millions of years. Under IC, a thought, a complete wave of information processing, takes roughly as long as the apparent age of the universe.

The universe changes its mind on the scale of ten billion years or so, as a clock time. So, it doesn't seem unreasonable – unless you think the whole thing is ridiculous – that a vomity black hole will spit up stuff for tens of millions of years and old black junk will fall into the black hole at some roughly equivalent rate.

You could view, don't know if this is geometrically right, a galaxy as a kind of a rotating donut, say. This isn't right geometrically, but it is okay in terms of picturing something.

Imagine if you're grabbing and rolling the sides of a donut – the you unroll a sock or unroll a condom, so that as you rotate it out of the center (you're rotating the ring) and you've got ring stuff coming out of the donut and falling back into the center on the bottom.

You've got a shower of matter falling out of the black hole and burnt out matter falling into the other side.

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Ask A Genius 47 – War 1

Scott Douglas Jacobsen and Rick Rosner

January 3, 2017

Scott: War is a perennial human activity. How will war affect the future durability of nations? How will this change in the future in general?

Rick: When you mentioned that we'd be talking about the future of war, I realized that I don't know what I'm talking about when I'm talking about war, and most people don't know what they're talking about. When you talk about sex, sex is pretty specific in its meaning. Although, it has a lot of related activities and behaviours, but sex is pretty pin-downable. Even though, it is fairly central to the human landscape.

War is very nebulous and hard to think about clearly. If you go to Wikipedia and look at the list of wars by death tolls, you haven't heard of most of these wars. And if you ask most Americans what the longest American war has been, most will war WWII. Some will say the Vietnam War. Some will say the Iraq War. It is pretty much the Afghan War, which has been going on for 15 years. We still have troops over there.

Even though, peace has been declared at various times. When Americans think about war, the model they have in their heads is, or Canadians or anyone in North America: what is the longest war?

Scott: If just wars, then The Hundred Years War comes to mind, or more typical ones like the Gulf War or the Korean War.

Rick: When you ask people to describe or name a big war, typically, it is WWII. It is the war on the tip of most people's minds in America as being a big typical war. The kind we don't want, the kind we fear, and the kind that typifies war. It was America's last war. Vietnam, Korea, the Gulf, and Afghanistan and Iraq, none of these were declared by an act of Congress. I believe Congress has been asked to help the President declare war in some of these instances, but he pussed out. They were in support of the Iraq War, but that backfired on a bunch of people.

But WWII have aspects that make it clearly a war, war. An evil enemy, nations as enemies, nations fighting with each other, a clear beginning for us, at least, with Pearl Harbor, a clear end for us with the atomic bombs dropped on Japan. A Triumph for us. One we can feel good about; a triumph over evil. Then there are subsequent wars, we don't like thinking about them. Korea, most people don't know what was accomplished, if anything.

Vietnam, it seems like a loss. Iraq seems like a bummer. In that, most people feel, at least, vaguely that we shouldn't have gone in there. Or if they support the war, they support it for bullshitty reasons. The Afghan War seems like something we should've done to the extent that people think we should have done it, but most people don't even realize that it's still going on and may not realize that it is even a war. Even though, you can argue that it is the longest war in American history.

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It has only killed about 1,800 Americans in combat compared to WWII, which killed about 300,000 Americans. Vietnam killed 53,000 Americans in combat. So, our most recent wars like Iraq have killed only a few thousand. Our more recent wars have been more nebulous, haven't required the level of national sacrifice WWII did. When George Bush said, when went to war against the people that did 9/11, he told people to go shopping and support the American economy.

(Laugh)

Even though WWII is the one that we most like thinking about, and with WWI it isn't clear what we accomplished, WWII is our preferred war, but is atypical in its clarity. Most wars are messier. So, we have the wrong model for war when we look to WWII. So, we don't really know what we're thinking about when we're thinking about the future of war because we've been at war since 9/11, but most people don't feel as if we're at war, though they do feel that things are terrible in the world because of terrorist attacks.

They feel like things are in some ways worse than ever, or can be convinced into that, but when you look at the number of casualties due to terrorism to the number of casualties due to the big wars in the 21st century. We're doing pretty well. Terrorism functions to create terror and also a lack of clarity. I don't know how sophisticated terrorists are when they do acts of terror, but I don't know if they are aware how their actions affect people's thinking. But terrorism causes confusion and makes people misunderstand the world via horrors.

One guy, recently, was dressed in a Santa outfit and killing dozens of people. So, we need to pin down what war means a little bit before we can talk about the future of it. We can see some trends, which may or may not be actual trends. You haven't had a big world war since the last one ended more than 71 years ago. Unless, you count the Cold War, which was a different kind of world war. But we haven't had one with a bunch of battlefronts, combat, planes, bombs, hundreds of thousands and millions of troops and casualties.

But you look at the timeline, and I mentioned this before, of huge world conflicts, 71 years doesn't necessarily mean the end of big wars altogether because according to some ways of classifying wars, then big worldwide conflicts happen every 150 years. If you haven't had a war in 71 years, or if you haven't had an earthquake in 71 years, and earthquakes happen on average every 150 years, it doesn't mean earthquakes are over. But if you look at the 71 years since WWII, you can see trends, which like I said can or can not be trends.

Fewer casualties in wars. Unless, you count the genocidal wars in Africa. More mechanization and remote fighting of wars. Different means of fighting wars. For the first time in American history, the American president was elected, in part, because of an act of cyberwar by Russia.

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Ask A Genius 48 – War 2

Scott Douglas Jacobsen and Rick Rosner

January 4, 2017

Scott: That leads to thoughts about the drone campaign, ongoing, and cyberwarfare by Russia, as you noted. The future would seem to then presage more cyberwarfare and more drone, or at-a-distance, mechanized warfare.

Rick: Let's go back to the WWII model of warfare, which is nations fighting each other using everything they have, and what makes wars like that, and so, I don't know that much history, but one thing that makes for big national wars is nations thinking they can get away with conquest, or aggression.

To some extent, some nations feeling aggrieved. Certainly, that is what Germany was feeling, or at least Hitler was able to exploit the national feeling of Germany because Germany felt cheated by the Treaty of Versailles that ended WWI. That Germany felt put upon. That they were blamed for everything, made to pay for everything, had land taken away. So, they had a bunch of national grievances.

So, I assume that's a cause for big national war. I guess another cause for war would be the feeling among nations and national leaders that they can't get what they need or want via less belligerent means. And to go to the modern means of war, war has often been seen as a means of last resort, though not always. I don't think when the Greeks and Romans fought wars that they saw wars as a means of last resort.

They saw them as a norm, especially the Romans who were constantly on a war footing. They kept doing their business on a framework of war: 'we're going to come conquer you via fairly warlike methods, and then we're going to incorporate you under the empire.' Since they were constantly at war, I don't know if their wars were as brutal as other countries. War was their deal.

I think they made war more of a business than a bloodbath. But I don't know that much history. In more recent times, war has been seen as what happens when you exhaust other means. And as we come up with new ways to fight war, what war is changes, and a drone war tends not to kill the people flying the drones, I don't know that we've lost any American troops to drone warfare since we're the ones using drones to target missiles and people.

Although, you could say some Americans are the victims. The victims of the drone attacks get pissed off enough to commit terrorist attacks. Some Americans are victims of the terrorist attacks. But drone warfare takes war fighting away from troops in the field to some extent, and then cyberwarfare is a form of warfighting that is even more remote from what we think of as combat than drone fighting. To the extent where it blurs the line between war fighting and getting what you want via other means, the whole dividing line between war and not war becomes blurred, in some good ways and some terrible ways.

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The terrible ways are people don't even realize they are in a war. Russia pretty much committed an act of war against us in screwing up the election. Now, there are a lot of other reasons that contributed to a less competent politician becoming president, but you can argue fairly effectively that if Russia hadn't helped out that the election wouldn't have gone the way it did, and the US will be less effective politically, more divided. The US is just worse off with the outcome of the election.

Which makes Russia more powerful, I think for the fourth year in a row *Forbes* has named Putin the most powerful person in the world. He's going to be more free to do what he wants due to the outcome of the American election. That was war. He won this battle. But it doesn't feel like war. It feels gross and confusing and disheartening in a way that we don't want it. Obama just kicked 35 Russian diplomats out of the country, and that feels more of the right scale than, say, 'I had to launch missiles at Russia.'

It is confusing. I just saw a survey that more Trump voters by almost 4-to-1 approve of Putin than approve of Obama. 35% of Trump voters approve of Putin versus 9% approve of Obama. That is effective war fighting. Anyway, we don't have a clear view of what war is, the means of fighting war. There are more and more ways of handling international conflict. And when I say "international," I mean conflict among nations.

There are, since 9/11, more conflict that is not based in nations, but is based more in, you could call it, religious extremism. But it is al-Qaeda and ISIS, and whatever you consider them. Yea, they are Islamic extremists, but they are not just that. Because, really, they use Islam as an excuse, but they are really a bunch of assholes who want to kill and be pirates…

(Laugh)

They are not a lot different in certain ways than warlords in some ways. They want to set up little empires.

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Ask A Genius 49 – War 3

Scott Douglas Jacobsen and Rick Rosner

January 5, 2017

Scott: That's some background. What will be future wars?

Rick: Future wars will, obviously, be fought in a variety of ways including things that aren't clearly combat along the WWII model. But I think when people talk about the future of war, and will there be war, I don't think nuclear weapons can be left out of the discussion. The United States and Russia each have over 7,000 nukes.

I think in third place might be France with vastly fewer nukes, maybe around 300, then you've got Pakistan and India, which might have 150 each. I've seen the list. Israel maybe with 50 or 100. The deal with nukes, I think, is that when there's the possibility of something being used, and that possibility exists for a long enough time. Eventually, that possibility will come to pass.

If there's a 0.1% of an earthquake per year, there's a fair chance that an earthquake will happen with 1,000 years. There's a fair chance that a 1-in-a-1,000 per year thing will happen in 1000 years. And it's almost inevitable that something like that will happen, this 1-in-a-1,000-year earthquake will happen in 10,000 years. There's a non-zero risk of a nuclear weapon being used per year. Eventually, you will see a nuclear weapon used.

You could argue, or I tend to believe that it is probable, that the use of nuclear weapons will not be what people have feared since WWII, which is a massive use of nuclear weapons between the US and Russia, the US and China, or China and Russia. Any of those. Instead, it is more likely that you'll have a smaller country with a smaller nuclear stockpile being controlled by a psycho a-hole not being controlled by his political system, like Kim Jong-un.

He's more likely, I think, to launch a nuke than Russia to launch a nuclear attack. Although, the US and Russia have more to lose via a nuclear exchange, and have more controls in place. It is more likely that you've got a smaller crazier nation, or you have non-state actors getting a hold of nuclear material and setting off, probably not a functioning nuclear bomb but, a dirty bomb, but one that doesn't successfully undergo fission.

Instead, it has a packet of radioactive material that gets distributed across a few hundred yards via a conventional explosive, which would scare the world almost as much as a nuke because most people don't understand the difference between nuclear material distributed and scattered via conventional explosives and nuclear explosives.

Scott: It would set a precedent, too. It would provide the possibility in the minds of bad people.

Rick: Sure, but I think that would mean somebody managing to do that. What has captured the imagination of terrorists since 9/11 has been easy things that kill a lot of people, grabbing a plane and flying it into a building turns out to kill a lot of people without a lot of having to build

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weapons. More recently, hijacking a truck and driving it through a crowd kills a lot of people without having to build any weapons.

It scares people because planes and trucks are everywhere. So, if some group or person were to set off a dirty bomb, that would capture the imagination in a new horrible way, but it is not likely to happen a lot. At least, until, the first time it happens, but it is more likely than a full scale nuclear exchange among super powers.

Scott: What about narrow artificial intelligence designed to combat systems specific to nations, integral to their infrastructure? I do not a mean science fiction movie or a takedown from AI becoming conscious and destroying everything human. I mean the notion of someone design an artificial intelligence geared towards taking down specific systems within nation.

Rick: Some kind of analytic system that takes a look at the distribution of ISIS forces across Syria and Iraq, and trying to determine the optimal distribution of resources. Some kind of AI-based analytics for some specific military intelligence.

Scott: That would be half. The other half would then be the computer program can infiltrate the computer system and take it down. You can have some nuclear reactor, and it takes down its computer system.

Rick: We know that Iraq's centrifuges were attacked by a computer worm or something. We took over their centrifuges and made them spin so fast they wrecked themselves. That aggression will continue. Yesterday, in the news, or the day before, it came out that there was evidence of Russia attacking or hacking into Vermont's power grid. Anyway, it was into part of the US energy infrastructure.

All three major – the US, Russia, and China – countries have many people working. It is their normal jobs. I'm sure. It is their normal jobs to be hacking into other countries' internet and computer systems. We are hacking each other all of the time now. You could say right now there is ongoing cyberwar. Although, mostly, there's ongoing hacking going on. There's the actual aggressive acts using the hacks, which are still only occasional, I guess.

You have, along with the constant hacking by state actors, state actors working in concert with private entrepreneurial hackers. In Russia, I'm sure the government hackers sometimes team up with freelance hackers to go after our stuff. I don't know if the NSA ever uses freelancers. I assume that in the US there's a more official division than the NSA and the CIA, and whatever other agencies do our hacking, probably like to think of themselves as competent to do it without having to bring in freelancers.

And would feel it would be kinda criminal to bring in freelancers, whereas Russia probably has less qualms about that, but there's constant hacking among bigger countries and India's in on it too. There's freelance hacking going on every place. Stuff that isn't hacking, but isn't exactly kosher.

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This isn't war, but it is bullshit. In that, I can go online and find somebody in Bangladesh who can sell me 1,100 fake Twitter followers for ten bucks. In fact, I do this a lot. I go online. I find a vendor. Usually in a third world but technically able country, a lot of people do this in India, Sri Lanka. I try not to business so much in Pakistan because people doing this from Pakistan…I don't want to be supporting who knows what.

It's a big creepy world of people doing bullshit online in addition to a big world of people doing legitimate business online, the world of cyberwarfare is in itself hard to think about with the clarity that we think about WWII. There's too many moving parts to it. Most Americans don't know how to frame the Trump victory.

There are so many moving parts to it that it is completely confusing. It is similar to Brexit, where I'm sure if you're in Britain or just looking at Britain – how that happened. The Trump victory and Brexit are both things that the fair majority of each nation don't want. Yet, they still won electoral victories. It's confusing to people. Both things consist of many forces whose affect on the process are hard to judge.

When you want to talk about the current state of war or the future state of war, those things are subject to similar confusion because there are so many moving parts, and the size and the power of each of the moving parts are hard to judge or to fit into a picture that can easily fit into your imagination.

So, we have countries and individuals who are constantly committing aggressive acts against other countries and individuals or preparing to do so. We have no idea the extent to which this is going on, and no idea the ways in which this is going on.

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Ask A Genius 50 – The American Election 1

Scott Douglas Jacobsen and Rick Rosner

January 6, 2017

Scott: What was this election? We have talked about this being science fiction election. How is it a science fiction election?

Rick: The presidential election in 2016 can be seen as the first science fiction election. In some obvious ways, in the late 60s, a writer named John Brunner wrote the books *The Sheep Look Up* and *Stand on Zanzibar* in which the president is a figurehead, an advertising icon, called Prexy.

You can see that with Reagan. A movie star becoming president. Not the brightest guy, but the guys around him running the show. Then with Trump being a reality star, among the other reasons that Trump wouldn't be president without is *The Apprentice*. His 10 or 11 years on *The Apprentice* and being on TV, being America's boss.

So, in a superficial way, we have that, and then you have *Idiocracy*. The president being a goofy figurehead. That doesn't fit Trump exactly, or Reagan, in that they made decisions, have opinions, act on those opinions, and are not simply puppets. Although, they are more media focused than previous presidents.

They are more created by the media than previous presidents. I think there's a deeper sense in which this was seen as the science fiction election because it showed trends in our relationships with AI and computation that will become more and more apparent and more and more important in the future. To set it up, I have to set up like 3 or 4 periods of human existence.

Let's call Period Zero humans trying to survive like other animals on the savanna and other areas, where they tried to survive as small packs or tribes without much language, technology, or tools - scrambling to survive in the natural world and having no special sense of themselves.

But Period One is humans separate, beginning around 10,000 years ago when humans start to have language, toolmaking ability, and civilizations, and start to see themselves as special and different from the rest of the world. Until you have language, you can't see yourself as much of anything except the way animals see themselves as individual operators, but not subject to even that much introspection because you're trying to survive all of the time.

Period One as humans as separate and their own story, and narrative. It goes on for thousands of years. Humans interacting with the gods, and not wanting to anger the gods. They have their stories about the world, which, at least according to some religions, is made for us, specifically.

Period Two is human dominion, where we get the idea over the last thousand, and especially the last few hundred, years that we can do anything, solve anything, given technology and science and the world is ours to figure out, and that we're not functioning at the whim of gods, which is the science point of view.

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I would say that is the majority opinion right now. Yea, you can do a survey and find most Americans believe in angels, but most believe if you want to get something done it takes human action and planning, and technology, instead of prayer and gods.

I think there's a further period that we're entering into, which is the rise of computation external to human thought. A rising tide of computation, of information processing, in which we're beginning to be immersed. There's that old saying that no man is an island, which is similar to that Hillary saying, "It takes a village." No one exists in isolation.

Or when Obama said, "You didn't build that." Which was purposefully interpreted by Republicans as Obama denying individual entrepreneurial spirit in some collectivist way, that is Obama saying, 'Yea, you built your business, but you could not have done it without some things external to your business. With the rest of America, your business could not have been built.' But, computationally, we have all been, largely, islands for all of human history.

Where almost all of the computation we do, all of our understanding and perceiving the world, takes place within our brains, the means that we have of sharing information are much more narrow-banded than the information streams within our individual heads, but that is changing. The 2016 election was different from every other presidential election in human history for reasons we are still trying to figure out.

One reason is you had two non-incumbents. Both of them flawed and not real popular compared to the 2012 election, which was Obama Election Part 2. Obama Election Part 2 had a lot to do with Obama Election Part 1. For the first time in 8 years, you have 2 non-incumbents.

For the first time in more than 30 years, you had 2 super unpopular non-incumbents. So, those things alone would make 2016 different, but in science fiction ways. 2016 is different because you have social media influencing people's voting behavior more than ever before with the step up being huge, where 2012 was still about a charismatic known candidate versus a non-charismatic and bland candidate.

Those issues overshadowed technological issues in the election, though technology played a big part. Mitt Romney's speech about the 40% of takers, which cost him. It was caught on somebody's cell phone, but that's somebody happening to have a video camera in place when Mitt Romney said something unfortunate said between him and a bunch of his donors.

But in 2016, not only do you have the election influenced by the steady stream of ugly information about the Democrats obtained by hacking, you have people's opinions and voting behavior being influenced by their relationship with social media, which is this giant external wad of computation and interaction.

With certain upshots, certain consequences, one thing is everybody feels super actualized and more important than they would feel otherwise. Hillary's slogan was "stronger together." But what you have with voters, thanks to their personal relationships with social media, feels more important than people felt 10, 20, or 30 years ago because everybody has a personal voice in social media, a personal megaphone.

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You can talk to anybody on social media. You can comment on any story. You can get a personalized feed on the social media you participate in: Facebook, Instagram, Twitter, which leads to a feeling of entitlement.

It is consistent with Trump's reality show entitlement. Trump is this guy of no special ability. He is not a trained actor. He is not a beautiful actor. But through reality television, he has been able to convey his…being for more than a decade. He's a skilled exploiter of media including social media.

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Ask A Genius 51 – The American Election 2

Scott Douglas Jacobsen and Rick Rosner

January 7, 2017

Scott: This recent election with President-elect Trump was different than previous ones.

Rick: Looking back at WWII, WWII was America coming together to fight. The generation that fought WWII made sacrifices. Everybody made sacrifices. The people at war and the people at home. Gathering newspapers and scrap metal and willingly putting up with food rationing, gas rationing, people who wouldn't normally go to work in factories going to work in factories. Americans fought WWII together. Americans did not fight 9/11 together.

Bush made it explicit. He said we tried to take action against the entities that committed 9/11 and told people to go shopping. There has been no draft for more than 30 years. Very small percentage of the population is involved with the military compared with past eras, and so most Americans were separate from the fight against people who attacked us on 9/11. We have a more individualistic way of being that is facilitated via social media and reality television shows. We always have had an individualistic streak.

Many guys in the 80s, including myself, walked around thinking of themselves a little bit as Rambo. Guys had it in the back of their mind that they could really take care of themselves in a fist fight or if we encountered a mugger or if we got involved in a road rage incident. We thought we could step out of the car and knock somebody's block off.

Scott: So, America had a unified vision of their direction and their group, Americans themselves. So, they had an idea of themselves as a society, and the direction and place they wanted the society to end up.

Rick: WWII was a definitely clear war with a definitely clear enemy or series of enemies. The Germans had evil intent and the Japanese were pretty terrible too. We thought of ourselves as the injured party being compelled to enter into war because of aggression committed against us. So, we were unified in fighting a big evil threat, but then you had a lot of stuff like unified Americanism.

You had patriotism. You had the boy scouts. You had religion. You had high school. American high school was more or less a 20th century invention to give everybody an education in the general American society and principles of democracy to give everybody equal opportunity, whether it worked out that way or not. It was a comprehensive high school, meaning it encompassed everything.

Scott: Comprehensive high schools were to give Americans complete educations in the American way of life.

Rick: An American education, comprehensive high schools were, are, abridged versions of adult American life. They were little societies. My first high school had 2,000 students. My second-high school had 3,000 students. The first high school worked better. It was more of a society.

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Everybody felt as though they could be a part of something, fitting in some place. The 3,000 student high school in Albuquerque - Highland High, Beavis and Butthead's high school by the way, was dominated by like 50 super cool students who not only dominated sports and student council, but also overpopulated the AP classes.

So, you had a group of super cool kids and a bunch of kids putting in their time like "fuck this." There was less civic involvement in the affairs of high school, but in the stereotypic high school, like *Grease*, or every high school movie ever. You are looking at an abridged version of society, of adult society, that is more vicious because people are just learning to behave in society and haven't learned how to be over being assholes yet.

But in real life versus movies, I'd say that people are probably nicer in high school than post-high school because most people in high school are still living in family units where they have things taken care of for them, which means there's less at stake and means people are slightly kinder.

I've been to a zillion high schools and feel that people are mostly nice in high school, or at least nicer in high school movies. Anyway, the things that drew us together in the 20th century as Americans. A lot or most of those things have eroded. The idea that being a boy scout or a girl scout. I don't know the percentage, but it's got to be pretty low compared to 80 years ago.

Fewer people are participating in the military. You used to have everybody getting called up or at least had to be examined to see whether every male could be a suitable soldier. He, the generic guy, had to be drafted in the 70s, where every male was at risk of being forced to join the military.

Patriotism has eroded into various ones like conservative and liberal, which are very different flavors right now. Family life has been subject to, or at least aspirational family life with 2.3 kids with a dog and a house in addition to a mom and dad who are married, erosion. That has eroded. Monolithic culture has to some extent eroded. We went from 3 TV channels to an explosion of individualised entertainment. So, we're more individualistic.

So, collectivist slogans do not persuade us as much as they used to. The idea, which is probably more Republican right now, that people aren't good at stuff should, maybe, be left to fend for themselves and live lives that aren't as good if it is costing achievers. We can't support everybody in the style to which everybody would want to be supported.

So, social media makes everybody feel special, or feel entitled. Drivers feel entitled. Not everybody, but a significant chunk of drivers feels entitled to drive dangerously while they absorb and interact with their social media, whether it is talking on a cell phone or more likely talking or playing games on a cell phone, or tablet, or whatever.

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Ask A Genius 52 – The American Election 3

Scott Douglas Jacobsen and Rick Rosner

January 8, 2017

Scott: Social media is very custom as well, and this played a role.

Rick: Social media wouldn't be as delicious as it is if it weren't super targeted and individualized, which is made possible through massive computation, massive information processing. Social media rests on a foundation of masses of servers, hugely complicated apps someplace, feeding us what we want all of the time. So that we're not just computing in our head. We're interacting more and more, and exporting more and more of our personalities. We are still at a fairly non-immersive stage. VR is just starting to become a thing.

Scott: You have mentioned Zuckerberg making Facebook 'telepathic.'

Rick: He said a couple of years ago that we'll be telepathic, which means the best social media will get better and better at transmitting versions of what we're thinking. Right now, we're mostly communicating via words, but more and more via words that we've either selected or either personally collected or captured via a phone camera or phone video.

And what we're able to transmit among ourselves will become more and more, will contain more and more information, reflective of our mental landscapes, we'll more and more export the content of our thoughts. We'll become less and less islands and more connected with each other. While this is going on, there will be a rising tide of sophisticated and to some extent self-directed information processors that aren't human, and we will eventually become enveloped in the worldwide thought sphere. I think some people call it the noosphere, which means thought sphere.

Where there's going to be a lot, a lot, of information processing going on and less and less of it going on in our meat brains, though, we will continue to participate more and more fully in this thought sphere. That will usher in the third big human, or if you want to call it post-human, because some people do, period, where humans don't have dominion, but we share dominion with other information processors.

We become part of this worldwide information processing enterprise, which has both individualistic and group aspects. We'll probably see all flavors of individual information processing and group information processing as we build more and more technology to make our thoughts accessible to each other and to build other things that have their own thoughts.

We can talk about some of the flavors - like some people will become the steroid abusers of thought. Where people, some people, will try to make themselves the most powerful information processors on the planet as individuals by augmenting their brains, other people will try to do this by using technology that allows people to bridge thoughts plus added thinking power - as groups. Some people will not be interested in building 19" mental biceps that way. More people will simply be more and more linked computationally to other people.

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I haven't seen statistics, but it looks like one of those hockey-stick graphs. The amount of information that we share with each other per minute has to be like a 100,000 times more now than it was in the 1930s. A lot of that information seems like garbage. Russian videos of crazy Russian drivers, but still information. It is not like the information in the 1930s weren't garbage, like Tiahuana Bibles were pornographic versions of popular comic strips, can't get more garbage than that.

It just turns out that in the election 2016 that one of the aspects of this rise of personal information was that it kind of turns us more into pricks than perhaps we've been in the past, more individualistic, more entitled, more likely to say "F- you, everybody else."

Also, more manipulable via personalized information, which is another thing. Once we get more and more immersed into the worldwide thought sphere, our ability to understand what's going on will get worse and worse. Well, we'll get better at not being manipulated by certain things.

When I was a kid in 5th and 6th grade, we were taught as a lesson in civics how not to be manipulated by TV ads. You are taught the various pitches that TV makes. There were a bunch. We were taught to see through them, whether we did or not. At least, somebody was trying to teach us that. At this point, we are probably pretty resistant to manipulation. But some forms of TV ads are pretty effective. Everybody has their bubble.

The 2 or 3 places I go to see the news every day are HuffPo, Slate, and Salon, which are all pretty liberal websites. Only occasionally do I go to Drudge to see what conservatives are thinking, but I can't stay there too long because it pisses me off. I am in my own information bubble, at least I know it. There are a lot of people who are thinking they are getting the truth and who are at least as bubble-bound as I. I think that eventually we will learn to see through a lot of the content that comes to us over the internet.

But there will be other means of streaming information into ourselves that we'll always have something that messes with or will be beyond our ability to be manipulated by, as we move into the future - even as we learn how to not be manipulated by slightly older forms of information.

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Ask A Genius 53 – Social Media, Political Views, Hollywood, and Raptures

Scott Douglas Jacobsen and Rick Rosner

January 9, 2017

Scott: With social media and people having narrow political views, people can have more information than ever, which can help if people are active in finding the information of the day. However, as with most people, the problem is the passive intake of information, which leads people into silos, as you noted with HuffPo, Salon, and so on.

Rick: Are silos the same things as bubbles? Scott: Roughly the same metaphor, you're in a smaller worldview, or a narrowed perspective. Rick: Most people don't search diverse or opposing viewpoints. I only occasionally read Drudge, but not too much. It annoys me. I never go to The Blaze or The Daily Caller. I'm not sure if it is if I can't handle the viewpoints or the dumbness. There's this young woman named Tomi Lahren.

She was going crazy about Meryl Streep - either pro or con. Her most annoying tweet was that Hollywood wouldn't know hardworking Americans if it bit us on the ass. It's dumb because she's 24, and for all I know she has worked on TV and some congressional Republican campaign; whereas, I didn't get to join the Writers Guild until I was 35 and had a lot of menial jobs. I cleaned a lot, a lot, of toilets.

When I get to work on TV shows, the work was no less hard, and maybe harder - working for a daily TV show was pretty much an all-the-time thing. You were either working on the day's bits or jokes or getting ready for the next day's stuff. It was at least 10 hours and more than that. It is a lot of work to do a good job. She is saying Hollywood elites don't know what hard work is, which is dumb, hypocritical, and bullshit.

Scott: Does Hollywood lean Left?

Rick: Yea! Truth has a liberal bias, which may not be the case for some eras and some places. But, in America, right now and for the past couple of decades, increasingly, conservatives traffic in bullshit more than liberals do. Conservatives engage in more fake news.

Scott: If you take the Left and the Right of Hollywood, does Hollywood have less influence than it thinks it has with regards to the people it has in it - actors, comedians, writers?

Rick: Hollywood has less influence than it would like to have. It probably has less influence than it thinks it has. Celebrities have less influence than they like to think they have. When you look at some celebrities who are competent and well-informed, like Meryl Streep, if you look her up, and Trump calls her overrated, on Wikipedia, she's been nominated for 409 awards and won 157 of them including Oscars, Golden Globes, and Emmys.

Scott: She's batting at Babe Ruth.

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Rick: Yea, she's not a dumb person. She's well-informed. She's made her career out of figuring out how the characters she plays feel, which is not the worst way to understand people. A lot of people come to Hollywood to make it, but there's a bias to not being stupid to people who do make it. A lot of celebrities are smart, and make effort to be extra well-informed about things they do support, like when Clooney testifies before congress.

When they testify, they are testifying from an informed point of view. When people say they're full of shit or dumbass celebrities spouting off, that is frustrating for those of us who believe most celebrities are well-informed and not stupid about the things they're talking about. As with any large group of people, there are some celebrities who speak out who are idiots, at least about the things they speak out against like the anti-vaccination people.

Where if you look at the science of it, they are almost entirely a good thing and objections tend to be based on dumbness and misinformation. Let's take an example like a Clooney, a Clooney will not hesitate to go on the internet and figure out if the things he is talking about are true or not. They inform themselves. Then if they feel they need more information, they will reach out to people with more information within the field.

DiCaprio has probably spoken to a bunch of scientists about climate change. He is a bit of hypocrite by flying on private jets because they do pollute a lot. At the very least, he knows what he's talking about. He is an interesting spokesperson to have for a cause because people like listening to him. He will get more attention than the run-of-the-mill climate scientist.

As opposed to people on the conservative side, like the senator who held up a snowball in 2016 and said that disproves climate change, where often on the conservative side, you find people who search out information and scientists only with an eye to find loopholes in commonly held scientific truths.

Scott: Also, sociological analysis, some sociological analysis of people known to be good observers like comedians, e.g. Paul Mooney or Eddie Griffin on the presentation of race in Hollywood movies.

Rick: Yea.

Scott: Which is sometimes outside of the political or scientific analysis.

Rick: Entertainment, most good entertainment, is based on presenting a nuanced view of the world, which is based on observing things and viewing the world as it is. There are various ways the world as it is does not get to the final product, but somebody who can intelligently observe and analyze the world is more likely to have success in writing and producing entertainment than somebody who is oblivious or is chained to a semi-false agenda.

Unless, they are selling to a captive doctrinally-anchored market, like you're selling the Left Behind books. I read a couple of those things to see what was going on with them. I mean, they're okay, but they're not great. They are big, thick novels. It takes like 10 of them to get through the entire Book of Revelation. I didn't read all of them. It's like 4,000 pages.

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Scott: That's probably bigger than Game of Thrones.

Rick: Possibly. There are characters in them. One is an airline pilot, and misses the Rapture bus. He goes through all sorts of tribulations. We know how tall he is, what he likes and doesn't like. You wouldn't read these books for the wonderfulness of the portrayal of the individual humans, as opposed to another book that deals with another type of Rapture, which is The Leftovers by Tom Perrotta.

He's written a bunch of good well-observed books. I'm not sure if The Leftovers is his strongest book. His strongest book might be Election or Little Children (which was turned into a movie with Kate Winslett). That's a brutal, sharply-observed book. Election does too. It puts characters through their paces. The Leftovers is a better work of observed humanity than Left Behind, which just needs humans in place to move through the tribulations of The Book of Revelations.

As one general rule, if you like being entertained or moved by your stuff, you want something that is more like Tom Perratta than a Left Behind book.

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Ask A Genius 54 – Trump, the Golden Rule, and the Last 16 Years

Scott Douglas Jacobsen and Rick Rosner
January 10, 2017

Scott: Back to the bigger picture, to zoom out, the Hollywood perspective is that there is the presentation of more power and influence than there is; whereas, in DC, it is the opposite.

Rick: Let's drop in the apposite quote, though not entirely appropriate, but needs to be said when comparing DC and Hollywood, 'DC is show business for ugly people.'

(Laugh)

Right now, when Trump tweeted Meryl Streep was overrated, you had a competition between an actor, Streep, who is relatively universally regarded as super competent and a decent person versus a guy who often acts as a bully and may, or may not, be competent because his financial and business behaviour are so sketchy that it is so hard to tell.

People who are not in favour of Trump like to say that if Trump took the investments from his dad and made reasonable investments, then he would be as or more successful than he is with his real estate shenanigans.

Scott: With Trump, moral or immoral, ethical or unethical, he is good at getting what he wants.

Rick: Yea, we're about to find out if this loose-cannony, triumphy, bullshittyness will be successful in a president. We've never had this kind of huckster. This kind of PT Barnum character as president. It makes everybody nervous because it is tied to the Republican agenda for the most part, which isn't a kind agenda.

It is an agenda that says that if everybody takes care of themselves then everything will be fine, and if not fine for you then maybe that is just too bad because we can't save everybody. It is not an everybody pulling together agenda.

Scott: From the Utilitarians to the Social Contract Theorists, or the modern ethical theorists, that hyper-individualist perspective goes against them.

Rick: It goes against the general principle and trend of the Golden Rule. The general direction of civilization, which is to be more inclusive. The Republicans base a lot of stuff on excluding, modern Republicans. The icky republicanism seen now is based on looking at the world and the social acceptance that has been growing for non-majority types and lifestyles, and having backlash against it.

Scott: To be fair, as a lot of the perspective you're speaking to is Left…

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Rick: …yea…

Scott: For some classical liberals, traditional conservatives, and modern libertarians, they are appalled with some of the things he has said and represents.

Rick: Yea, he might screw over the Republicans as much as the Democrats because he hasn't been historically tied to one party. He is tied to doing what he wants, saying what he wants. Any political stances that he has are either his private opinion or designed to get him what he wants. It is a big experiment that is about to happen, whether a huckster businessman can direct the nation productively.

Scott: One thing is societies function on policies and leaders. Another thing is societies function without the top-down policies and leaders. So, things will be more difficult for some people, but things will still run. It won't be utopia, except maybe the super-rich, but it is not necessarily the end of the world as some insinuate or outright claim.

Rick: Democracy is durable. Over the past few years, you've had Bush as president for half of the time, who is considered by liberals to be one of the worst presidents ever. Then you have Obama considered by many conservatives to be one of the worst presidents ever, but there's a lot of bullshit to that argument. If you look at the best presidents ever, Obama is probably ranked in the 70th percentile, where Bush is in the bottom quartile, but not among the worst.

He wouldn't necessarily make it among the 5 worst presidents in history. He might make it somewhere between the 6th and 12th worst presidents. In any case, you have two presidents considered by two differing wide swathes of the country to be super bad, and America has survived that with its economy intact in terms of at least the stock and in terms first-level employment statistics.

Although, people like to argue, especially those that hate Obama, that the current unemployment rate is 4.7, which is good, but some like to argue it doesn't reflect 90 million people who have given up on finding jobs, which I'm sure has a large bullshit component to it. Anyway, we've survived 16 years of political strife and the country is functioning well.

We're about to see whether we can survive at least another 4 years assuming Trump serves out his term of unqualified leadership at the presidential level and Republican control at all levels including the legislative and executive, and soon to be the judicial, but with a population that is more against the soon-to-be government than perhaps ever before.

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Ask A Genius 55 – US, China, India, and Talent 1

Scott Douglas Jacobsen and Rick Rosner

January 11, 2017

Scott: 'Hot button' issues still in the United States. Acceptance of basic ideas in various fields. In climatology, global warming; in biology, evolution, for examples.

Rick: There's big science, then there's everyday science. Big science includes everything everybody thinks of when they think of science, which includes the nature of the universe, climate change, evolution, but most people in science don't work in big science, necessarily. Most people push science forward in smaller ways and work on smaller projects.

Scott: America is the most powerful country, ever. So, whatever it does in science affects not only its internal population, but the external ones, the stances on climate change, because the policies influence many coastal peoples in the world, and evolution, because it influences medicine, are important.

Rick: If we have policies that turn us into a bunch of yahoos, then we fall out of the top leadership position within 50 years because there are other countries that have the resources to take over from us as the leading countries in science and technology. We're a big country relative to the world population. We have 325 million people out of 7.4 billion people. We have slightly less than $1/20^{th}$ of the world's population.

You have two countries that each consist of about $1/6^{th}$ of the world's population. China with 1.3 billion people and India with 1.2 billion people. Together, they are a little more than $1/3^{rd}$ of the world's population. They are both pro-technology countries. China in its recent past has been hampered by bad communistic policies, and perhaps even from the 1940s, 1950s onward China wrestled with bad communist leadership – killed a lot of its people, repressed a lot of its people, sent educated people to the countryside to work on the farms. That screwed China for many decades.

India has been a poor ass country. It remains poor, but at the same time with 1.2 billion people. There are enough people who aren't poor and who are probably educated that they probably have at least as many people who are tech savvy as our population, even while they are struggling with being poor. China is getting better at scaling back on the communist government interference in technology, and getting better at the government facilitating the development of technology.

I think it's fairly obvious that they think they can achieve whatever position they want to achieve in the world, which is, I assume, to run the world as much as they can via technological superiority. If we're not going to be technologically superior in America, to use a stupid cliché, 'eat our lunch' – probably not in the next 10 years, but maybe in the next 50 years.

Scott: Three things come to mind there. Two are ethnic and linguistic issues. Another is a statement by Lee Kuan Yew, the deceased ex-prime minister of Singapore – for 30 years. On the ethnic and linguistic issues, India has a bigger issue because it has caste, a

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tremendous number of ethnicities, and a tremendous number of languages, which makes integration more difficult and processes in the country slower – which by implication can make progress slow. China, it has mostly one language with different dialects, mostly one people, at least by a large margin – the Han, and those simple pervasive factors can make it more able to develop at a faster rate.

Rick: Before you get to the third one, that's what makes China scarier than India because China has one-time zone across one country! Which is insane with a country that's 4,000 or 5,000 miles wide, they have more unification than India, but they're both scary. In that, India may be chopped up into these little pieces by bad infrastructure, by caste, by lack of common language, but still they've got 1.2 billion people to deploy.

1.2 billion people who want the things that people want, which means they can have inefficiencies and still do very well in competition with us because they have 900 million more people than we do. They can still waste a lot of those people via those people being trapped in the wrong places, in the wrong castes. They can still do well. China, with its monolithic culture, and focus on being a technologically superior country, and having more than a billion people than we do, if we want to maintain our position, we're in trouble.

Maintaining our position involves America being the greatest place to do technology, move to America and have freedom, it's fun in America. If you're a nerdy guy, you might become reasonably affluent, meet awesome women, live in an awesome place and have awesome stuff, and not have to worry about having to say the right thing, and without having to kiss the right party member's butt.

As long as the world sees America as a place where you can become Leonardo DiCaprio in *The Wolf of Wall Street* via doing tech, then we'll be kind of okay, but China seems to make it fun to do tech over there, where if you're the head of a tech thing over there then you can live a rich person's life. All of the things people associate with an awesome life in America.

I'm sure there might be some protocols, but a lot of those things are probably left out. And if you live in a big industrial city, and if you're a big tech mogul, you probably get to eat great food, have great romantic partners, and cars, and places to live.

If we're going to be a country of yahoos, where you've got a bunch of racist dumbshits running around and making things tough for brown people, if you're some super smart kid from India, do you want to live in China and live awesomely or do you want to live in India and live awesomely?

If America is going to be a country of dumbshits and yahoos, where somebody is going to be roughing you up on the street because they don't like your color, and if we have a country that starts denying tech visas to people because we want to reserve smart person jobs for America's smart people who may or may not want them…

Scott: …You mean the H1Bs.

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Rick: Yea, if we start messing with that program, then America becomes less and less promising as the country where you go to achieve your dreams. China doesn't have to do that much. The worse we become then the less China needs to do to become the country where you achieve your dreams.

For a while, I was watching a bunch of Bollywood movies. Yea, a lot of people are poor as crap in Indian cities, but there are many places in India for people to live awesomely. Yea, there might be people living poorly two blocks away, but there are places for people to live awesomely in India.

The less awesome America is, then the easier it will be for other countries to hang onto or grab people who do want to live awesomely, and a racist or yahoo government will lose us talented people.

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Ask A Genius 56 – US, China, India, and Talent 2

Scott Douglas Jacobsen and Rick Rosner

January 12, 2017

Scott: That leads to the third point, where Lee Kuan Yew had good relations with the United States and China. He had to balance between the two with a small city-state. He was the prime minister of Singapore for 30 or so years. He is the father of the current primate minister, Lee Hsien Loong, who became prime minister after one term of Goh Chok Tong (who became prime minister after Lee Kuan Yew).

He noted China was seen as, or many of the population (the leaders) saw China as, the middle path or middle road, where everything had to go through it, e.g. trade, but it can't be that anymore. It won't be that in the future because it is a multipolar world, where there will be many power countries as major poles of varying strengths. Lee Kuan Yew (and I assume Prime Minister Lee Hsien Loong) knew (and know) this. Three we've been talking about will be on that list: United States, China, and India.

No country can claim absolute dominance. They are not going to own 50% of the world's wealth as the United States did after WWII. Everyone will be attenuated proportionate to everyone else. There will be the rise of some older ideological empires. Some more secular than others. Others more religious. With more technology and more science, as a rule of thumb, it will liberalize and democratize much of the world.

Rick: Forces of nationalism will be challenged by other forces. Now, historically, you have religious forces challenging national forces in places where they don't align. Some places reinforce them; some places don't. Recently, we have forces of corporatism or don't, and aligning, or not aligning, with national forces or interests. In the future, you will have nationalistic and religious forces losing power relative to corporatistic and informational forces.

Economic and informational forces in other words. We've talked about this before, where it doesn't matter if your country is number one in the world or not. I like the feeling I get from living in LA, which is one of the world's major cities and having been involved in one of the city's major industries, the entertainment industry, when the US was one of the most powerful countries. It is the place you go to have your dreams come true.

If you look at your average person in Finland, they might healthier and happier on a day-to-day basis, but they don't have the awesomeness of living in the US. They might be a boutique country, but they don't have the awesomeness of living in the US.

Scott: What about the durability of the nation-state? Historically, it is a newer concept. Will the city-state be more viable in the future?

Rick: World-ruling countries have a run of a few centuries, historically. Rome had 5 centuries, though Rome was pretty dysfunctional because it had a model of conquest and trade. I don't know too much about them, but Rome was kind of a mess. It led to higher standards of living for millions of people, but it still brought weird ways of living as it colonized the known world.

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It had its 5 centuries. Greece had its couple 3 centuries. Spain had a few centuries. The US has had, since 1776, 240 years, but America hasn't pushed to the forefront of nations until the 20th century, but you could push it back and give the United States the 19th century too – because of democracy, even though we weren't the most dominant 19th century country.

Can we expect any country to be the world's leading nation for another 2 centuries, say? I think that's unreasonable because I think the idea of leading nationhood will be beat up by the forces of technological change, where many of those forces work against nationhood and align people from all different parts of the world in entities that aren't nationally based. Cory Doctorow considers them as tribes, but they may be tribes of tens of millions of people.

One tribe might be the technologically adept. Another might be the technologically augmented. In the future, the people who have the wherewithal or the internal orientation towards economic mobility to get themselves augmented with AI that works closely with one's own brain. Those people will form a tribe of tens and then perhaps hundreds of millions of people who live life at a different speed and in a different way than people who are less able to rev themselves up with additional information processing capacity. That tribe of 100, 200, 300, half of a billion people may be something that runs the world for a while and only pays a half assed lip service to nationhood.

On the other hand, the nation that makes itself the most attractive home for this tribe of souped up people. That nation may buy itself another 50-100 years of nationhood. But eventually, nationhood will become less of a force, like sex, than it has been because there are a lot of other stuff going on in civilization than sex. It is a slow change. Right now, it is barely statistically noticeable, but people have a lot more other awesome stuff to be engaged in.

Similarly, in the future, people will be less likely to be nationalistic because there will be a lot more awesome stuff that functions apart from nations because America gives people a lot of things that are awesome, but we also get stuff that is awesome that don't come strictly from America.

The information feeds that come to us do not come solely from America. You can probably get the same quality of material fed to you from Canada, and England, and to some lesser extent in China. You need to do more dancing around stuff that might be censored in your country there. But your information feeds are not provided to you by national entities. So, national feeling, and power, will be attenuated over the next 100 years, though individual nations, as they evolve into places for certain types of people, will continue to lead in certain ways.

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Ask A Genius 57 – Nations, the US, Putin, Inequality, and AI Valets

Scott Douglas Jacobsen and Rick Rosner
January 13, 2017

Scott: What about nationhood at various levels of sophistication?

Rick: You're talking about the idea of nations or the actuality of nations throughout history. Over the past 300 or 400 years, it's probably been the heyday of nations, where it is tough to have nations. It is tough to have a nation when you don't know the layout of the world.

Say before the Rennaissance world, you have states, but not nation-states as we understand them with 99.8%+ of the world's land belonging to a nation or a colony of a nation. It is difficult to have nations before, say, the telegraph.

But to really get a full national system, where we have – there are small exceptions – a world divided into about 200 nations, it is difficult to have the glue required to bring a nation together, which requires communication, decent borders – can't when things are too rugged and things are too conducive to people taking local power.

America has a lot of things that are pre-telegraph, which makes things slightly politically weird. The electoral college satisfies a balancing act between the slave states and the free states. Slave states with smaller populations were set this way with the house and senate system too.

Slave states were generally rural and agricultural states, and didn't want to be swayed by the popular vote and made compromises, but these compromises are based on need a week or two for information to travel across a pretty big country. So, nations function more efficiently with the telegraph and telephones, and that kind of stuff.

Nations probably function less well into the future when extremely efficient forms of communication allow people to form alliances independently of nations. You've always had forces that work against nations. You have local geographic interests that can cause civil war.

You have organizations such as the Masons who, for hundreds of years, have been rumored to have secret agendas and alliances, but you really get forces that can reduce the importance of nationhood into the future when people can form strong alliances via communication, when everybody is plugged into the Internet – and what will grow out of the Internet.

You see strong non-national interests forming. For the past 100 years, you've had increasing corporatism. That's not necessarily a people thing. It is a corporate thing, but corporations, the world's largest corporations, tend to think of themselves as their own primary interests or are aligned with their own interests.

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Often, that doesn't align with following the rules or being in any one country. Though corporations don't represent large numbers of people. We've mentioned this before, but Cory Doctorow talks about tribes built around common interests such as when people prefer to work.

You have the world divided into 24 time zones. One for each hour. In one of his books, people line up in each one of these 24 tribes depending on when they want to be awake, which is when their tribe is awake during their time of being awake.

Someone in Philadelphia might feel more aligned with someone in London, as a tribe, because someone might feel more comfortable with their time. But nations aren't going away for the next couple 100 years. There's a writer named Amy Webb.

I haven't read her book, but I heard her on NPR. She said if you want to be a futurist and want to see what the future will hold, then you might want to back off and stop worrying about a 100 years from now and start focusing on the developments happening in the now.

Nation will almost certainly become less and less important in the next 100 years. But now, in the near future, they are extremely important, but brings us back around to America versus other large powers. Thanks to cooking the election, Russia is seen as resurgent, but that's hard to know for sure because Putin is powerful.

But he runs a country with high levels of alcoholism, low standards of living, declining population about half the population or so of the US (half of 325 million). I don't know how much actual clout they have. I'm sure their clout is growing. You have other large nations that are ineffective in the world.

Brazil has a large population, but it's a mess. You don't hear about them dominating world politics. When you're talking abut effective nations, in wielding world power, you have the US, European nations as a group, though less so as the EU gets tattered, and India and China.

We've talked about what you might get from living in a nation that is a wielder of political power, more so than other nations in the world. That's complicated. I've benefitted from the US being a dominating nation because I've worked in entertainment and the world looks to the US for entertainment.

We have the world's most developed entertainment industry. I have worked in that for many years. Also, I was a good earner working for TV. Though I'm sure there are other places in the world where you can make a good living working in the entertainment industry. India has a huge entertainment industry.

China, based on their size, has a huge entertainment industry. At a superficial level, you feel cool living in a dominant nation. People don't deconstruct that very much. But if you go to Twitter and looking at people with the American flag on their Twitter, there's an unquestioning alliance to this manly Rightist conception of America.

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There's calling other people pussies on social media if they express any reservations on what conservatives think America is supposed to be about, but the feeling of coolness goes along with a lot of US patriotism. It is somewhat averse to questioning. We benefit in ways that I don't entirely understand being the dominant power with the economy.

We dominate with the US dollar being the benchmark for world economics. People talk about we're going to be a lot worse off if the US dollar is replaced more with the Yuan or the Chinese currency.

We benefit from the US being one of the world's coolest countries to move to, to live in, because we get to recruit smart people from the rest of the world. If that gets screwed up via increasing xenophobia, maybe, our technological dominance is further threatened.

Scott: You mentioned something in your Genius of the Year Award from Jason Betts. The landscape of genius is going to flatten, but that's on the assumption that people will take technology on board. Not everyone will, there are some nuances there; the technological Amish, the technologically adept, and the technologically augmented.

Rick: An immediate analogy is income inequality. You have some people becoming much richer and others' income staying flat. We have an increasing, into the future, cognitive inequality or informational inequality, or computational resource inequality, where the technologically receptive and nimble will be able to provide themselves with power to move through society that is much greater than people who can't make the various technological leaps.

We're at the beginning. For all of history, all living beings have done most of their computation within their heads. One dimension of success in the human world is how good your computation is, how good your thinking is; as we move into the future, an added dimension will be how good you are at augmenting your internal computation with external computation with all sorts of specialist applications. We see various applications of that. Until the 80s, the securities market, the stock market, were not dominated by match, but by people ruggedly pursuing gut feeling.

The rough-and-ready traders, then in the 80s, physics postdocs started getting jobs on Wall Street and mathematicizing all of the vague hunches that people had in working in the stock market until then. From the 80s onward, the securities trading and analysis has become increasingly dominated by mechanical, non-human, computation.

That kind of dominance, or various flavors of dominances, will extend into more and more areas. One area, which is a dumb area, but an important one living in a congested city, is route computation. There are ways you can give yourself an advantage by travelling different ways. It means people can save themselves 5 minutes on a trip or find themselves less annoyed at the end of a trip depending on the way they travel. It is a near future thing that people will have increasingly sophisticated personal AI valets, butlers.

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Ask A Genius 58 – AI Advisors, Life Strategies, Neural Plasticity, and Built-Ins

Scott Douglas Jacobsen and Rick Rosner

January 14, 2017

Scott: The AI assistants are primitive now, but they should, just given technology trends and computer science sophistication, increase their domain generality and utility. How is this likely to going to play out into the future – stuff with AI assistants?

Rick: We already have in-home helpers like Cortana and Siri. They aren't that helpful. Mostly, Siri frees up your hands when looking for stuff. You can yell stuff at her while you're driving to look stuff up for you.

Those types of butlers or helpers are going to become increasingly helpful. They'll become good at giving life advice. One area where people are particularly clueless is middle and high school, and applying for college. It has a bunch of moving parts. Social media functions as rough advisors for teens now.

But it is not the best. Teens have always been clueless, and miserable because of it and search for ideas on how to live their lives, but not very hard. Teens wallow in misery. It is a rare teen that does the makeover, which is a popular theme in high school movies.

The teen that is unhappy with his/her social position and does a radical transformation of his/her self. Mostly, teens don't know how to ask or take advice. Teens are like most people. Most people don't want to take advice. Most advice isn't good, and most people don't want to drastically change.

But there will be an increasing market for increasingly good expert advisors as people see that the expert advice can really help them. I would think that the teen market would be a good place for that. The best advisors for teens, who are lucky enough to have them, are older siblings.

If you get advice from an older sibling, whether you want it or not, they will tell you you're stupid or not, but not everyone can have a cooler older sibling. But there will be devices that perform some of those functions, which will ask people to reconsider their appearance, behavior, and life strategies.

You'll be able to program your personal advisor to give you the degree of input that you might want, and a personal life monitor can give you all sorts of helpful advice, like you're mansplaining, or interrupt a lot, and can give a report on the quality of your conversation if you're concerned about that.

It'll tell you if you're being too interrupty. It will monitor other people's faces. It will advise you if your language is either too high level, or too low level, or too many "uhms" or "you knows." And this specific thing is one example of working with external computation.

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And having that kind of thing will be a huge advantage for people who get good at working with that kind of thing, but then you have the external computation that is even more intimate. External computers that ride really close to your brain and may follow a more direct pipeline than just talking to you.

Google Glass failed, it fed information into you via your optic nerve, your eyes. At some point, there will be a wearable form of computation that feeds users information more or less continuously and doesn't freak people out.

We've talked about contact lenses linked to computers, like the *Terminator* eye display. That is fairly intimate. Eventually, computation will be more intimate and people will have more built-ins or jacked-ins. People might have actual jacks that link up or allow neural-type feeds, directly into the brain.

You already have things that really, really roughly work like that, where, for blind people, glasses that can give a rough picture of the world via your tough, maybe, or else directly to the back of your eyeball.

Digital hearing aids that provide hearing assistant directly to auditory nerves, or just cochlear implants. The brain is super plastic it turns out. The old picture was you were born with a certain amounts of neurons. That's not entirely true.

That's not the entire picture because the wiring in your brain is not neuron based, but dendrite based. All of the tendrils coming off of each one of your neurons, and those tendrils are constantly being re-engineered, which is at a crazy rate. An insane rate that the dendrites are rejiggering themselves.

The brain is greedy for efficient neural connections. The brain is super eager to rewire itself to the most efficient it can be relevant to the tasks it is being asked to do, and because of that people building add-ons for your brain will not always have to know the brain's wiring.

Because if you give the brain additional computational resources, it will tend to rewire itself given those resources. This is an overstatement, but you can slap any old crap on the brain and it will rewire itself to be able to use the information coming from that crap, if it can gain access to that information.

The future won't be war between the humans and the robots. The future will be scrambling among various people who are better or worse at adapting to various forms of external information. It is like war between the humans and the half-bots, which is a better kind of war.

Because anybody who is sufficiently motivated can become a half-bot by learning how to exploit external computation better. A half-bot, some kind of super-digital asshole.

(Laugh)

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People are still pissed at the way people in the 90s had cellphones. Not everyone had a cellphone, people who did, didn't know how to use them in a way that didn't annoy people. On an annoyance scale from 0-10, somebody with a cell phone was likely to come in at a 6.

Someone talking loudly in the bank. Now, it is a low-level annoyance. Everyone is at a low-level annoyance. It is about a 2 for everyone. People think, "This is how it is now." Everyone is distracted and driving stupidly because it is pervasive.

The annoyance level is down to a 2. We will see the induced annoyance lowering. With Google Glass, it was seen as a 6 if people knew what you were wearing. People were ready to think you were a butthead.

And especially if they knew you could be recording video of them without explicit knowledge at any point with the glasses, so if you went into a bar with anyone that is tech savvy with the glasses, they might hassle you.

They might think you're a douche, and a douche who is taking video of them. The annoyance they cause was too much to overcome any kind of benefits from the Google Glass. But at some point, the wearable digital helper, the annoyance level in other people associated with them will be lower, will have more benefits than annoyance. In the same way, it was lower over time with the cell phones.

There will be all sorts of advantages to be had with the advancements in technology. There will be the gentleman billionaire who can't afford to be jacked in, but surrounds himself/herself with a bunch of tech jockeys who are providing the gentleman/gentlewoman with the latest insights from the devices.

That will allow them to take advantage of the technology without having to partake of it himself/herself. There will also be the gangs of people who jack into each other plus all of the added technology, to become specialized in a certain area. It isn't a tech thing, but Judd Apatow has, I believe, the most effective model for writing comedy movies right now.

Which is the multiple table readings, Judd Apatow is friends with all of the best comedy writers and comedians in LA, when he's got a project in development he brings in everybody to read the script. 20 people at a time, I guess. They sit around a table.

I do not know about this personally because, I guess, I am not one of the best comedy writers in LA. Apparently, you bring in 20 really funny people. At different points, people chime in a joke. I've been in comedy writing rooms. I have worked in them for years.

Somebody throws out a topic or something under consideration, then everybody tries to get their brains to think about the jokes on the topic under consideration. Apatow works and works his stuff under this methodology.

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Ask A Genius 59 – Judd Apatow, Comedy Writing, Medicine, and Computers

Scott Douglas Jacobsen and Rick Rosner

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Scott: So if this is the methodology without technology, we're talking about a large number of independent talented people, who specialized in joke writing, coming together to make better comedy. And this is Apatow and others.

Rick: He's a writer with some other writers and some added quips and stuff from dozens and dozens of other talented people. If you watch Netflix, or if you watch an Indie Comedy on Netflix, it might not be that funny, but could have benefitted from this kind of thing.

A well-developed movie these days, whether it is an Apatow comedy, where every line has been workshopped to be the best possible line. Or a $200 million Marvel super hero movie, where every point in that movie has been workshopped to make sure it best takes advantage of the technology that has been developed for the super hero movies, such as CG, and that it makes a plausible presentation of the ridiculous mythology and backstories that lead to this point in the super hero universe.

A $200 million Marvel super hero movie has been workshopped a zillion times. If you look at an Indie movie, you have a $2.5 million budget. Only 2 or 3 people have ever gone over the script. If you look at the movie, it had the potential to be a more entertaining movie, but it just didn't get worked over enough. We can assume analogously that people in the future will network more and more intimately to add value to more and more areas of endeavour.

The stock market is one of the biggest laboratories for technological assault and technology aided understanding of value and trends, but it is still people sitting at a bank of screens. In the future, that may be one of the places where the 'traders are sitting at a bunch of screens' model is changed into a more efficient form of computational exploitation of being the first to understand what's going on.

Or being the best at what's going on in the corner of some financial market, but you can imagine different relationships among people and machines being helpful, like medicine. Studies of doctors show that doctors make a lot of wrong diagnoses and guesses, and mistakes.

Mistakes that are overlapping. Somebody treated by 6 or 7 doctors is likely to have mistakes in treatments or medications. If your entire medical team can be jacked into, or intimately computationally linked into, a treatment gang, that will lead to better outcomes.

I read Michael Lewis's book about human error and risk prediction, or risk-based behaviour. That includes doctors going off their gut instincts. They aren't that great.

If you throw certain diagnostic tasks over to a computer or some kind of diagnostic machine, even though the diagnostic machines don't have the same quality of input or experience, the

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rubric base, the rule-based diagnosis coming out of a machine will in a lot of cases be more accurate than the human diagnosis.

We're going to become half-robots linking up to each other in all sorts of ways to take advantage of external computation, which will become a misnomer as the external computation becomes more and more intimate.

It will impinge of the type of art that we like, type of science that we do. I notice *Captain America: Civil War* came on Netflix. We have talked about how if you showed one of these super hero movies to somebody in the 60s or 70s they would have a hard time reacting to it.

Because they weren't used to such a quick visual presentation of information, so wouldn't be able to follow it. I noticed with this movie that the ability to compute it is so apparent that we can react to super-violent interactions with fairly real physics in real-time!

If you were watching *The Six Million Dollar Man* in the late 70s, there was a lot of slow-motion as Steve Austin did his super power high-jump over a wall with his bionic legs. The action slowed down so you could really appreciate what was going on. Also, so, probably, it would eat some time.

(Laugh)

But *Captain America*, somebody gets hit with a car in real-time, they go, splat-pada-doom-da-doom, in real-time! It is exciting to see that stuff in real-time. And it is due to the CG that let's that stuff be simulated persuasively.

And it is a collaboration, external computation working with our educated brains, so we're able to understand a quick little interaction that takes less than half of a second to present information that would not have been picked up by somebody 40 years ago.

A fight in a super hero movie would have made zero sense, in a contemporary super hero movie, to somebody in 1972.

Scott: What about the reverse? Somebody travelling to the past and working on a mechanical loom. Modern people would suck. It doesn't seem better/worse. It is experience with rapid visual presentation of information or with physical manipulation on a loom.

Rick: Humans in general are attracted to helpful information. A byproduct of that is we're attracted to information in general, like rap music. Rap music has to be the most informationally dense genre. Some might argue symphony music is more informationally dense.

Scott: Yea, but symphonies require the ability to read the musical notation, oftentimes other languages, rap is more easily accessible with the use of spoken word rather than instrument, mostly. So, there are some fundamental differences. It's apples and oranges, to a degree.

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Rick: Part of that is the love of information thing. Rap hits you with all sorts of salacious or insidery references or information – bam, bam, bam, bam, bam – and you are pleased as the information flows into you. It is rewarding to you. It is a reward system thing – ding, ding, ding, ding, ding. You are hip to this, hip to this, hip to this, hip to this, as the information flows into you.

Back to super hero movies, people now have to sit through most of the credits. You see 2,000 people make the movie in the credits. If you see the movie, now, you see much of a movie consists in people interacting with the movie in hi-tech ways, like a team of CG people in South Korea building the wire frames of your characters, fleshing them out, and animating them. Even though, you have never met them.

I am sure the amount of computation that goes into a super hero movie has to be millions of times the total computation that went into WWII. WWII was partially fought with primitive computers. There were radar sites, or there were bomb siting machines on bomber planes.

That would help people zero in on their targets. They were really elementary computers. The amount of computation going on in a bomb site computer was probably among the most sophisticated of the era, and would probably be dwarfed by a home thermometer now. The thing connected to your thermostat that has your heater go on and off depending on the temperature.

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