

The background of the cover is a photograph of a night sky with the Milky Way galaxy visible. The stars are in shades of purple, blue, and white. At the bottom, a silhouette of a person stands on a rock, looking up at the stars. The entire scene is framed by a thick black border.

# COGNITIVE THRIFT

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VOLUME I

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Scott Douglas Jacobsen

&

Rick Rosner

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*Designed by Scott Douglas Jacobsen*

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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

# Cognitive Thrift 1 - The Start

Scott Douglas Jacobsen & Rick Rosner

May 6, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** When we talk about aspects of efficiency in thought as an implication of optimal informational arrangements such as mass and gravitational forces to make aggregations of matters as representative of information efficiency, this then reflects a certain architecture, and this then reflects a certain style of thinking that is going to be generally used.

**You had an idea about cognitive economics or thrift or thought thrift. Could you please expand on that to start this little e-book off?**

**Rick Rosner:** Sure, but first let me say you're talking about gravitational aggregation, you're talking about our idea of informational cosmology. That the information within consciousness can be physically represented by an information space, which is kind of a map or a kind of a world of information, but for cognitive thrift or cognitive economics.

You don't - cognitive thrift doesn't rest on that set of assumptions, though those assumptions are certainly relevant to it, but you can establish the idea of cognitive economics with some ideas that are fundamental to cognitive economics itself.

One is that the brain is a finite information processing structure. Two is that the brain consumes a huge proportion of the body's resources. Three might be that it's in the interest of a thinking organism to have accurate perceptions and come to accurate conclusions about the world it's perceiving.

And with those three assumptions, you'd get the idea that it might be a priority for the brain to function ultra-efficiently and that there are important limits on the functional ability of the brain.

[End of recorded material]

# Cognitive Thrift 2 - Error Reduction

Scott Douglas Jacobsen & Rick Rosner

May 7, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** That recalls two things for me. On the one hand, the strength of the cognitive system. On the other hand, its weaknesses too.

**What would cognitive economic state about the strengths and weaknesses of an evolved organism such as the balance between energy consumption and efficiency, and computational capacity and error reduction?**

**Rick Rosner:** In an evolved organism such as ourselves, evolved organisms such as ourselves. We must be right in our perceptions about and our actions in the world enough to live long enough to reproduce and raise offspring to continue the species.

For humans, the standard lifetime according to the Bible is 70-80 years, more recently in developed countries it's in the low 90s and according to the UN we'll eventually shortly hit 100, and that's a long time to be making the right decisions about the world so as not to be killed by accident or not to fall victim to other consequences of bad judgment.

So, an average brain needs to last a century. And as brain science finds out more and more about the brain, we find out just how physically complicated it is, not just in its physical structure, but in the processes, that then maintain it.

The processes that allow you to learn and remember. It's much more complicated in terms of all the moving parts than any computer, though computers will before too long have the computational capacity that we do, but since the brain is an evolved system.

Everything - since the brain is an evolved system, it is messy and organic and all these overlapping and interacting chemicals and electrical signals and constantly rewiring its dendrites and extending new ones and forming new synapses, and changing the - retuning synapses, constantly rejiggering the inputs that the strengths of the various inputs reach neurons and rejiggering how a neuron decides when to fire.

All this growth and change and maintenance is expensive in terms of the bodies resources and important in terms of our individual survival.

[End of recorded material]

# Cognitive Thrift 3 - Size

Scott Douglas Jacobsen & Rick Rosner

May 8, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen: What are some of your ideas about cognitive thrift with respect to size?**

**Rick Rosner:** One, it requires a lot of resources to run a thinking organism. It costs a lot in terms of energy. Two, independent thought as opposed to following long-established rules can be risky. Thought involves error. Three, thought can add instability.

Both to the species by being disruptive and to the individual by making it more likely to go crazy. I guess that an organism with a complex brain is more likely to suffer disorders of thought than an organism with a less complex brain.

Four, big brains are dangerous during childbirth. Five, they require more time to pass on cultural knowledge. And they require that babies be born less mature than animals with smaller brains.

When you look at the human childbirth model, the head is as big as it can be. It is just big enough to get out of the pelvis, but it is not big enough for an adult brain. So, you've got this 10 or 12 years of learning and continuous brain growth, and requires humans to have longer lifespans. It is a whole different model of survival. Say possums, which are dumber, and have an average lifespan of two years.

**Jacobsen: What would be some of the consequences in terms of cognitive biases with an expanded cortex – which comes with expanded cognitive capacities and can be put things on the 'radar' of the organism's conceptual landscape but leaves an area for cracks?**

**Rosner:** It's like when you're buying the car. Is it worth the spray coat to protect from salts? Is it worth the Sirius XM radio? The thought expanding capacities can be at the expense of other capacities.

They can help the thinking organism find ore exploitable regularities to improve their situation or to avoid risk. You might be able to argue that our brains are at the optimum size for risk that we face.

In fact, you can make an overall argument that brains which are expensive are only the size that they need to be for the organism to survive long enough to raise that next generation of organism, and depending on the environment and other factors.

So, it's jocks vs. nerds throughout evolution and amongst species, where species that are well-adapted to stable environments may not need to think as much as much as species in changing environment.



Once they are set in an environment, like some kinds of molluscs or clams, their brains are there when they're looking for a place to spend the rest of their lives, but when it's done their brain goes away. I don't know. I'll have to Google it.

[End of recorded material]

# Cognitive Thrift 4 - Motor Ability

Scott Douglas Jacobsen & Rick Rosner

May 9, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** There's an aspect to do with motor ability. The degree to which an organism travels. How regular and localized is its general itinerary in addition its kin?

And human beings having a very large brain in proportion to their body size and in general, in addition to a deep interconnectivity amongst its parts, more than any other animal travel the farthest, I think, on average as a general principle.

You can, for instance, make a counterargument via birds migrating, but, as a rule, I think the bigger the brain the farther the travel.

**Rick Rosner:** Yea, but birds go from on type of environment to another type of environment. Their environments are nearly as varied as humans, and expanded to cover, or at least can survive in, 70-80% of the world's land areas.

When you look at the pressures on humans or the things that allowed humans to develop big brains, you have size. Animals the size of a lemur cannot support a human size brain, but larger primates can support larger brains.

Standing upright, which frees the hands, which means you need more brain power to work your fingers to manipulate things with any kind of dexterity, you need expanded powers of visualization to go along with that ability to manipulate things with your fingers.

None of that explains genetically why you're able to develop big brains, but it gives bonus drives and pressures to develop big brains, and along with dextrous hands you've got the ability to develop tools, which allow you to survive a greater variety of environments.

Also, we need resources. As predatory mammals, we're physically untalented. We're not fast. We're not particularly strong. So, when you hunt as a hunter-gatherer, we need to communicate to hunt effectively.

[End of recorded material]

# Cognitive Thrift 5 - Cognitive Economics

Scott Douglas Jacobsen & Rick Rosner

May 10, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** Rick, you have mentioned some parts, in other discussions, about low-cost, beneficial, non-empirical belief systems. For instance, about things that are non-provable, some might deem them non-meaningful by that definition, or matters of faith or superstition. What would a cognitive economics state about this?

**Rick Rosner:** Faith-based beliefs do not have a huge influence on moment-to-moment evaluation of sensory input. A faithful person is going to jump out of that way of a recklessly driven car the same way an atheist is.

You can say that in many, if not most, instances people who have various faiths are going to react in the same way as people who are non-believers, and cost of - say you're a non-believer that faiths are superstitious and just don't reflect the scientific reality of the world.

You can say that, but the cost of having faith or having superstitions - believing in ghosts or other things that are hard to prove through evidence or are hard infer through any kind of scientific process. People with those beliefs don't pay much of a price in day-to-day activity for having beliefs that some people might consider irrational, and they get a lot of benefits.

Faith gives people systems that provide eventual justice when the everyday world doesn't. God makes things right, eventually or in the afterlife. God rewards the virtuous and punishes the evil, eventually.

And there's a thing called Pascal's Wager, where Pascal said at least on your deathbed you might as well go ahead and become faithful to God because even though it is a low probability thing that God exists. The benefits are great, and not becoming faithful offers zero reward in any possible afterlife.

Faith can also help bring people together in shared altruistic effort. Faith is kind of a spiritual patriotism that lets you, or might make it easier to be brave or be self-sacrificing, for the benefit of others under your belief system. The same way a soldier in a war may sacrifice him or her self for people who share his nationality.

Faith can help people do or make smaller sacrifices in their own lives and just engage in people understand shared humanity and be altruistic in smaller ways - be charitable, be tolerant. Unfortunately, in America right now, under political polarization, we see religion being used for somewhat non-Christian purposes in a lot of instances.

Or in a more general sense, we see faith being resistant to societal change, even when the society is coming down on the side increased tolerance. But - anyway, that's what I got.

[Break in recording]

In a general sense, non-evidence-based beliefs offer benefits - emotional, sometimes societal benefits without people paying immediate and obvious costs for beliefs that are not substantiated. Few people are compelled to stand in front of a moving car by their spiritual beliefs, or if they are it's in an altruistic way. That by letting a car crashing into them they are saving other people.

So, in a general sense, matters of faith and superstition and faith have greater benefits than costs.

[End of recorded material]

# Cognitive Thrift 6 - Proto-Science

Scott Douglas Jacobsen & Rick Rosner

May 11, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** Some subtleties can be added to this. For instance, a generalized spirit world or any manner of afterlife seem different than any of ghosts, devil or Satan, spirits inhabiting animals, and so on.

**Rick Rosner:** If you go all the way back to the beginning of religious beliefs, they are in a way scientific. By coming up with several gods that are responsible for aspects of the world, you are dividing it into a variety of phenomena or characteristics and assigning causes to it. Even though you are doing it religiously, you are taking a stab at establishing a system of the world.

**Jacobsen:** That sounds different than system as a process and more akin to science as a taxonomy.

**Rosner:** Yea - but taxonomy is one of the first steps of science. You can't do science without taxonomy.

**Jacobsen:** Yes.

**Rosner:** And back when people 3, 4, 5 thousand years ago were coming with up a zillion god. There wasn't much in the way of science and you could probably argue that the coming up with gods and investigating the world in a proto-scientific way were not too different things.

[End of recorded material]

# Cognitive Thrift 7 & 8 - Faith and Science & Teleology

Scott Douglas Jacobsen & Rick Rosner

May 12 & 13, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** That sounds like an anthropomorphism and a teleological view tied together that then becomes the lens through which the taxonomical classifications are had or made and the process itself is done.

**Rick Rosner:** You might be able to argue that all science begins with faith and religion and mystical beliefs. Chemistry comes out of alchemy. Periodic table, you could probably draw its lineage back to alchemy.

Newton, arguably our greatest physicist, spent more time on analyzing the Bible than he did on math and physics. Einstein, deep spiritual feelings. It's only lately and - I mean -it's not just lately.

Religion and science and unsubstantiated beliefs don't have to be at cross-purposes. They can inform each other.

In current times in America, when people put religion at cross-purposes to science, a lot of that is shysters exploiting faith for creepy self-serving purposes. Conservative think-tanks, corporatist think-tanks, over the last 35-40 years have spent many hundreds of millions of dollars learning how, learning which voters can be easily moved and learning how to move them.

One of the techniques they've learned is to exploit religious faith, which means you have - you know- religious people being used for non-religious purposes. And after decades of this, it seems to natural that fundamentalist people should be anti-science and at least some of that anti-science has been cynically drummed into them by people who are trying to exploit them.

And in an earlier time, 1950s, say, science and religion could more peaceably co-exist with each other, which isn't a bad way for things to be. Faith offers benefits to people without necessarily impeding change.

It is only when faith is cynically exploited that - it's not only - but it's often when faith is cynically exploited that faith is used for obstructive and cynical, and non-humanistic purposes. Anyway, that's what I got.

[End of recorded material]

# Cognitive Thrift 9 - Major Figures

Scott Douglas Jacobsen & Rick Rosner

May 14, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** Our discussion went from scientific process in general to discussions about spiritism and the afterlife in addition to specifics about ghosts, the devil, angels, and so on, and then it went into historical aspects to do with early indications of science, if not outright science but with an anthropomorphism and a teleological view, then it went into major figures in this.

Take, for instance, Isaac Newton and most of his work being on alchemy. You did not mention his heavy work on Church Fathers, which was probably a religious duty from his own perspective in addition to the very deep religious feelings of Einstein who, I guess, developed his views from Spinoza, I believe, then you went into American politics as well with the cynical exploitation of people, but also looking at some of the more mild, general social benefits that over a society can do very great good.

For instance, the self-sacrifice that can be encouraged by belief systems that require faith. This then leads to a personal perspective. What is your own stance on this in terms of religious feelings and science, and so on, rather than observing the historical record, American, other historical figures, and so on?

**Rick Rosner:** Well, with me, I have a pretty healthy dose of OCD. Every day, you can catch me acting superstitiously many times without easily believing that the stupid superstitions have any validity.

Even though I don't believe in them, I still try to step in a room with my right foot, and certain numbers make me nervous, and it's all ridiculous, but I still find it easier to yield to the superstitions than to actively resist them and feel uneasy - which is a characteristic of OCD.

At the same time, nobody is free of unsubstantiated suspicions or beliefs about the world. You don't get people taking forward steps in figuring out the world without those people exploring unsubstantiated beliefs.

When you hear - you could probably dig up hundreds of quotes from mathematicians and scientists talking about how they pursue the most beautiful lines of enquiry. The godliest lines, the things that - Einstein often said that God had to do things certain ways because they were too beautiful to not be done that way.

Spiritualism or science can't be separated by certain kinds of mystical feelings. Now, you can - a lot of scientists would call themselves hardcore realists and say that they don't believe in anything, but natural processes, but often as they explore the world they must at least partially rely on suppositions about the world that could be considered non-scientific and somewhat mystical, hoping that this would lead to further hard science.

We don't know everything, and when trying to know more we are going to go out on a limb. Some of which are a little mystical. In talks we've had earlier, we've talked about some of the reasons why math, the beauty of mathematical regularity is reflected in the greater world.

Somebody talked about the super-weird effectiveness of math in describing the world. How that is just a crazy - why should math and number and equations of motion and all that describe the world?

Why should the world have to at all conform to mathematics that a lot of mathematicians and other people consider beautiful? It seems for a lot of math people that seems mystical and wonderful. It can reflect a faith in the beauty of creation.

Even if you're so hardcore that you don't believe in a creator, at the fringes of what people know is belief, and belief often can't be entirely rational.

[End of recorded material]



# Cognitive Thrift 10 - OCD

Scott Douglas Jacobsen & Rick Rosner

May 20, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen: How does this apply to you outside of diagnoses of OCD?**

**Rick Rosner:** Through our talks I've developed of what I believe, I believe that simple forms of order are more likely to be self-consistent and are thus more likely to pop up in the world and in abstract systems of logic and abstract systems of analyzing the world.

The self-consistency is kind of the key to existence. Things that are contradictory can't exist for long.

And to me this feels as if this belief system is sufficiently pinned down that it will be durable and hard-edged once it's fully developed. At the same time, my feelings about self-consistency being the key to everything or non-contradiction being the key reflect faith in order, and it doesn't feel mystical to me.

But if you push it far enough to the area of what I know and don't know, and if you push it far enough into what I don't know, there's faith that these stabs are the nature of things will eventually become logically and scientifically substantiatable, but right now there is a lot of faith there.

I have an increasing belief that there are powerful forces favoring the arrow of time at work in the universe. Specifically, energy lost by particles travelling long distances across the universe and losing energy to space, but there's a lot of faith in that in that my mathematical training is not sufficient to let me easily translate that into quantum mechanical equations or relativistic equations.

But I have faith that what I believe about that is translatable into sharper mathematical language and that it will be substantiated, but there's a lot of mystical faith in science and what I think. In that, I've studied a lot of science.

I've read a lot of science of various degrees of sophistication. I've had a couple semesters of quantum physics. At one time, I used to know how to use eigen values, but I have since forgotten all of that, and I've read kind of physics that is made easier for less mathematically trained people.

Via this big mass of scientific knowledge and semi-knowledge, I have faith that what I think will comport with hardcore science. Even though I am more ignorant scientifically than people who do science, there's faith in science that everybody does, even super highly trained scientists.

Hawking has thoughts about what's beautiful in physics. I'm sure it informs him in his judgment in how the world works.

There's one caveat about the costs and benefits of non-empirical, spiritual and superstitious thought, which is the costs and benefits.

We've been talking about cognitive thrift, which is the costs and benefits of thought itself for an organism, where the costs and benefits for religious or faith-based thought are not relating to the costs and benefits of thought itself. They are to the costs and benefits to the organism and society. It is a different kind of cost-benefit thing than the cost-benefit of thinking.

It is a different economy. A more - cognitive thrift is a little bit more at the expense of having a brain; whereas, it's a more straightforward, the costs and benefits, of faith, say, rather than lack of faith, which is more easily understood under a more well-established economic framework. It's not as new a framework as the costs of cognition.

We're talking about two different topics, even though we're throwing them in the same little book.

[End of recorded material]

# Cognitive Thrift 11 - Neuroeconomics

Scott Douglas Jacobsen & Rick Rosner

May 21, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** It is differentiated from neuroeconomics, which looks at decision-making in general with regards to economics in addition to the brain basis of that behaviour.

For instance, one researcher, Paul Zak, isolated oxytocin as the bonding hormone and applies this to various areas, but that's far apart from this. It does not get that technical, but does provide some thought experiments with respect to having a brain and how that might turn out with the standard perspective of an evolutionary perspective.

**Rick Rosner:** Yea - now, also, there's a different set of considerations or costs, where because we evolved organisms. Our brains don't always tell us the pure unadulterated truth. There are the issues with Plato's Cave, just the limitations of perception and there are some built-in biases.

And when you look at matters of faith, there are a complete set of possible faith-based cognitive biases, where evolution wants - we are most effective as reproducing organisms when we're in certain emotional states.

Evolution, as evolved beings we are most effective when attentive, because inattentive beings in a dangerous, complicated world get killed due to error.

By shorthand, we can talk about what evolution wants us to be, but keeping in mind that that's a teleological statement and evolution is not teleological.

Evolution does not really want anything, but just for shorthand we are most evolutionarily effective when we have certain attitudes and those attitudes might be optimistic and happy but not so happy.

If an entire species were just happy regardless of situation, that species would be too complacent to be effective at continuing itself. You can see that in people's lives in the stories that we follow.

The story ends at happily ever after, which is fine but nobody is happy throughout the story. People go through periods of being miserable, and being happy for a second, and there's just turn arounds in the plot.

You can't be happy all the time because then you're not motivated to take on the tasks that evolution wants us to take on.

[End of recorded material]

# Cognitive Thrift 12 - Rich and Poor

Scott Douglas Jacobsen & Rick Rosner

May 22, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** I see some room for additional extension of that argument into more practical realms: statistical geographical, global perspectives.

**If you look at the most prosperous nations, the least religious nations, the most well-off nations in terms of health and well-being nations, and in terms of international women's rights nations - for instance, North America and Europe, they tend to have the lowest birth rate as an inverse correlation.**

**If you have high on those things - irreligiosity, education, socio-economic status, you tend to have a lower birth rate. With that in mind, that might argue for that. People are more content and, therefore, that might argue against too much contentment for the persistence of a species in normal evolutionary circumstances. Of course, we have technologies that override this.**

**Rick Rosner:** There are at least two trends fighting each other in that. You've got the crappy living conditions and spit out a lot of kids in the hopes that some survive versus good living conditions with a high expectation of each offspring surviving, and then you have what you're talking about, which is people being satisfied enough in some ways that they don't feel compelled to steadily reproduce.

Which is probably going to be an increasing trend across the next century as people's lifespans increase, people will feel increasingly lackadaisical about the business of spitting out the net generation because the current generation doesn't feel the clock clicking as loudly as older generations did.

[End of recorded material]

# Cognitive Thrift 13 - Population

Scott Douglas Jacobsen & Rick Rosner

May 23, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** That leads to a population implosion, which seems like the major concern in Japan and Singapore, for instance.

**Rick Rosner:** A population implosion is not the worst thing in the world if it's uniform. What people worry about is being overwhelmed by - this whole area gets tricky, you want to avoid racist characterizations, you start getting in the Herrnstein and the other guy, those arguments are icky and fallacious, and they tend to blame victim for unfortunate economic situations.

**Jacobsen:** Our arguments apply across or within the species. It does not matter the nation or 'group.'

**If you are wealthier, if you are less religious, if women have more rights, and if you are more content in general, then your birth rate will be lower and this could lead to issues around population being below replacement rate.**

**Rosner:** Yea. Though, being slightly under replacement rate wouldn't be the worst thing if it applied to the entire world, the population gradually dropping from 7.3 billion to 7 to 6.5, or even lower, over a couple generations would buy us some leeway to deal with some of the problems we're having with having so many people.

[End of recorded material]

# Cognitive Thrift 14 - Billions

Scott Douglas Jacobsen & Rick Rosner

May 24, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** That does seem overly optimistic. Some of the best projections look at 9-10 billion, and even 12 billion at the extreme, by the end of the century.

**Rick Rosner:** Anything that slows it might not necessarily the worst thing. To circle back to what evolution might want from us in terms of spiritual thought, we might be better off psychologically with a certain amount of faith.

**Jacobsen:** That's true. That does match some evidence. People within a faith community tend to have more psychological health. The 'jocks' win in that sense.

**Rosner:** Yea - faith does not cost anything. It's one of those things where it doesn't hurt and it might help, unless faith is cynically exploited by jerks to fight some positive social change.

**Jacobsen:** What social change? What examples - two, please?

**Rosner:** You have a bunch of Southern states calling prejudice against trans- and gays religious liberty, which is A) bullshit and B) on the losing side of history.

The Golden Rule tends to be - history tends to be on the side of the Golden Rule, extending respect and empathy to more and more entities, deserving entities. Nobody is arguing that the Golden Rule applies to cars, though they may in 50 years when cars turn out to be with computer brains that are as smart and feeling as a kitten, but really, it's -

The Golden Rule extends empathy to thinking, feeling entities.

[End of recorded material]

# Cognitive Thrift 15 - Smarts

Scott Douglas Jacobsen & Rick Rosner

May 25, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** There's one extension there into the life support systems. The direct Golden Rule goes to individuals with an increasing moral sphere of concern. Following from that, every entity exists in a context and requires some form of support system.

**Computers require materials and electricity. Human beings require food, and air, and water, and a clean living, for instance. So, life support systems are also important in terms of proper treatment as an indirect form of that as well.**

**Rick Rosner:** Yea - the context of existence also is a consideration - like, you cannot do a lot for salmon at the end of their life cycles. You might be able to do something for the salmon swimming upstream to do whatever they do when they get upstream to deposit then die. They evolved to be that way.

It is to some extent a bummer, and to some extent you must balance against it being - eventually we're going to have to look at nature and see how much we want to meddle.

If - I imagine a science fiction-ey world, not one that is going to pass, 50, 80, 100 years from now with all animal being mentally actualized, everything is smarter - deers are smarter, bears are smarter, raccoons, dogs.

Everybody's been smartened via some weird genetic plus some biotechnical tweaking, and in this world if a bear eats a deer. The bear is responsible for absorbing the deer's life experience, and so now the deer is kind of riding piggyback inside the bear's head as just one of the -

You can imagine a vampire story that's like that. Vampires designed by some alien civilization to when they suck blood they are also sucking the life experience of the person whose blood they are sucking, and it is just an alien civilization's way of gathering data on humans, which is all crazy ridiculous science fiction.

However, in a smartened-up world, there are going to be all sorts of things that are thinking and feeling that we don't have right now. We are going to have to make decisions about how much consideration those things deserve.

[End of recorded material]

# Cognitive Thrift 16 - Choice

Scott Douglas Jacobsen & Rick Rosner

May 26, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** There's also the fundamental right of choice. If you look at international declarations such as the United Nations Declaration on the Rights of Indigenous Peoples, they have the right to not only pick their heritage and culture from which they come from; they also have the right to live as they see fit within that context and some people don't want that, and there's no reason that it should be forced upon them.

**Rick Rosner:** I think in the novel Brave New World people are divided into five classes. I think it's a society that at least on the surface works efficiently, and when you start poking at it it is all scary and horrible, which is the point of the book, and there are people that decide to opt out and live on reservations without modern amenities, and we can figure as tech goes crazy across the next couple centuries.

There will be the technical Amish.

People who to various extents shield themselves from technical improvements. People who decide to age and die across a natural span of 80, 100, 120 years as opposed to everybody else who prefers living indefinitely.

You can imagine family struggles where you have a pair of 300-year-old parents and a rebellious kid who is getting old at 85, and refuses to take rejuvenation treatments or other forms of technical resurrection.

And how much strife there is going to be in that kind of family.

[End of recorded material]



# Cognitive Thrift 17 - Jocks vs. Nerds

Scott Douglas Jacobsen & Rick Rosner

May 27, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** We have talked about dynamic, static, ways of thought. You have characterized as 'jocks' in a larger theme of jocks vs. nerds in larger evolutionary theory.

**Rick Rosner:** Well-adapted organisms in stable environments: jocks.

**Jacobsen:** This could be tied into cybernetics with systems that have elevated levels of feedback, where systems that are static have less feedback.

**Rosner:** Sure - we're talking about dogma in society.

**Jacobsen:** Yes, as a larger theme, yes.

**Rosner:** So, if you're looking at the Middle Ages, where - and I know there are nuanced and revisionist pictures of the Middle Ages that have changes happening all the time if you happen to know a lot a history and I don't - a lot of things stayed the same generation after generation.

The cathedral might take 120 years to put up, so when after your kid looks at a cathedral that's 30 feet higher than you did when you were his age.

And that kid looks at a cathedral that's another 3 stories higher. Meanwhile, you are farmer, bakers, and barrel makers and living kind of the same types of lives under the same political, religious systems in a lot of cases.

I mean, yea political boundaries change and there were doctrinary changes, but there was a lot of stability. Certainly, more stability more than there is now, and stability is amenable to stable rules.

I may have mentioned this before, but my kid and I for her 21st birthday. We went to Italy and we were looking at a bunch art from the Romans and then from the Christians, and between the Romans and the Christians. There seemed to have been a major loss in ability to realistically render the human body.

The Romans had good-looking statues, and whatever survives of their frescoes or whatever. They obviously understood the human body.

All its muscles and bones and how they worked, and then you get to the Christians and you have cartoonish figures robes, and it seems like a giving up of that area of knowledge and giving it back to God.

We worry about our spiritual fitness, and we worry about our bodies and how they work. hat kind of suggests a certain at-homeness with stability in a lot of places over the next 1,000 years, and when politics is table, when religions are stable, when societal patterns are stable, and people aren't really trying to rock the boat. That permits or encourages stable rules.

And in a lot of instances a lack of curiosity or at least a lack of encouragement of curiosity.

[End of recorded material]

# Cognitive Thrift 18 - Dogma

Scott Douglas Jacobsen & Rick Rosner

May 28, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** We talked about static, dynamic, or simply dogmatic thought or patterns of people.

**This is less functional in a highly dynamic, often-changing, and increasingly changing society based on technology, science, and other things. Can you give us some examples of dysfunctional dogma? And how might we change that? How might it change?**

**Rick Rosner:** We can look at the 20th century, which saw the erosion of faith in many traditional belief systems. Even science, which got bigger and greater in terms of its successes in the 20th century also got scarier and weirder and more dysfunctional.

You had the Titanic go down in 1912, which signalled the beginning of distrust in big engineering. You had relativity and quantum mechanics dethrone classical mechanics, classical physics, and made everybody feel weird.

You had the erosion of patriotism in the second half of the 20th century, the erosion patriarchy, the erosion of things like the Boy Scouts became super unhip - where no kid or few kids were ashamed to be a Boy Scout in 1940, but there would have been a lot of kids who would have been embarrassed to have been a Boy Scout in 1980.

So, some of the erosion of traditional belief systems or traditional belief systems or things that are traditionally valued were probably due to over-reaching or too many uncomfortable revelations on the part of the institutions themselves. You could probably trace a lot of the erosion back to information. When there's too much information that undermines an institution, it becomes harder and harder to believe in it wholeheartedly, and the second half of the 20th century saw fewer and fewer institutions being able to shield themselves from information about themselves being revealed.

JFK could screw around with a zillion woman while feeling that he wasn't in much at risk of having any of this revealed. Gary Hart was the first, 1986, was the first huge presidential candidate brought down by an affair, and Clinton had all his dirty laundry aired.

Information probably drives the erosion of faith in traditional structures. The more you know about sports, especially recently, the less you can wholeheartedly believe in it.

The Tour de France, apparently pro bicycling is entirely based on avoiding being caught doping and the NFL, our entertainment revolves around players whose average lifespan is something like 60. They are engaging in something that is going to cost them their rest of their lives and will cost them 20 years of their lives on average.

[End of recorded material]

# Cognitive Thrift 19 - Theory

Scott Douglas Jacobsen & Rick Rosner

May 29, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** These things - all of them - can derive to degree of feedback and basic principles of information and communication theory with respect to how much a system is recursive in terms of its own improvement and ones that cannot keep up with the general change that happens - whether societies or aspects of the international community, they tend to erode or outright disappear.

**Rick Rosner:** Yea - I agree with that. And what we've seen over the past century or more. People love information. People will be draw to increasingly rich information source. People love secret or taboo information.

So, there's the - many of the traditional, American, institutions that had flourished through the first half of the 20th century were undermined by people learning too much about them or by people learning about their internal contradictions or them being at odds with rapid changes in society during the second half of the 20th century.

[End of recorded material]

# Cognitive Thrift 20 - Feedback

Scott Douglas Jacobsen & Rick Rosner

May 30, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** In terms of a general principle through cognitive thrift or cognitive economics, and bearing in mind the feedback systems and information theory and community theory basis of a lot of this, we can derive a principle about nested systems and levels of feedback within the system and in the embedded systems within that larger one.

**Rick Rosner:** The erosion of American stuff, which is proportional to the amount of news coverage that is available. I grew in the 60s. There was a half hour a day of national news on TV, on each of the three networks. Under - there was less pressure to crank out a lot of journalism. There was - though...

**Jacobsen:** I could clarify what I meant. What you're providing are very specific societal examples from a standard American perspective, which makes sense based on the information that you do take in a lot of now, my perspective went abstract.

In terms of how these interrelated, and so I think they're very much tied together, here's the theoretical foundation of it in these disciplines and your provision of examples are very good and lay out a trendline of these in the, now, most powerful nation now, in history. It is a practical and theoretical overlap between the too.

**Rosner:** We're right in the middle of media and politics wrecking themselves and each other. Right now, people are not resistant, sufficiently resistant, to manipulation via targeted information, where everybody has their chosen bubble.

And often these bubbles are cynically manipulated, lie the conservative bubble is partly stuff that. Both the conservative-liberal - whatever bubble you're in is partly actual events, stories about those events, and partly spin about those events, and partly manufactured events.

And the information that wins probably in each of the major political bubbles right now in America is stuff that's been spun.

[End of recorded material]

# Cognitive Thrift 21 - Data

Scott Douglas Jacobsen & Rick Rosner

May 31, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** We talked about high level theory - communication theory, information theory, cybernetic theory, and so on. You gave examples from American life and politics, and social situations now.

**Both have relationships with respect to the empirical and the theoretical. Theoretical coming from me. Pragmatic coming from you. I think some healthy middle ground can be had here. About examples, what can be said here?**

**Rick Rosner:** In my mind, it's always jocks vs. nerds. As a species, we're nerdy. We're physically weak. And with built-in mental fluidity, when a species is successful in surviving in nature in surviving in its niche, it uses its excess abilities to create extra complications to maintain reproductive hierarchy.

I'm not saying everything is because of sex, but humans triumphed over the natural world and now because we have mental fluidity. We're constantly reshaping the human world.

When we get better and more powerful because we have more powerful tools and because we have the mental capacity once things are reduced to symbols to be able to understand those systems, and it's not like we're going to run out of mental power to understand symbols.

And so, we have an endless ability to reshape human society and the reshaping accelerates, which means that there's less and less room for established rules.

**Jacobsen:** When I think about that, that seems like the foundation for dynamic thought, non-dogmatic thought.

**Rosner:** People call it a hockey stick curve or an exponential curve. It's where things happen slowly for a long time and the various forces amplify each other and the rate of change goes nuts.

And if you look at history, if you look at the curve of human population, probably the curve of productivity, the curve of information, these curves are hockey stick curves speaking to human mastery of change. We're nerds!

We thrive on flexibility now.

[End of recorded material]

**Cognitive Thrift 22 - Liberalization**  
**Scott Douglas Jacobsen & Rick Rosner**  
**June 1, 2017**

[Beginning of recorded material]

**Scott Douglas Jacobsen:** We have discussed a little bit of Dogma, not necessarily in beliefs systems alone. For instance, as after that great Kevin Smith movie, we can look at the Catholic Church and the way that it's standard dogmatic positions of a lot of things have been in many, many ways been liberalized in many, many parts of the world. It's a softening of the belief system.

**In an analogous manner, the way people interact with the world will have to become less rigid with respect to their heuristics in terms of interacting with the world, and that seems in line with the erosion of dogmatic or static thought in general. Can you expand on that a bit?**

**Rick Rosner:** We're lucky to have the current Pope who seems to be less dogmatic than a lot of previous popes, but he's still strict about some stuff, but Catholic Church has gone through periods of greater and lesser rigidity.

The doctrine of Papal infallibility is only about a 150-year-old, but what we're looking at in our future is as we gain control over our thought processes.

As we learn more and more how our brains work and thought works mathematically, we will be able to re-direct our priorities and we will as we design artificial intelligence or adjunct intelligence must decide what our priorities and those thinking entities' priorities are, which means will have to decide what is important about being human.

Science fiction generally comes to glib conclusions about what being human ultimately is, at the end of a lot of lazily written movies and TV show humanity is love, but that doesn't tell you with how we will change over the next few centuries.

Many of the things that defines use: being driven by reproduction, to some extent by the amassing of wealth, preserving the physical integrity of our bodies. All those things are going to be under attack via the marketplace, via theoretical considerations.

I suspect that once we understand consciousness more thoroughly we'll find out that our version of consciousness is a bit overrated because it's an evolved consciousness that is a bit threadbare and is weighted in ways that we might not it to be weighted.

My example is the fascination with butts and to some extent with boobs and facial features because all those things biology wants us to be interested in because they represent reproductive fitness.

[End of recorded material]



# Cognitive Thrift 23 - Hate

Scott Douglas Jacobsen & Rick Rosner

June 2, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** Some innate aspects of human hardware and wetware, as it's sometimes called, has to do with what you pointed out before such as boobs, butts, and even rich lips.

Other aspects are more positive such as greater intelligence, which seems like a driver.

Something that I want to go into is violence. Something that has been very consistent throughout our history, whether as individuals, as groups, or as societies, and now as we're seeing in the international community, at least in the 20th century.

Basically, war and violence towards one another in various way seem like rationalizations for hate. This seems very dysfunctional at this point in history. What are your thoughts on it?

**Rick Rosner:** I got to defend violence to some extent because in some instances it works.

Sometimes taking stuff by force works to the advantage of the person if they can get away with it, but in a more general sense. We're still the primates we were 100,000 years ago with the brains from 100,000 years ago.

We are able to do more sophisticated things than 100,000 years ago because we developed a culture and we're surrounded by technology and we have ways of communicating and we have theories and understandings of things that work well with our brain's ability to process symbolic information.

Our ability to process symbolic information has served us well and will continue to serve us well as we begin to climb, rapidly now, climb rapidly to higher and higher levels of sophistication because if anything can be broken down into symbols we can generally understand those symbols, and so our brains are adequate.

But we still have the, as you said, hardwiring of primates, and as we understand more and more about our brains we will be able to rejigger the wiring, which is something that we've been able to do up to now in history.

We'll have the increasing ability to decide that our drives are as opposed to our evolutionary heritage to some extent deciding what our drives are.

We will be able to turn down sex drive if that's convenient for us, or re-direct drives in directions that individuals find more productive. We'll be able to tone down violent impulses if that makes or serves a utilitarian purpose, if it makes things better for everyone in general.

[End of recorded material]

# **Cognitive Thrift 24 - Utilitarian**

**Scott Douglas Jacobsen & Rick Rosner**

**June 8, 2017**

[Beginning of recorded material]

**Scott Douglas Jacobsen: Do you see things becoming more utilitarian?**

**Rick Rosner:** Yea - as people live longer, people's tolerance for risk goes down. People drive crappier than ever with our devices and everything, but our automobile fatalities are lower than they've been 50/60 years because we have cars with ten air bags and other safety devices, and so, yea, tolerance for risk will decrease in the future.

That includes becoming the victim of violent action. People will try to engineer some of our uncontrolled violent tendencies out of our behaviour.

[End of recorded material]

# Cognitive Thrift 25 - Network

Scott Douglas Jacobsen & Rick Rosner

June 15, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen: What might be the benefits in light of this speculation about information theory, communication theory, cybernetic theory, and more open information processors with more feedback? What are the benefits to highly networked thought?**

**Rick Rosner:** We kind of know that there are cognitive economic benefits to highly networked thought within individual brains with the highly networked thought being consciousness.

In a practical sense, where you have all of these sub-processors in the brain that are sharing information on an ongoing broadband basis, which we can kind of guess that consciousness is beneficial. It's not always beneficial in every single situation, where, you know, situations where you need to make a split second move are going to tend to be sub- or pre-conscious.

But where you need to process a bunch of information and make a decision or have an understanding, there's benefit to having every part of your brain sharing information with every other part of your brain, and we can guess that networked information sharing amongst groups of brains or groups of information processors probably has benefits, and we're in the middle of being much more networked.

Where you can imagine a bunch of people in the 1930s and the 1910s, and most communication is face to face, verbal, you've got newspapers and some people have telephones, but most information carrying interaction is one person to another person right there on the spot.

And I don't know what the proportions are now, but the proportions have changed dramatically where we are gathering information from our devices every waking hour depending on how addicted you are to your devices.

And much of our communication is via texting or via talking on the phone, less and less on the phone and more and more texting, but there's just much more or a greater flow of information, and across greater distances and I guess of a greater factuality, perhaps.

In that, much of the information that's carried by our devices reflects some kind of news or factual content. But given all of that, it is hard to immediately hard to say that it makes us smarter.

In America, in the middle 2016 elections, we look really stupid. People look very committed to their information bubbles. Trump voters are generally stupid. Bernie voters are a different kind of stupid, but the appeal of both of those candidates are not.

They appeal for dumb reasons. Bernie wants to give people a lot of free stuff. He wants to level out the economic playing field with no easy way to do that. So, we're in the middle of a stupid

time in America. So, it's hard to see how all of our information has made us smarter. So, we kind of have to look where we might be smarter, and where we might be smarter is entertainment.

Where I've worked for 25 years, we are supposedly going through a Golden Age of television.

TV is much, much better than it used to be, and it is, and one way that it is better is that it includes more information and it is targeted for a sophisticated audience, not a more sophisticated segment of the population, but a viewing audience that in 2016 is more sophisticated and has seen more stuff than viewers in the 1960s or 70s.

So, entertainment moves faster. Plots are more intricate. More is left unsaid; people are encouraged to draw more of their own conclusions. There's more realism than there was in earlier TV, and that's largely because everybody has seen everything now.

Everybody has seen 10,000 different stories and heard 50,000 different jokes over their lifetime compared to a farmer in 1908 who has heard 19 jokes and knows the plot to 30 stories.

So, increasing sophistication is one benefit, I guess the pace with which redundancy and error might be knocked out might be another possible benefit, where everybody knows. Before the telegraph, it took days for people to find out days or weeks to find out news from different parts of the world. Now, people find out within seconds.

But, again, I'm not sure what the benefit is to the overall level or functioning of society for people knowing things instantaneously.

[End of recorded material]

# Cognitive Thrift 26 - Isn't

Scott Douglas Jacobsen & Rick Rosner

June 22, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen: We defined some things about the principles around cognitive thrift. What isn't cognitive thrift?**

**Rick Rosner:** Thinking about economics, it is not the science of how your brain makes decisions about finances and money. It's not about the costs, the financials, neither is it about the financial costs of decisions that make or the financial costs of cognitive bias.

It is kind of deeper than that. It is about the costs and benefits to the organism of thought itself. And in its most extreme, what are the costs and benefits? Meaning, the person who can think and react to the environment compared to a tree that can't think.

You can make a case for being a tree and for being a human. Trees live for hundreds of years. They reproduce. At the same time, trees can't change their situation. They can be cut down for Christmas trees.

They can be attacked by beetles. They can't run away from a fire. People can react to their situations, but if their perceptual thoughts are erroneous then they can become victims of their own thoughts.

[End of recorded material]

# Cognitive Thrift 27 - System and Negation

Scott Douglas Jacobsen & Rick Rosner

July 1, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** We have defined some aspects of Cognitive Economics and some of aspects of its negation, its surrounding void. We talked about information theory communication theory, cybernetic theory, and American life, politics, and cultural changes. Let's talk some more about it.

**Rick Rosner:** Alright, so - I dib, my preferred term for all of this stuff is cognitive economics. I don't know if that's a useable term because other people have used the term for things that we are not talking about because they use the term for economics and decision-making, but some areas we are going into that are related to cognitive efficiency, which your brain definitely engages in, in some ways that are obvious and other ways that are not obvious.

And cognitive game theory because thought to some extent is a game, where perceptions and decisions have a range of paths - both positive and negative - and the game you're playing, your brain is playing, is to come to the conclusions that maximize the expected payout, maximize the benefits.

[End of recorded material]

# Cognitive Thrift 28 - Meta-Game Theory

Scott Douglas Jacobsen & Rick Rosner

July 8, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen: What about meta-game theory or cognitive meta-game theory? Theories about not only individuals, but many individuals, groups, and societies in interaction - or information processors or agents in interaction.**

**Rick Rosner:** Game theory is traditionally involving people playing against each other, and trying to come up with optimal strategies that are resistant to other people's decisions which you would expect themselves to be informed by game theory with the classic game theoretic problem being the prisoner's dilemma, which is whether or not you rat out your partner in crime.

So, cognitive game theory to the extent that you're thinking about your place in society and your place among other people. It includes assumptions about other people's mental and decision-making landscapes.

So, I guess you would expect over time brains to evolve to decisions that maximize mutual benefit, at least to the extent that this allows people to raise children that themselves will be able to raise children because the prize with evolution is always the succeeding generations.

But to go back to cognitive game theory for the individual, your brain is trying to follow heuristics or come up with rules that maximize its available abilities to minimize risk and maximize benefits, which to some extent means that the less conscious consideration you have to give decisions.

The better because conscious decisions use up less resources than pre- or sub-conscious decisions, so to go back to the usual example of the traffic light.

If you know hundred percent of the time that a red light means danger and a green light means safety, you don't have to think about your position or your decisions to do with lights. It becomes increasingly unconscious that you drive through green lights and stop at red lights.

However, real world experience shows that it is not 100% and the prudent drivers pay a certain amount of attention to the state of the light because everybody increasingly an idiot when it comes to driving.

Which itself is a consequence of cognitive economics, where due to the evolutionary nature of the brain, the brain has built-in biases, which means that we have a hard time resisting these biases and the kind of information that we get from our devices seems pertinent on a personal level - which makes it delicious, very attractive, in the same way that salt and sugar are delicious and attractive based on our evolutionary history.



So, the deliciousness of personal information received from our phones puts us in danger because at some point the brain - evolution biased us towards finding this kind of information super important by making it tasty.

[End of recorded material]

# Cognitive Thrift 29 - Game Theory

Scott Douglas Jacobsen & Rick Rosner

July 15, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** Game theory is the theory about the mathematical models of conflict and cooperation between intelligent and rational decision-makers. It does deal with a payoff matrix between two players. We talked about cognitive game theory, which implies something different.

**Rick Rosner:** Let's clarify how game theory works a little, generally, in game theory, you lay a payoff matrix. Where you have a set of different decisions that you can make, and you have a set of different outcomes of things that can happen for each of those decisions, and then each of those outcomes is weighted probabilistically, and a value is assigned to each of those outcomes, and by calculating the entire matrix you hope to come to the optimum decision.

For a simple situation, we'll do a simple situation: cross the street. Game theory of crossing the street, you have two possible decisions, cross the street or don't cross the street. You have two possible. you have two possible decisions and two possible situations: red light or green light. And then for red light or green light, you have two possible outcomes.

Make it across safely, get killed, so - or get badly injured, whatever you want. So, the payoff matrix or the payoff for crossing the street successfully. The payoff is say 1.

Say that's worth 1 abstract dollar, crossing the street unsuccessfully, not getting injured, the payoff is -5,000. it is much, much worse to not make it across the street than it is to make it across the street.

And then the probabilities for making it across the street, for red light, 1% successful/99% unsuccessful and, for green light, 99.0% successful/.1% unsuccessful. And you don't need to plug in the math because it is a commonsensical thing.

Your best strategy is to not cross the street on red and to cross the street on green because the negative payoffs for unsuccessfully crossing are really, really huge.

And you can use game theory to make decisions that aren't so clear cut like you could do a John Nash decision. Do you hit on the blond girl that everybody is hitting on or do you hit on the brunette girl that is being ignored, or do you completely blow off that situation because that's leftover from when John Nash was thinking about hitting on girls in the 1950s?

The best strategy there is to probably to post on a blog that you don't hit on girls and hope you get to meet on girls by appearing to be enlightened.

[End of recorded material]

# Cognitive Thrift 30 - Cognitive Evolutionary Game Theory

Scott Douglas Jacobsen & Rick Rosner  
July 22, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** We're going to be using this to lead into cognitive evolutionary game theory. We cannot say that these particular cognitive game theoretic aspects come from evolution because everything comes from evolution. It is a trivial truth in that sense, but we can carve out things.

**Rick Rosner:** I'm not saying a lot specifically about the brain, but I am making the assertion that brains and species. The one main assertion that I am making - well, I'm making many, but the one that I am making with respect to game theory is that brains can work with varying levels of functionality.

[End of recorded material]

# Cognitive Thrift 31 - Individual Functionality

Scott Douglas Jacobsen & Rick Rosner

August 1, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** We observe this with varying levels of functionality with individuals.

**Rick Rosner:** Once we suss this out, there will be mechanism, or clear mechanisms, by which people will think in familiar patterns or are jostled into thinking in unfamiliar ways.

**Jacobsen:** We can put these in common terms. Organisms evolved in particular habitats. Therefore, the organism to do or try to do is to attain a particular habitat suited for itself. For a simplified example, an artist should not be in a Symplectic geometry class. An mathematician should not be in the sculpting class.

**Rosner:** Yea - but there is a generalist class with a species that it's a generalist class. There should be a species - a generalist species should be successful.

[End of recorded material]

# **Cognitive Thrift 32 - Generalized Capacity**

**Scott Douglas Jacobsen & Rick Rosner**

**August 8, 2017**

[Beginning of recorded material]

**Scott Douglas Jacobsen:** However, we assume a generalized capacity. These could amount to a very large set of particulars from which through skill and training what appear as generalizable skills and abilities because we are taking an assumption about an entire species and then applying to an abstract individual. We cannot do that, and that is a common thing I notice.

**Rick Rosner:** You can bring that up as, "Is that something that is going on? Or is it some actual 'g' that arises in the conscious arena - which we argue it is - that actually makes for - or makes generalization possible?" Where you have the different models that each of the brains sub-modules, each of the brains modules. The under consciousness, generalization becomes possible.

[End of recorded material]

# Cognitive Thrift 33 - Survival

Scott Douglas Jacobsen & Rick Rosner

August 15, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen: Cognitive game theory will imply some things to do with both an individual member and species survival with respect to cognitive evolutionary game theory.**

**Rick Rosner:** Before we talk about game theory, we have to talk about the struggle between individual survival and species survival. We're evolved beings. Evolution doesn't care about anything. It's not a willed force. There's a thing called teleology. An idea, a bad idea, that evolution wants us to go in particular directions.

Evolution can't want anything. It is not an entity with will.

**Jacobsen: It's a process. What are some examples of a teleological view in ancient and modern times?**

**Rosner:** Teleological process - eyes are used by people that advocate creationism and intelligent design as something that couldn't have evolved all by themselves. That the hand of some divine entity must've gotten in there because they are too complicated to just show up on their own.

Mixed in that is the idea that evolution pushed towards eyes. That evolution wants us to have eyes, but evolution can't want anything. It's a process, and it can exert adaptive forces, but those forces aren't willed.

Those forces - and forces isn't a good term, but I don't better because I am ignorant - are helpful in surviving, eyes are helpful in surviving. Eyes get better and better where any extra betterness was being extra helpful for the organism. Economically, plus there's the whole landscape of what  
dammit (phone)

Evolution doesn't want us to have eyes, but evolution has evolved at various times throughout evolutionary history because eyes are helpful, but there's no divine push towards it.

In a sympathetic view, what would seem like a more generous statement to those - the majority of people with that teleological view in the world, which tends to tie into it?

There's no generosity to be given to people that cynically exploit anti-science views to push their political agenda. It is people with their own agenda trying to sound scientific with a pseudo-scientific theory, and it is just trying to sneak creationism in.

So there's no generosity with them.

[End of recorded material]

# Cognitive Thrift 34 - Perspectives

Scott Douglas Jacobsen & Rick Rosner

August 22, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** I don't mean that. I'm talking about genuine individuals with those perspectives.

**Rick Rosner:** We all ride the arrow of time towards increasing order in lots of settings. For instance, the setting of a planet in a temperate zone orbiting a star. That's a place that's ripe for increasing order, and under the arrow of time increasing order is a thing we all benefit from.

And its part of what somebody like Einstein or Hawking might consider that divine beauty or divine order of the universe. That it's a cool thing, a beautiful thing. One could almost say a godly thing without specifying an actual, like, bearded guy up in the sky that indicates order.

That feeling of evolving towards increasing order. But that being somehow at home in the world in a beautiful way isn't a bad feeling, it's good. You just have to - when you think about evolution and stuff, which is tough to think about because of issues like this.

You have to keep your forces kind of well-defined and avoid purpose sneaking in there. That we're an evolving form of purpose.

[End of recorded material]

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Scott Douglas Jacobsen & Rick Rosner

August 22, 2017

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[End of recorded material]



# Cognitive Thrift 35 - Cognitive Economics

Scott Douglas Jacobsen & Rick Rosner

September 1, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** We talked about cognitive economics. We talked about game theory. We talked a little bit about meta-game theory, which builds on that - via mention. More importantly, we talked about evolution and cognitive economics. What ties these together?

**Rick Rosner:** Hold on, due to the way we evolved, there are sometimes - we evolved to want things. Nature doesn't care what happens to us once we're done reproducing, as long as what happens to us doesn't disrupt the species.

For species such as ourselves, where it takes 20 years to raise the offspring, there's, there's - we have some further use after reproducing. So, there is some - evolution wouldn't favor our welfare - it would favor the welfare of our species.

The welfare of our species would be threatened by members of our species not actively participating or actively disrupting the activity or raising offspring, and so to that extent there might be some evolved conformity to the business of raising kids and providing a stable culture, say.

That'll need to be revised, but beyond the business of raising kids and not disrupting that business. Nature doesn't care about what happens to us. Or there's no pressure for there to be positive outcomes or any kind of - we have kids, we raise kids, and we enjoy a few more decades of aging and then we're gone.

There's - because there's no - we can talk about a thing. There's probably an official name for it.

I'm calling it evolutionary sufficiency, which is that the pressures of evolution create individuals and individual characteristics that are only good enough to do the job they do plus a little more, just as a margin of error. And that evolution sufficiency takes various.

Evolutionary sufficiency creates beings and characteristics of varying durability depending on the life cycles of the various species. Our bodies wear out in 70-110 years because we have to live until 40 or 50 just to do the business of raising kids.

And then we have some excess durability because things keep - the evolved. Our evolved durability allows for a few extra decades of life beyond the decades necessary to get the next generation going. And that probably holds across most species depending on how long it takes those species to get the next generation going.

Dogs can live up to 20 years, possums up to 4 or 5 year, rats and mice - 3, 4, 5 years if they're lucky, enough time to spit out another couple generations and then they're done. There is little

evolutionary pressure to have longevity beyond reproduction except accidental longevity due to systems that need to go a certain or need us to go a certain amount of time that need us to go a little extra time.

[End of recorded material]

# Cognitive Thrift 36 - Longevity

Scott Douglas Jacobsen & Rick Rosner

September 8, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen: What about grandparents, great grandparents? Those aspects of evolved creatures that live extraordinarily long periods of time compared to other creatures that can have evolutionary benefit.**

**Rick Rosner:** People speculate that any characteristic that we have someone will speculate that it is due to evolutionary pressure. That we live 30 years beyond reproductive age because it is helpful to the species that there are grandparents and elders that have accumulated knowledge. That up to 10% of the population is gay because gay people often function in societies as nurturers.

And to some extent, these are legitimate arguments to be made. There's a separate set of arguments to be made that extended life, gayness, are just things that arise as part of the process because there's no evolutionary pressure for this not to happen.

That we have evolved characteristics, gender-related characteristics, and these are generally helpful to the species. For every human, there's a mix of gender-related characteristics with - we all have characteristics.

Some of them are strongly associated with one gender than the other, but none of us has - research shows that none of us has - uniformly characteristics that is associated with one gender or another. We are kind of a mix. Some people are more of a mix than others.

[End of recorded material]

# Cognitive Thrift 37 - Binary

Scott Douglas Jacobsen & Rick Rosner

September 15, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen: Well, people are not binary. People are on a spectrum, but that's a polysyllabic statement for a trivial truth. What is the deep truth there?**

**Rick Rosner:** The deep truth there is that under evolutionary sufficiency. Things are only as good or as ordered or as whatever as they need to be for the species to function.

And, it - apparently, our species functions fine with everybody having a mix of gender-related characteristics and with some people have more of a mix across gender than other people.

Nature is only a sheriff of characteristics and only a caretaker of characteristics to the extent that it is necessary for the species to thrive, and that leads to helpful flexibility in species, where there is no sheriff in nature that says you need to die after reproducing - so we get extra years.

There's no sheriff saying you need to live until 120 because that doesn't help the species, and it is whatever helps the species, doesn't hurt the species, and whatever persists because - to some extent, we live until 70, 80, 90 because it is helpful to the species.

But we also live that long because once you build a car or something, the pieces have some excess durability just due to the nature of those things.

If you design something with evolutionary sufficiency, the sufficiency generally has some slop over that allows for extended survival and it's increasingly debilitated survival because there is no sheriff saying - the situation is there is no sheriff saying you have to die after you are done with reproduction, and there is no sheriff saying you have keep going after you're done reproduction, and we keep going in an increasingly debilitated form. We're good at 40, pretty good at 50.

A little falling apart between 50 and 60. 60, 70, to 80, things get dire, and then we're kind of a mess into our 70s and 80s, and more so - we fall apart because there's no sheriff that says we shouldn't. The sheriff of nature or evolution.

I drive a 16-year-old car. And I don't maintain it that well. I get an oil change about every 7,000 miles. I don't switch out fluids. The car will eventually fall apart, but it has been going this long.

If I was super scrupulous and it were a collector car, and I replaced everything that could/should be replaced, I could keep the car going for 100 years, but because the car was designed to last for a 10 years say, I can get more out of it because designing for 10 years generally allows for continued functioning for years beyond that.

It is that way with our bodies. It's not like we live for 50 years after we're done reproducing. We live for 30, 40 years. It's not like dogs live to 35, even though they've quite having puppies at age 10. Dogs get a few extra years.

Everything gets a reasonable proportion of their lifespan extra because things don't fall apart immediately.

[End of recorded material]

# **Cognitive Thrift 38 - UN**

**Scott Douglas Jacobsen & Rick Rosner**

**September 22, 2017**

[Beginning of recorded material]

Scott Douglas Jacobsen: If you look at the UN data, the highest lifespan and health span nations are the typical players in terms of well-being, which comes out to Eastern Asia, North America. In particular, places like Japan, Finland, the Netherlands, and Canada as well with the numbers running up into the 80s - and even in the high age ranges of societies in terms of lifespan women live longer than the men.

Rick Rosner: You can make an evolutionary argument about that. On the one hand, the countries where people live longer are the countries where people take better care of themselves whether due to diet or lifestyle.

Jacobsen: Cultural restrictions, social restriction, or even religious dietary restrictions.

Rosner: Could be, could even be circumstances of life, maybe we even survive better in colder countries, although that's unlikely. It's a combination of accidental things and intentional things.

[End of recorded material]

# **Cognitive Thrift 39 - 2x**

**Scott Douglas Jacobsen & Rick Rosner**  
**October 1, 2017**

[Beginning of recorded material]

**Scott Douglas Jacobsen: The difference between the high lived societies and low lived societies is about a 2x.**

**Rick Rosner:** When you have a terrible failed state, where people are struggling to get food and there's civil war and stuff like that, of course, there's going to be - in a general sense, I live in LA. My car is going to last longer than if I lived in Minnesota given that I take care of the car in the same way in each place because in Minnesota the car is going to be eaten up by road salt and bad weather.

But, and then, women, for one thing, menstruate - bleeding every month means that they have lower levels of iron. Iron binds to cholesterol, which lead to a buildup of plaque in the arteries. So, that's one factors.

Women have that whole extra chromosome. The Y chromosome is kind of crappy. It doesn't have as much instructions. It's all stubby. If you have two X chromosomes, you have extra genetic instructions. Women carry the offsprings. They are more necessary. Men are more disposable culturally, evolutionarily. There could be a zillion reasons.

[End of recorded material]

# Cognitive Thrift 40 - Matriarchy

Scott Douglas Jacobsen & Rick Rosner

October 8, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** Is this an argument of a matriarchy in the 21st century?

**Rick Rosner:** It could mean that as we move forward there's an argument for government that contains fewer assholes, if fewer assholes are women, then there's an argument for that.

**Jacobsen:** What defines an asshole to you?

**Rosner:** Somebody who wants to burn it all down to make a point, out of fanaticism. Ted Cruz seems to be an asshole. He shut down the government with crazy filibustering BS.

He's super-staunch conservative, and he and a bunch of the Tea Party guys are willing to do a lot of damage to what has been a political process that functioned better before there was a Tea Party in order to have everything crashing down and then have everything reformed in a new better way. Though good luck with the Tea Party form of government being better.

An asshole can be a fanatic. An asshole can be dogmatic. Somebody who ignores human welfare in favor of points of dogma who goes to war over points of philosophy.

[End of recorded material]



# Cognitive Thrift 41 - Caligula

Scott Douglas Jacobsen & Rick Rosner

October 15, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen: Caligula, Hannibal?**

**Rick Rosner:** Those guys. Their whole culture. I only read one book on this. They built a whole culture that was built on - war was not a sport, but they were highly invested in conquest. Their whole society was built on conquest, and it was after a while it became.

To some extent, it was always fake conquest. Rome functioned via economic partnerships that sucked wealth out of the states that they had dominion over, and that brought wealth to Rome, and at the same time the benefits flowed out from Rome to the states that they owned.

The relationship between these places was a bit warlike, but it was not war all the time, even though they saw themselves as a conquering civilization.

[End of recorded material]

# Cognitive Thrift 42 - Spartan

Scott Douglas Jacobsen & Rick Rosner

October 22, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen: Does this reflect the Spartan civilization?**

**Rick Rosner:** I don't anything about them other than that their name stood for self-sufficiency. I don't think - the Spartans were pretty isolated. I think the various Greek city-states emphasized, probably, self-sufficiency.

They were less interested in economic partnership. The Romans were people who loved war. They loved a lot of stuff that wasn't really warlike. They liked putting supposedly conquered people in charge of their own affairs. It's kind of like the US model of imperialism versus - I kind of want to say the Society model of imperialism, but that's not exactly it.

The US likes to come into countries and set them up the way we function and make them our friends to the extent that we can, and then hope or expect that they will run an election in American-type way.

And then we'll sneakily go into the past. In the past, we have a history of killing the foreign leaders that don't act in a friendly way to us. We kind of want to bring or say we want to bring democracy to the world.

We don't want to rule the world. We want the world to be our pals because the world works the way we work, which is a bit like the way the Roman model works.

[End of recorded material]

# **Cognitive Thrift 43 - Group Psychology**

**Scott Douglas Jacobsen & Rick Rosner**

**November 1, 2017**

[Beginning of recorded material]

**Scott Douglas Jacobsen: I want to take this a little bit back into cognitive thrift, game theory, and evolutionary theory.**

**This brings a couple things to mind for me. One, the way in which an asshole model of cognition can lead to analysis of society and that societies relationships with other ones, and how individual psychology can be reflective of group psychology.**

**Rosner:** We're talking about assholes versus non-assholes. There are some times in history when it pays to have assholes running around.

**Jacobsen: I'm not arguing plus or minus for either model, but I am saying this can give insights and add to the field of cognitive thrift.**

**Rosner:** The general principles as we move forward is that lifespans are lengthening because we understand more about medicine and we have better medicine. Lifespans are extending because we have better understanding and better medicine and better technology.

[End of recorded material]

# Cognitive Thrift 44 - Dynamic Non-Mechanistic Machines

Scott Douglas Jacobsen & Rick Rosner  
November 8, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** That comprehension is based on us as dynamic non-mechanistic machines rather than some spiritual thing.

**Rick Rosner:** Generally, yea! The spiritual understanding has its place, but in terms of living longer it helps to have medical understanding of expertise.

As we living longer, our tolerance for risk goes down, and it's probably better for a low-risk and tolerant society that you have fewer assholes in charge, but if you go back to WWII where you need a bunch of risk takers. A bunch of bold - you have existential threats in the form of Nazis that want to kill or enslave everyone who doesn't fit a certain genetic profile or racial profile.

You need people who are going to blow up bridges where Nazi trains are going to cross, and you need people to join the resistance, and to contain Hitler for WWII. You reach the point where you need 1,000s of guys to storm the beach and the hell blown out of them.

And you get more guys. I'm sure more women could have done it too, but things were set up that way then to drive 100s of miles to work their way across Europe, and getting blown up along the way to eventually reach Hitler's bunker.

So, I'm sure a lot of the guys...

I imagine an evolutionary sheriff that is kind of lazy and people come in to complain about there are gay people and trans people and it goes against nature, and if you look at the history of humanity and other animals.

Humanity seems to be doing fine reproductively. People have different sexual orientations. Historically, the Romans had boyfriends and girlfriends until the 19th century there really much of an idea of homosexuality.

People, and so I think things are fine the way they are, and he goes back to looking at a magazine. We were also talking about boldness and intrepidity and assholery. Historically versus now with lower risk tolerance.

People talk about going back in time to kill Hitler and you got to wonder. Is it better to kill Hitler or put a bomb in his neck and say that he's a good way - he's got a good handle on the German people in the 30s and he's a terrible guy. Maybe, you cure his syphilis so he doesn't go as crazy as he eventually goes.

You say that as long as you don't go about the genocide of the Jews, or if you do and about anyone that you don't like we will blow the bomb up in your neck. We'll make good on some of the oppressive conditions of the Treaty of Versailles and you can lead the German people, but just not towards genocide and oblivion.

People tried to appease Hitler. Chamberlain, they believe him when he said he wouldn't take over Europe. He lied and did it. That doesn't mean that - the takeover of Europe required bold action that killed tens of millions of people, except if you look at superheroes and the culture is built around superheroes now.

People are just starting to notice that superheroes are by their bold action causing a lot of collateral damage. Much of what - it's not that super, much of the time superheroes are not saving the world they are stopping other superheroes or other supervillains from messing up the world.

Heroes was a very frustrating American TV show where the heroes didn't do any saving of the world. They only fought other heroes and stopped them from wrecking the world or killing other heroes - so bold and intrepid action has kind of a history both in reality and in pop culture of causing a lot of damage. And we may end up moving increasingly away from it as our lifespans go up and we learn more about how to work around our - some of our - evolved aggression.

[End of recorded material]

# Cognitive Thrift 45 - Evolved Objectives

Scott Douglas Jacobsen & Rick Rosner

November 15, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** We have evolved objectives. What objectives?

**Rick Rosner:** After messing around, we are finally ready to talk about the motivations and objectives and, to use game theoretic terms, the payoffs of our evolutionary history. Much of it is simply to survive.

Some of it is to reproduce. Sometimes those things conflict with each other, but regardless we want things. But wanting and getting those things amounts to a payoff or a payout or a - a payoff.

There's evolutionary sufficiency, which is we're pretty much only as good at the things we want to do as we need to be under the - to conform with - to do what we need to do in nature and in society as long as our ability to do things in society are the result evolution.

Or our capacities to do things in society are the result of evolution. We mostly evolved to survive in nature and we got so good in nature that we were able to build a complex society and society also it is arguable about whether society has been around long enough to make much of a difference in our evolved capabilities so for the most part our abilities to survive in the city are just kind of a byproduct of our ability to survive in nature.

Any abilities above and beyond that are kind of accidental due to the persistence of characteristics. If you design a car for the last ten years, it is likely that it will last for eleven years or twelve years or 14 years, but not a 150 years. There's some available capacity that - but all of it is the result of evolutionary pressure.

And which means that we have limited resources to do what we want to do. We can't run a mile in two minutes, even though some animals could run that fast for short distances. There's wasn't sufficient pressure on us to develop that ability.

We can't calculate three-digit numbers in our heads because there wasn't evolutionary pressure to do that, nor is it an easy enough ability to have by accident as a result of evolutionary pressure.

Excess capacity does not give us too much excess capacity. We are limited in our abilities because we've evolved to only have limited abilities that are only as good as they need to be plus a little more by accident.

[End of recorded material]

# Cognitive Thrift 46 - Cognition

Scott Douglas Jacobsen & Rick Rosner

November 22, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** We talked about evolution with regards to cognition. Let's talk a bit more about it, we seem to be coming to a realization here.

**Rick Rosner:** Cognition is important for several reasons. one of the reasons is that the offspring takes a long time to be raised because once you get into big brained things. Well, we in particular have childhoods that last 10 or more years.

Partly because it takes a long time to teach humans everything that we know, and partly because we are only semi-formed because our brains are as big as they can be without killing the mother during childbirth. So, they have to develop outside the womb.

Brains are expensive. Let's go back to general thinking about what's expensive.

[End of recorded material]

# Cognitive Thrift 47 & 48 - Meat

Scott Douglas Jacobsen & Rick Rosner

December 1, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen: Bodies, meat, and brains.**

**Rick Rosner:** Any organic costs something. The function of running or not running, climbing, breathing. Bodily functions consume calories. So, a tiger's body is expensive because it is big and has got a lot of muscles that use a lot of energy and so it has to find a lot of calories in the wild.

I suppose a hummingbirds body is expensive because it's wings beat about 300 times a minute and proportioned to its body size that is a huge expenditure.

If you run short of calories, you starve and might die. Generally, whatever animals have that costs calories also helps in finding calories in their environment, but everything is expensive. Lost time is expensive.

If a tiger stalks an animal for an hour and a half and the animal gets away, the tiger has spent 90 minutes of calorie consumption and also missed the opportunity. Maybe, it could have found, maybe if it was stalking a couple of ibex, I don't know what else tigers capture - maybe in zoos or somethin'.

A lot of animals exist on a thin edge of being able to come up with their daily requirement of calories. So, stuff that isn't necessary; we tend to have stuff that works for us.

Sometimes, you get animals that successful enough in their niches that they can start spending developmental energy on things like the peacock's tail, which is just an arms race for mating displays that kind of got out of hand.

But generally, we only have stuff that is worth it, and worth it in terms of survival. That kind of analysis can be applied to the brain.

[End of recorded material]



# Cognitive Thrift 49 - Cognitive Evolutionary Game Theory 2

Scott Douglas Jacobsen & Rick Rosner  
December 8, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** That leads into something. You noted in off-recording talks about something called cognitive evolutionary game theory. It might tie in these ideas.

**Rick Rosner:** Cognitive evolutionary game theory is - there is game theory over time, which is the game evolution is involved in helping us develop our brains. Then there is game theory when applied within the lives of individual organisms.

So, two different applications of game theory. One is we are the successful outcome of random bets made by evolution, which doesn't care about the outcome that provides pressure to fill niches that increase cognitive ability. Cognitive ability would lead to a successful organism.

And then, for individual organisms, it's the gambles we make when we think or choose not to think to extent that we can just go off of rules that are well-established. We'll come up with a better definition for that.

Evolutionary game and then we can narrow in on how it applies to cognition, where at some point in our history. Some point in - at some point in the history of primates it became possible for big brains to exist.

I have no idea how easy that was evolutionarily, was it just a couple of genes that shifted around and brains got bigger and bigger, probably not because it was a gradual thing or millions of year - 4 or 5 million years or more if you want to go from lemur-like tree dwelling things or proto-chimpanzees or whatever, but the push for bigger brains.

Bigger brains look as though it was a successful enough niche-occupying aid or benefit that there was steady pressure for bigger brains for millions of years and that we had whatever is in our genetic makeup was able to provide mutations and changes and support of that pressure.

There's probably stuff in evolution that there is a push to occupy niches, but just that our genetics and mechanical makeups don't make it easy for those things to evolve.

Brains can evolve, but you never - you hardly ever seen wheels evolve, people say. There's no large animal that gets around by naturally evolved wheels.

But we were able to evolve bigger and bigger brains, which indicates that bigger brains are helpful in exploiting niches. Commonsensically, we understand how that might work. Smart animals are better at understanding and exploiting their environments.

In order to understand the world, you need to perceive the world. So along with bigger brains, we have at least held onto much of our perceptual abilities. People say that when humans and dogs got together dogs became domesticated.

Humans lost much of their ability to think and deferring to humans' ability to think and humans lost their ability to differentiate odors, deferring to dogs' sense of smell. I don't know how accurate that is. We're talking about only 10-15,000 years ago.

But if you look at the diversification of dog breeds, a lot can happen in thousands of years. We have highly - some of our senses are highly developed. We have big eyes, decent ears, and we have a lot of mental hardware to differentiate the sensory information that we are taking in.

[End of recorded material]

# Cognitive Thrift 50 - Individual

Scott Douglas Jacobsen & Rick Rosner

December 15, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen:** Game theory can be applied to the individual. Game theory can be applied to the species. We have talked more about game theory as applied to the species within the context of deep evolutionary time as well. How does game theory apply to an individual?

**Rick Rosner:** Well, in a couple of different ways, one is different life strategies among individuals, where due to our evolutionary history, or due to having evolved, most of animals want to reproduce, but in many species it's only the fittest animals according to some criteria that get to reproduce. Generally, greater fitness leads to greater reproductive fitness.

I guess particularly among males, but I'm not sure.

**Jacobsen:** What does fitness in evolution mean to you?

**Rosner:** It is being well-adapted to survival in the world. The part of the world that the organism finds itself in. So, it looks like jocks versus nerds situation, where the jocks, the fittest individuals, monopolize reproduction and the nerds are shut out.

It is not just reproduction. It is in competition for anything within or among members of a species.

The fitter individuals may monopolize resources. And the less fit individuals can't compete for resources straight-on in many instances.

So, the less fit individuals can either be content with a lower quality of life or they can die because they do not have access to as many resources and more fit individuals or they can try lower probability strategies with potential for a high payoff.

[End of recorded material]

# Cognitive Thrift 51 - Payoffs

Scott Douglas Jacobsen & Rick Rosner

December 22, 2017

[Beginning of recorded material]

**Scott Douglas Jacobsen: That was a two-box matrix for game theory payoffs for an organism. What about more than a two-box matrix? What's next?**

**Rick Rosner:** We're talking about well-adapted species, stable niche – do the standard thing and get a steady payout, diverge from that and get less of a payout. Can things diverge? Well, yea, we know that at least some animals, ourselves included, can engage in all sorts of divergent behaviors.

I love watching stuff on BuzzFeed and other trash news feed time wasting websites about animals who diverge in various ways with, I don't know, a pretty good example being dogs that have learned to ride the subway in Moscow.

They get on the subway in Russia and then they go to the station and they ride in the morning in the station where they get on the bus to where they get rewarded, and then at night it in addition – according to the article they have used to put the cuter dog up front to have better begging rewards. That seems like a liiiiittle bit of BS, but the article is about dogs getting on the subway as if they're going for a job.

At least in higher mammals, we are used to flexible behavior. Let's go to an expanded payoff matrix, imagine that instead a stable niche, there's a niche that can vary from year to year, say, where some years the nut trees are all in bloom and other years they are all blighted and the nuts only pay off at 5% of their normal rate.

So, and let's say every other year – in good years, standard behavior pays off huge. In bad years, standard behavior barely pays off, which means that weird behavior at least relative to standard behavior may pay off relatively better if it leads to finding other ways to get calories.

So, you got a 4 box matrix now: good years where doing the standard thing is the right thing, do the non-standard thing doesn't pay off, and bad years where doing the standard thing doesn't pay off very well, and doing the weird thing might lead to a higher payoff.

Now, instead of looking at a messed up niche, look at messed up members of a species, not all members of a species are ideally fit.

So, say there's only in the standard kind of feels like that standard survival of the fittest thing, that the niche, say, can only support 80% or some arbitrary percent of the members of the species and the more fit members of the species crowd out the less fit members.

So, if you're a sucky, geeky, nerdy, or just incompetent, or just something is wrong – you got a bad beak for nut harvesting, so your payoff for standard behaviour instead of being 1.0 might be 1.2.

You might only get 20% of the calories from standard behaviour in the niche that a jock bird might get. He was a geek and gets shunted to the side, and so your payoff is .2 compared to 1.0 for the jock bird.

So, maybe you're forced into weird behavior or not standard behavior and if for a jock bird who's really good at harvesting nuts, the nut payoff is 1.0 and the weird behaviour is .15, not good a figuring out.

Maybe, the geek bird with a standard behaviour of .2, which may not be enough to survive engages in weird foraging behaviour and through practice in that behaviour it manages through that behaviors manages to raise the weird behaviour to .3 It is still a miserable living, but it is better than standard behavior.

.2 for standard behaviour, possibly .3 for divergent behaviour, though the divergent behaviour doesn't give you a uniform payout of .3. It gives you an 80% payout of .1 and a 20% payout of like .9. Maybe, you get lucky.

I don't know if the math works out exactly right, but it averages out to be maybe a .3, but in most instances it doesn't pay off very well, but in some instances it pays off great.

So, that's a matrix that you are kind of growing an extra box to the right rather than to the bottom, where you've got divergent-bird (80% crappy payout/20% super great payout). Divergent-bird finds a new food source or a new way of harvesting food that delivers a lot of calories.

So, that bird has a choice to make. Barely surviving through standard behaviour or going divergent and maybe not surviving at all, and maybe winning and surviving really well. And what the right thing to do is depends on the various probabilities and payouts within the bird's choice as with anything in game theory.

If things get sucky enough for a geek bird under standard behaviour, geek bird is faced with either dying or taking a risk. Maybe, dying any way or getting really lucky in a low probability event, and for the healthy and well-adapted bird, the jock bird, things have to get really bad for the jock bird.

The math is the same, but the standard behaviour is high for the jock bird. So if things have to get really bad, then the niche has to start changing like crazy or the jock has to be forced to make the gamble.

[End of recorded material]

# Cognitive Thrift 52 - Cognitive Flexibility

Scott Douglas Jacobsen & Rick Rosner

January 1, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen:** You gave some examples about dogs in Russia and unexpected cognitive flexibility.

**Rick Rosner:** That dogs have taught themselves to ride the subway to get to places where it's easier to beg for stuff, which is kind of crazy sounding at first. But apparently, they do that. People historically and consistently underestimate animals' abilities.

Animals can't write bestsellers, but they can figure out how to use door knobs and latches. Animals have behavioral flexibility. Some of them. So let's talk about whether behavioral flexibility is even possible.

I've just said it is, but only for dogs and people, and I assume for higher mammals like elephants. Given the game theoretic setup that we've been talking about where under certain conditions, it would pay to have flexibility in behaviour, which means not just flexibility in thought but thought itself. Can animals think?

We've pretty much decided that subway riding dogs can think. But 80 years ago, people gave up on asking whether animals could think because it was too complicated a subject, which went with behaviorism, which is the idea that animals are packets of behavior.

Let's not look at if they can think, but how do they behave. Setting aside the problem of whether animals could think because at the time it was too difficult of a problem.

Here we are going to argue that animals are capable of flexible behavior and that animals can think in proportion to the extent that animals have brains, and you can go all the way down to aphids and even smaller than that. What's the little freaking thing that has 352 neurons or something?

[End of recorded material]

# Cognitive Thrift 53 - 302 Neurons

Scott Douglas Jacobsen & Rick Rosner

January 8, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen:** That's *C. elegans*, 302 neurons. It is a roundworm that we have mapped the neurons and interconnections of the neurons as well. It is the only model we have complete understanding of, but we don't know why they turn left instead of right or right instead of left.

**Rick Rosner:** So it's got 302 neurons, not much of a brain, but still a brain. I would argue that even *C. elegans* with its brain that can fit about 10 of its brains on the head of a pin is capable of some kind of thought and flexibility in behaviour.

And argument number one in this is that sometimes it helps to have flexible behaviour or helping to have alterable behaviour that there is steady, not steady evolutionary pressure, in that sometimes you're in a good niche and everything is good and you don't need to have flexibility generation after generation, but I call it steady evolutionary pressure because from time to time across hundreds of millions of years, billions of years, species run into trouble.

Niches change, there's competition with the species where somebody is always kind of under the gun whether it is the species as the whole or individual members of the species and I'll probably need to substantiate this at some point, but it's helpful to have flexible behavior when you're precluded from using standard behavior or when standard behavior isn't going to pay off well for you.

Is mental flexibility or is behavioral flexibility linked to mental flexibility a possibility across the spectrum of beings that have neurons, basically? All the way down to *C. elegans* with its 302 neurons to people. One of the biggest things is that mental flexibility is something that can evolve or has the potential to be there at all levels of cognition and without knowing the math of it.

I would argue that increasing level of mental sophistication, the increasing size of brains and increasing information processing across hundreds of millions of years for the most complex beings mentally at each point in history or pre-history argues that the potential exists at every level.

The potential is not great for *C. elegans*. It is not going to write any part of a Shakespeare play – no matter how many if it's a million roundworms at a million typewriters you don't get Hamlet. Given that you've got neurons that are linked and sharing information, *C. elegans* is probably nowhere near conscious.

It is just a little blip of neurons. I would guess that there is still the possibility that *C. elegans* if you put it in a number of different situations relevant to a roundworm you will get different behaviors.

Behaviors that look kind of novel if you represent it with a situation that is not a familiar situation. It is not that *C. elegans* is doing a lot of deep thinking, but it does have the connections between neurons that are processing inputs.

You might surprisingly flexible behavior. It might not be relevant behavior. It might curl up or freak out to the extent that a 302 neuron thing can freak out, but you will get some kind of flexibility.

I'd argue that that flexibility is a pressure to have some measure of mental flexibility, behavioral flexibility, should consistently throughout evolutionary history – not necessarily every day or every organism, but across history, shows up a zillion times and that it's an unavoidable part of linked neural inputs that eventually at sufficient levels of complexity function like consciousness.

Mental and behavioral flexibility is available in some kind of proportionality of the size of the brain and maybe the way it's wired, but we can kind of guess that brains of varying sizes have some commonalities of wiring.

Brains are wired like brains and not like computers. Brains are interconnected among all parts. Computers are linear, at least the computers we have now. Flexibility is possibility, but flexibility. Divergent thought and behavior has costs.

Cost one could be foregone benefits of standard behavior. If you're not doing weird stuff, you're doing standard stuff that has a track record of paying off over generations and generations and maybe you're diverging because you've been closed out of standard behavior niche by superior animals or more fit animals, or by a change in the environment.

Cost two is that divergent behavior might not pay off.

[End of recorded material]



# Cognitive Thrift 54 - Calories

Scott Douglas Jacobsen & Rick Rosner

January 15, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen: How?**

**Rosner:** To keep it simple, you're looking for calories. If you're going off and looking for things that are not in your regular niche or things that not your usual prey, you may fail.

**Jacobsen: We evolved to like simple sugars, and fats, because they are calorie dense as opposed to fibers, protein, and slow-burning carbohydrates (complex carbohydrates).**

**Rosner:** Yea, and we evolved to like sugars and fats because they are calorie packed foods, where for most of human history and pre-history calories were relatively scarce, and so we developed a preference for high calorie foods.

Prehistoric people were not running around looking for more and more celery because I think you burn more calories eating celery than you take in, and so we didn't love celery, but we might love a tree full of apricots where there are a lot of easy calories available.

If you're doing divergent behavior, it may not pay off. You're engaging in novel behavior that is untested in the world and the world was not designed for your benefit, and so whatever you are doing might be wrong.

Another cost is misperception, which you're taking a kind of a step before you even get to thought and strategies you do have to do some preprocessing based on and you have to understand kind of what you're going to be thinking about.

So if you – there are different levels of understanding the world. You can understand it super analytically, but if you don't even understand it in terms of sensory perception, then your chances of being correct in what you're trying to do are even more limited.

You have to be able to think accurately, and think effectively, and odds are lower because standard behavior has been proven to work across hundreds of generations and thousands of years and you're trying to come up with new stuff and you're less likely to succeed.

[End of recorded material]

# Cognitive Thrift 55 - Evolutionary Sufficiency

Scott Douglas Jacobsen & Rick Rosner

January 22, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen:** One of the principles is evolutionary sufficiency. We can talk about the limitations on thought and perception.

**Rick Rosner:** For every part of the body, there's evolutionary sufficiency, which is that everything works as well as it needs to and just a little bit better.

Just because if things didn't work than they needed to work due to random variation then you'd have things breaking down and you'd have things not working, you'd have things falling below – with an error rate that would work against the species.

So, evolution provides a push that things should have a sufficiently low error rate that it doesn't kill off members of the species to the point where it then hurts the species, which means that organisms don't generally fall apart until after reproductive age and things tend to work as well as they need to work and a little bit better to allow for variation in function and all that.

So when it comes to perception and thought, we have limits. There's a mythology that the thinking doesn't have limits. There's that saying that we use only 10% of our brains, which is probably 100 years old and stems from some misunderstanding that is generations old and it is generally not true, and if we can get by with using only 10% of our brains, then why do so many people go crazy.

We need all of our brains to deal with the demands of life. Also, 10% of our brains. That kind of idea contradicts the idea of evolutionary sufficiency. Our brains function as well as need them to plus maybe a little bit more, which is not to say that we have 90% unused capacity.

[End of recorded material]

# Cognitive Thrift 56 - Angels

Scott Douglas Jacobsen & Rick Rosner

February 1, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen:** There's some other relevant things to the human organism. We have such – I think one of the markers of our tremendous cognitive capacity with respect to acting in the world are statistics on beliefs that are housed in the brain, brought forth by the brain of course, that are completely detached from the world. By which I mean, they are detached from –

**Rick Rosner:** You mean like ghosts.

**Jacobsen:** Not just ghosts.

**Rosner:** Angels.

**Jacobsen:** Angels, heaven and hell, a bearded man in the sky; sensory information to confirm these is pretty thing. Yet, most people most of the time tend to believe them.

**Rosner:** What that tells me is that such beliefs don't have much daily relevance, they're compact beliefs. You don't need much brain power relative to the human brain to not believe some non-sense, but that kind of non-sense does not take much cognition, doesn't hurt your cognition, and it doesn't affect your daily activities. And also because of our success as a species, we do have a little slack to believe non-sense, but beliefs are often and usually separate from actions.

Dogs don't have any beliefs, and animals as far as we know don't have any spiritual beliefs, except maybe vague feelings of rightness and wrongness of their place in the world. That might be a stretch, but they are able to function competently without any beliefs about their place in the world.

Non-sense is non-sense. There are junk genes that are just floating around.

[End of recorded material]

# Cognitive Thrift 57 - Prayer

Scott Douglas Jacobsen & Rick Rosner

February 8, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen: It depends on the belief. For instance, people pray believe they truly believe prayer works. Many people pray for many things.**

**Rick Rosner:** Some beliefs provide spiritual solace. There might be a little evolutionary pressure for people to feel good about being human in the world because the realistic view that we're evolution's bitches.

Our behaviors are driven evolution, and then we get old and then we die might be depressing to a lot of people without beliefs systems and/or without the ability to ignore what might be considered the sadness of every human's situation.

**Jacobsen: It goes against part of what you said before. That prayer and other things are associated with larger belief systems and those can take a large amount of cognitive capacity.**

**Rosner:** I don't think they take a large amount unless you're a religious - you can live your life according to religious principles, but we have enough slack as a successful species that you can have this belief system that might have you acting counter to your best interest numerous times a day.

Maybe behaving less ruthlessly than you would, in sticking to religious principles when those aren't helpful, we've got enough slack that people can afford doing that.

Plus, if you're part of a religion and that religion is the dominant culture in your society, that religion can be helpful, but I find nothing about religion or non-sense beliefs to have much bearing on our brains.

That we use our brains to pretty much near their capacity if you can even define the capacity of a brain and that we're always reasonably close to screwing up.

[End of recorded material]

# Cognitive Thrift 58 - Trial-and-Error

Scott Douglas Jacobsen & Rick Rosner

February 15, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen: I think in a lot of ways – basically, trial and error –**

**Rick Rosner:** Let me mention another thing, in addition to evolutionary sufficiency, part of evolutionary sufficiency is a buffer against error. If you – your heart is designed to go for 80 or 100 years in most cases without screwing up over that period of time because an error for your heart can be fatal, and if people suffer enough fatal errors, then that's going to screw up the species because everybody is going to be dying of heart attacks.

**Jacobsen: I think there's an aspect of the beliefs before: ghosts, UFOs, angels, devils, heaven, hell, and the way they relate to individuals and to groups. They can be taken as trial and error heuristics.**

**If you do one thing, then x, y, or z good thing will tend to happen to you. These can get codified into belief systems. That might play into what we've talked about in other discourses about the compactification of information in the brain.**

**Rosner:** I think what you're arguing is that gods, ghosts, angels. Anything whose existence is hard to substantiate are a consequence of the brain wanting to find patterns. You said not to use – but the brain finds patterns or looks for explanations.

We want to understand the world. We want explanation. If it is 5,000 or 8,000 years ago and we understand very little about the world, then a primitive joke to make is to invent gods for a lot of stuff.

[End of recorded material]

# Cognitive Thrift 59 - Ancestors

Scott Douglas Jacobsen & Rick Rosner

February 22, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen: Thought is hard. It costs a lot. Our ancestors had less resources to spend on those things in terms of coming to correct beliefs about the world.**

**Rosner:** You can see gods as hypotheses. People didn't talk like that back then. But if you're going to invent explanations for stuff, invisible helpers is going to be a durable explanation because it is hard to disprove because they are invisible.

Sometimes, they are invisible because people have mistaken perceptions and come to mistaken conclusions.

**Jacobsen: This reflects the mystics' views now. For instance, their communion with the Holy Guardian Angel. It has by no means disappeared, by and large.**

**Rosner:** People are going to invent things you can't see or put things into a morally satisfying framework.

**Jacobsen: There might be overriding things to do with community because any reason to have a community in any case is better than none.**

**Rosner:** Yea.

[End of recorded material]

# Cognitive Thrift 60 - Freemasons

Scott Douglas Jacobsen & Rick Rosner

March 1, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen:** In a lot of these things, we find a community, in the Freemasons, for instance.

**Rick Rosner:** They just remodeled the masonic lodge next to one of the gyms that I go to, and it looks like a really good time. It is very tempting to go check out being a mason. There are guys at the lodge all the time.

My dad was a Shriner, a mason. He went to the Elks club. He had a weekly poker group. He got a lot of satisfaction out of masculine community.

**Jacobsen:** You can find this in religious communities as well, even in fraternities. Things get morphed according to the time. For instance, the current masonic traditions in addition to the Rosicrucian tradition seems to come out of a man burned in 1600 named Giordano Bruno.

**Rosner:** People who belong to the masons don't give a crap about Giordano Bruno.

**Jacobsen:** No, they don't, nor Galileo Galilei.

**Rosner:** It goes back to Hermes, whatever his name was –

**Jacobsen:** Trismegistus.

**Rosner:** Yea, that guy. And all of these arcane mystical traditions – I mean that if the masons. I mean some people distrust the masons, but stuff that is alternative to Christianity, say.

**Jacobsen:** Or Islam.

**Rosner:** Yea, but because that stuff is just kind of part of a ritual at this point for most masons. You learn and you go through to join. It doesn't. I would guess that the groups of Christians are higher in the masons than in the non-masons.

[End of recorded material]

# Cognitive Thrift 61 - Capacities

Scott Douglas Jacobsen & Rick Rosner

March 8, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen: It's not like – a lot of these things are basically another small group. They aren't doing yoga, or meditation, psychotherapy, or some psychedelic treatment to alter their consciousness or anything like that.**

**They are doing their rituals and enjoying their time. A lot of the time it is a place to meet, and why not?**

**Anything, there's more about the capacities of the brain there, too.**

**Rick Rosner:** Well, the brain is the only organ where there's a saying that we say there's 20% of it. We don't go around saying we only use 10% of our heart or 70% of our kidneys, but wow if we could harness the whole power of our kidneys, then that would really be doing something. The 10% is BS.

Things are designed to work the way they work within our bodies. You can sometimes do more, sometimes organs are asked to do more, but generally organs are generally working the way they're supposed to work, and they aren't leaving all of this untapped capacity. It doesn't mean that we can't do more with our brains, but that doesn't mean that we're not doing enough.

There's something kind of Calvinistic in that you're lazy that you're not getting a PhD. That your brain is lying fallow. Our brain has a full-time job, which is helping our surroundings and making decisions about what to do with our circumstance, and because the brain is finite.

And because the brain is the only just about as good as it needs to be within a margin of error, error lurks around the corner all the time.

Error is not getting ready to kill us every day. We don't make potentially or come close to potentially fatal errors every time, but I live in LA. Every driving decision, or any city, can lead to jeopardy.

We have our principle of evolutionary sufficiency, where organs aren't going to be much, much, much better than they need to be because there's been no evolutionary push for organs to be that way, especially crazily complicated organs. So, some of the areas where the brain can be challenged; it's going to have limited ability.

That sufficiency most of the time. Limited speed, the brain can only calculate at a certain speed. Limited accuracy, which is that in combination with our perceptual system, knowing what it's sensing – knowing what's being sensed and correctly characterizing it.



Limited precision, which, again, is in combination with our senses. We can only see so sharply, see so sharply, etc. Limited memory, and memory can take various forms, limited long-term and limited short-term memory.

Incorrect priorities, limited correct prioritization, the brain can – we can make mistakes about what's important from moment to moment and on long-term basis. Limited ability to decode complexity. Limited ability to pay attention. The brain is limited in a number of ways. But that's what I got for this.

The brain has a non-zero error rate or, in more general terms, is less optimum than some imaginary perfect brain. The brain has limitations and there's stuff that it's going to have a harder time doing given its limitations.

The way the brain – what evolutionary pushes us towards is not making errors because the way you don't die before you reproduce is not making errors, and one of the ways you cannot make errors is to make fewer decisions – to be very clear about the decisions that you make and about what you're deciding about.

To have as much information as possible about what you're making decisions about, and what's helpful with all of these sources of error and dealing with the brain's limitations is what we're going to call compactification - being clear, finding relationships among things, which help you – both compact the information that you more need, the information you have more compact, and makes the situation more clear, and means that you have to know less.

There are less things that you have to juggle in – the more clear relationships are, the more you understand things, the more compact things are, the less you have to know at any given moment, and the more you can know that stuff really well.

The brain wants to know as little as possible, and wants is one of those contexts where it's shorthand for a bunch of stuff and wants isn't necessarily a willed thing.

It's an operational thing, but the fewer things you have to know and still have a completely accurate picture of the world up to the limits of your knowledge, the better you are going to be at perceiving things pertinent to few things that you need to know and making decisions about them.

You don't want to be confused. You don't want too many balls in the air. You don't want to be pushing your conceptual or perceptual or thought/thinking ability to its very limits – beyond their limits – and, thus, make error.

Compactified, clear, relationships in your brain help your brain avoid error. Red lights, a red light in the direction you're walking means the traffic against the direction you're walking against your path, in the direction your walking, means that traffic crossing you path is free to cross your path.

That makes things much simpler and clearer. You still have to watch out for unusual circumstance, but the red light is a weird example, and it makes it easier to cross the street without figuring out when you can and can't go.

It's the thing that compactifies information about the traffic situation. It says it's likely or say a green light, a green light says that it is likely that you can cross the street safely.

[End of recorded material]

# Cognitive Thrift 62 - Thought

Scott Douglas Jacobsen & Rick Rosner

March 15, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen:** Maybe, we should define thought. What is thought? What defines thought?

**Rick Rosner:** Okay, so, there – off the top of my head, there are a couple different kinds of thought: thought and pre- or sub-conscious. Thought that you are aware of because it is part of your consciousness to the extent that you are paying attention at all, and thought that is still kind of taking place in your nervous system, in your brain, and down your spinal column, but is still pretty automatic. Reflexes, walking, breathing, wincing when somebody you hate, your hated political candidate comes on the TV.

So, and in a more general sense, thinking is information processing done by your nervous system above a certain level of complexity, and you're free to – if you play your hand back from a hot ... that reflex action is generally, it is nervous action that is more complicated than that. Although, I'm sure nervous reactions are more complicated than that.

If you want to get really tautological, it's what your brain does with information.

[End of recorded material]

# Cognitive Thrift 63 - Compactification

Scott Douglas Jacobsen & Rick Rosner

March 22, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen:** Now, that we've define thought, somewhat. We can describe a little more about compactification because things seem to be coming to a head here.

**Rick Rosner:** The brain wants to think about stuff so it doesn't have to think about it anymore. You brain wants to sort stuff out, make stuff rule bound, and make relationships as concrete as they can possibly be, it is expensive to throw information into consciousness and when information enters consciousness, and it becomes available to your entire conscious brain.

All of the different modules that together constitute your conscious awareness. It is a big heavy-duty arena for dealing with novelty. You hope that your brain can find relationships, produce confusion, sort stuff out so you don't have to think about stuff anymore, and so you can learn with learning being hardwiring information.

So, it's associations. It's relationships and new information, and new information's relationship to old information is compactified. You figure out what the relationships are and it's locked in so it's used, easily retrievable and not confusing.

It's clean. It takes up less room in your brain. You can think about stuff as it shows up so you don't have to think about it later, and later you can, if your brain is working right, when the information is relevant you can retrieve it and the landscape of associations pull it back up when it seems to be relevant to new situation and new information.

So, one major function of consciousness is to take big blobs of information, boil them down into small and clear associations, among the things that are already in your memory or consciousness.

And, for instance, I am a joke writer for TV or have been one, and I have been looking at jokes as an example of something that used this process, though probably to no good purpose, but they illustrate how it works.

A joke has a setup, which is often fairly complicated with a lot of moving parts. A priest, a nun, two penguins, and a rabbi walk into an airplane that they are about to jump out of, and then the punch line takes that whole situation and resolves into one or two supposedly amusing truths.

The rabbi, it may be something about how depending on – this is racist or whatever – maybe, it is about how Jews are good with money. The nuns are sexually repressed, and there's nobody flying the plane. Who knows what?

It takes a complicated situation and resolves it into one simple truth and you're happy that you've got a complicated piece of information resolved into simplicity and you laugh because you're happy that you learned something cheaply, even though it's fake learning.

It might not be fake learning. If it is a joke that reminds you that Kim Kardashian owes her entire career started with her making a sex tape, then maybe that is something valuable to know because maybe it reflects something about celebrity at this point in history, but the brain is interested in compact information. And also, we'll have to figure out how this fits into everything, how information is gained cheaply.

I guess that means pre-digested information in the context of cognitive economics, when I was a kid and wanted to get big and muscly so I could get a girlfriend.

I used to drink this stuff called pre-digested protein and they would take all the junk parts of cows like hooves and render it into amino acids, hence it was pre-digested protein, and supposedly it was already broken down, and your body didn't have to work as hard to turn it into muscle. It was nasty and it tasted like vomit, but cherry flavored.

I think jokes are an expression of glee for getting a piece of predigested information, where you didn't have to work it out. It's been worked out for you, and it is as somebody else's expense and you got a piece of knowledge and you're happy, and reflects the brain's natural tendency to want information and want it cheaply.

[End of recorded material]

# Cognitive Thrift 64 - Jocks vs. Nerds

Scott Douglas Jacobsen & Rick Rosner

April 1, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen:** We've talked a lot in this particular interview. We've talked about a new field or discipline called cognitive economics or cognitive thrift. One of the themes you have brought to the fore with evolutionary history and human history is 'jocks vs. nerds,' which seems to reflect high school experiences. Can you elaborate?

**Rick Rosner:** I was born in the 60s. I was going to high school in the 70s, back then it is junior high and high school in the 70s. Back then, nerds were seriously socially handicapped by being nerds. Jocks were super cool. I wanted to be super cool and I did a lot of thinking about how to be, and failing at trying to be, and resenting that people couldn't see my inner qualities.

Basically, I was every kid in every freakin' John Hughes movie and high school movie in the 70s about the sensitive kids that wins the girl because of his inner qualities, which is not the way it works at least in the 70s.

Anyway, the dynamic seems to be one that is reflected in and rooted in game theory seems to be a running theme throughout the history of life. Where stable behavior, the fit organisms in stable niches are rewarded for standard behavior, and organisms less fit, less fit organisms, or organisms less fit at changing niches in order to go for any kind of payout have to go for the gamble of aberrant behavior or divergent behavior, different behavior.

And standard behavior is cognitively compact. Everything's been worked out or most things have been worked out, and it doesn't take as much thinking as effective divergent behavior and thinking. Divergent different behavior is a risk, which means that it's only for the desperate. For less fit organisms, gambling on a new way to get what they need or organisms under pressure, niche pressure.

But over all of evolutionary history, organisms will develop some capacity for flexibility of thought and behavior. That kind of pressure shows up too much. The pressure to change for organisms not to have or not to develop the ability to change. Eventually, you get to primates and us, who have embraced cognition and change as a niche of its own.

Where we're free to look for regularity, exploitable regularity wherever we can find it. In early evolutionary history, divergent thinking is on a very small, almost non-existent scale, and it may not or probably does not work that well most of the time, but now we are creatures who niche is based on constantly changing our minds.

I want to note that the writer George Saunders had the same idea at the expression of joy at information gained at little expense. Same as I, not that I'm stealing from him. It's just that we came up with the same idea. He should be cited for that.

Another point is the idea that appropriate stress. One possible reaction of stress in an organism, especially a higher organism is higher thought. Things, if you're under pressure and standard behaviour hasn't worked, it may make or we may have or evolved creatures may have tendencies to think more fluidly, where standard behavior is the default mode, but the default mode under stress is not working is fluid behavior and thought.

One very iffy clue is life supposedly passes in front of your eyes when you're in mortal danger. I don't know how well substantiated that is, but perhaps if true that that is some kind of desperate last ditch information dump that you might be able to pull anything or something out of that to save yourself when nothing seems to be working, or it can be seen as the extreme expression of – if normal stress unlocks locked up thought then maybe extreme stress unlocks everything.

[End of recorded material]

# Cognitive Thrift 65 - Everything

Scott Douglas Jacobsen & Rick Rosner

April 8, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen: Or what seems like everything.**

**Rick Rosner:** Yea – one more thing. There's a guy in the 19th century, early 20th century, Francis Galton. He was pre-genetics, but looked at the heritability of giftedness, and was one of the first people to come out in favor of eugenics.

Darwinism and genetics got all mixed into a stew of half-understood science in the 1920s and 30s. You had people coming out in favor of eugenics. The genetically inferior should be prevented from reproducing. It is super creepy, especially when you look at the Nazi involvement in it, and if different behavior and different thought is triggered by stress and tough circumstances, then eugenics has things completely backwards.

That if you only go with the fittest and best, you're going with the most well-adjusted, and if you're going for originality of thought, that may not be the place to look. You may have to look at the inferior, the broken, the under stress because those people may be the ones to come up with new ways of doing things and looking at things.

We can probably look at history and find dozens of examples of the supposedly genetically inferior overcoming inadequate circumstances. Both in themselves and in their environments to come up with new thought.

[End of recorded material]



# Cognitive Thrift 66 - Richard Pryor

Scott Douglas Jacobsen & Rick Rosner

April 15, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen: You mentioned comedy. One prominent example: Richard Pryor. His circumstances seem to indicate what you're saying. He had terrible circumstances, but had tons of original thoughts.**

**Rick Rosner:** Yea – it helps to have – sometimes it helps to have an unusual background. I think he grew up in his aunt's whorehouse.

**Jacobsen: His grandmother's whorehouse. He was born with a prostitute mother and a pimp father. His mother abandoned him. His father beat him. His grandmother beat him.**

**Rosner:** Some kind of dictatorial do-gooder could have shut down that whole lineage at some point for being or having anti-social and criminal tendencies or something, and then we wouldn't have a Richard Pryor.

In a more pastoral sense, nobody was going to sterilize Charles Darwin's family for any reason, but just in terms of having a different background leading to great thoughts. The guy goes on a five-year sea voyage and sees a selection of animal life and geologic formation that pretty much no one had – it's not that anybody had seen that stuff before, but nobody was ready to see the stuff they saw in the way that Darwin was – without the constant goading for five years of novelty. Who knows if he would've come up with his theories?

[End of recorded material]

# Cognitive Thrift 67 - Sets

Scott Douglas Jacobsen & Rick Rosner

April 22, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen:** We're talking about meta-game theory as applied to cognitive thrift. If we want to define this in more formal terms, we can define this as sets and elements with the elements as individual organisms and meta-game theory including sets with greater than one element and the payoff matrices between 2 or more sets – where sets can be groups or species.

**Rick Rosner:** What you're calling meta-game theory is game theory applied to multiple groups or more complicated situations with, I guess, averaging across groups, what groups do rather than large numbers of individuals do in some instances. Anyway, it's more complicated game theory.

One thing that evolution has revealed is that there is more than one successful general strategy as far as thought goes and half of the organisms on the planet have no brains and do no thinking, and they're very successful.

People misunderstand evolution. Among the misunderstandings that people have about evolution is that evolution proceeds in the direction of increasing complexity, which is not exactly what happens.

Evolution having no agenda wanders randomly from a base of zero, no life. Life originates. It's going to be pretty simple because it's the first kind of life. In terms of complexity, over the next 4 billion years, species wander all over the place. Some becoming more complex.

Some becoming less complex. Some becoming stable. As new species arise, they can go in any possible direction and one of the directions is towards increasing complexity, and so over billions of years the niches that require increasing complexity get occupied.

Other niches that don't require that kind of complexity mostly stay occupied. We still have relatively simple forms of life. It is not a march towards complexity. It is a random march in all sorts of directions, which continues to order proof that there are various strategies that lead to successful species because there are all these niches that require anything from zero thought on the part of viruses -there's so much stuff that viruses don't have including neurons.

Things like starfish, which are fairly large organisms that I don't think have brains, but which are a successful species.

So, if you want to move onto groups of humans, I live in LA. So I get jealous when I see somebody in traffic who is obviously succeeding because they are obviously cute or super studly and they are driving a range rover, and they are obviously kind of an idiot.

You can tell sometimes. But they have followed a different life strategy which involves being attractive, but not necessarily smart. Occasionally, somebody like that will surprise and be really smart. There are plenty of examples – anyway.

As we move into the future with an increasing, there's a coming proliferation of artificially engineered thought coming. People will have to decide what their strategy is going to be in terms of embracing technology that aids thought.

[End of recorded material]

# Cognitive Thrift 68 - Artificial Intelligence

Scott Douglas Jacobsen & Rick Rosner

May 8, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen:** There's something that comes to the head with all of the things that we've been talking about in this conversation. These have to do with the two major themes of evolutionary theory.

**One, species survival; two, individual survival. With an individual's drive for reproduction, an expression of species survival. Therefore, they are not as easily demarcated, but to simplify let's look at strategies for the future when artificial intelligence becomes a lot more prevalent.**

**Rick Rosner:** There are two main evolutionary forces in people. Due to evolution, we have two main drives. One is for individual survival. The other is for species survival or reproduction.

In the near future, the one that will be the most changed is the drive for reproduction as technology means that we can live longer and longer, then the drive to reproduce in our 20s, 30s will be lessened.

If people are living healthy and attractive lives to 100, they won't necessarily want to have kids at the ages that people want to do now.

Eventually, as lifespans become even longer, many people may not want to have kids at all. The main divide where the spectrum of strategies among people will be how technically advanced or how technically Amish you want to be.

At the Amish end, people will decide that it is important to preserve humanity as humanity in using traditional forms and lifestyles and bodies, and knowledge, and we'll vary – depending on your level of technical Amishness, you'll avoid more or less of the available technology.

Then there will be the technologically satisfied masses, who are like mid-adapters, mid-adopters. They go along with everybody else and take the path of least resistance to technological change.

And then on the other end there are the people who want to completely reshape themselves and their communities using all available technology and this will involve re-examining all of our evolved drives.

[End of recorded material]

# Cognitive Thrift 69 - German Blood

Scott Douglas Jacobsen & Rick Rosner

May 8, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen:** Some people might feel confused because you were talking about the creepiness of eugenics, genetic manipulation for some deal. We can bar crazy ideas like the purity of German blood and all of those nasty things, but that technological adaptation and reconfiguring of people is in a way a silicon eugenics.

**How do you bring those two together and reconcile the rejection of the eugenic view and accept the technological adaptationist view?**

**Rick Rosner:** You can all it eugenics, but that just makes it kind of creepy. It is a going beyond or a no longer being subject to evolutionary genetics and using genetics and other tools to willfully engineer yourself or other entities instead of playing the genetic lottery.

And a general theme of science fiction of turning into reality is science fiction predicts all sorts of weird things, and you can even leave science fiction out of it.

Advances, science fictioney advances how up first often in weird or creepy ways or used by weird or creepy people and then it's only later when they get adapted by just about everybody.

There was a time when people had car phones and most people thought that the first people with car phones were dicks. And most people thought the first people with cell phones were dicks walking around with cell phones talking in public.

[End of recorded material]

# Cognitive Thrift 70 - Range

Scott Douglas Jacobsen & Rick Rosner

May 22, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen:** It's the same with Google Glass.

**Rick Rosner:** It's the same, but that cell phone technology is so delicious and convenient to everybody that there was no stopping everyone from being drawn to it eventually, when they became cool enough, easy enough, to use. It will be the same thing with a lot of future technology that seems creepy to us now or seems like the same to humanity now.

Some of it will be so delicious, so intriguing, exciting, convenient that at adaption will become the norm. You'll have a technical cultural evolution. We're already in the middle or beginning of that. We're already in that process.

We're at the beginning because you don't see a big division between colonies of tech rejecters and tech super adaptors, but as with natural evolution where over time you end up with a range organisms of varying complexity and varying life strategies.

You'll see a spreading out of humanity into various groups based on how much and what tech they embrace, and increasingly the embracing of some tech will reflect life strategies. It will reflect a life strategy, which will often reflect a thought strategy.

In the arising of humanity, there is the rise of fairly consistent and competent thought, where we reached a level where we're god at thinking about stuff. If you look at a dog, a dog is just confused by everything.

A dog knows what a dog knows, and is decent as dog stuff, but beyond that is hopeless. But with humanity, we reached the point where we can pretty much decode whatever part of the world we focus our attention on.

So, the payoff matrix to go back to that thing for divergent thought. The value in that box is changed now because we're good at thinking. The payoff for divergence is such that it becomes a stable strategy, disruption becomes its own thing.

And we can look for that to continue into the future in ways that are both qualitatively and quantitatively different.

[End of recorded material]

# Cognitive Thrift 71 - Survival

Scott Douglas Jacobsen & Rick Rosner

June 1, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen: Evolution tends to have its presentation in the public sphere as species and their stories. However, there is another aspect to do with individual members, members of the species. Their survival is related to the species survival in low probability, extreme events.**

**Rick Rosner:** The way people think about evolution is competing members of species with the – as competition among members of species with the most physically able members prevailing and sending their genes down the line, their lineage, and survival of the fittest to be a group of fairly interchangeable hyenas or gazelles and the best one's survive to send their gazelle or hyena genes down the line, and the environment changes and still the gazelles still change with environment.

But there's still another story that is just as important to evolution, little offshoots of species on the one hand or a set of a few members of the species find them geographically isolated or find a new geographic area and reproduce among themselves and become different from the parent species, and this is something you don't get unless you're doing cognitive thrift.

Evolution is also the story of the animal under stress. That the losery animal that takes a gamble that is forced to take on non-standard behavior and non-standard thought, and gets lucky that this pays off and that this, maybe, becomes part of the species' repertoire long enough to put evolutionary pressure on the species the members that good at this particular behavior and it eventually becomes hardwired into the species.

[End of recorded material]

# Cognitive Thrift 72 - Aida

Scott Douglas Jacobsen & Rick Rosner

June 8, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen: It's like Aida: "Fortune favors the brave."**

**Rick Rosner:** It's this one frickin' gambler and it seems like a rare chain of events, but you've got hundreds of millions of years to work with and so rare events are what evolution is built out of anyway, and it is one more way for variation and innovation to sneak into evolution.

It's kind of like a little ramp to let species jump to other species or to incorporate new behaviors, which eventually, if they persist long enough may be reflected in physical changes to the species.

Throughout evolutionary history, you probably have a bunch of losery animals that turn out to be heroes just like somebody in a John Hughes movie.

**Jacobsen: Could there have been moderate to major steps throughout these low probability events in the species to drive cognitive systems to favor compactification of information?**

**Rosner:** Yes, but let's talk about – the deal is that old school evolutionary theory, just a few years past Darwin thought it was all gradualistic. Darwin was a gradualist, like water flowing through the canyons for tens of millions of years as opposed to the catastrophists who thought that huge single events happened that made these huge mountains shoot up.

New school evolutionary theory or semi-new evolutionary theory thanks to guys like Stephen Jay Gould includes Punctuated Equilibrium, which more accurately reflects the fossil record, which shows animals existing in a steady state for generation after generation until something disturbs them and then in a fairly short time you have new species.

Maybe, it is like one of those things like a bunch of those animals end up isolated because a path gets washed away, what is a peninsula is now an island.

They're on warthog island afraid to make their own set of new warthog principles based on the genetics of the 18 warthogs who were isolated there from the pack of several hundred, or Darwin's finches – whatever finch island gives you a new set of whatever.

People who are anti-evolution love to say show me the gradual things. Evolutionists say that nothing changes gradually. Dog changes gradually as all of history would let them change.

Things are the same... things stay the same for hundreds of thousands of years in a species, and then there's some chance set of occurrences, genetic changes, changes in the niche, and all of the sudden you've got speciation over a period of probably a couple of thousand years, and even as quickly as a few hundred years, but fast and the anti-evolutionists are like "Oh no! Show us the missing link" and the evolutionists say, "What change comes happens relatively fast..." and so



it's easy to find steady-state examples of trilobites, and where they change into something else is a little more difficult, and this is jump one more ramp to make the jump from species to species, which is periodic stress induced fluidity of thought.

A low probability behavior, but one that is necessary because species face stress, and sometimes it pays off big time.

[End of recorded material]

# Cognitive Thrift 73 - Brain Efficiency

Scott Douglas Jacobsen & Rick Rosner

June 15, 2018

[Beginning of recorded material]

**Scott Douglas Jacobsen: How does compactification work and make the brain more efficient?**

**Rick Rosner:** Let's look at it this way, a phenomenon occurs in the world for early humans in Africa or somewhere. Maybe, it's I don't know lightning, somebody just gets hit by lightning and killed, or maybe two people get killed in the period of a couple months, and Lucy and the rest of her tribe don't know beans about anything.

They know the natural world, but they don't think in terms of explanations, particularly. Maybe, they do in terms of hunting, if they gang up on some animal if they flank it they can drive it back into other people with spears or whatever. I don't know.

Generally, they live in a world that is without a whole lot of explanation, especially explanation that is correct. What they're left with is association, they can't not just go outside unless somebody gets hit by lightning, but what they could do is compactify what they know about lightning, which is what we know about lightning.

It is associated with rain. It is associated with thunder. It is associated with all of the things that is associated in the brain – rain, sky, dropping barometric pressure if they're able to sense that, rainy season of the year, and things that stick out taller than other things.

So, if you're on a golf course, you don't stand under a tree if it starts to rain. So, by associating lightning with all of these other things, they've made the job of avoiding lightning a lot easier.

Out of all of the possible causes of lightning, and they don't understand the cause of lightning and it won't be understood for another couple million years, they still have compactifying the information about lightning in an informational context.

They still made it much easier to think about lightning to deal with it effectively. If they hear thunder, then maybe they should go someplace where they are less likely to be hit by lightning, or a low-lying valley that don't have a lot of trees or something.

You've got compactification of information where the lightning is strongly associated with certain other things. It means they don't have to be confused when they see lightning. I mean they – it just, once lightning is put in context, associated with other things, they can more quickly and efficiently, effectively think about what to do about lightning.

Other stuff in their environment. Say there is a particular type of snake or bug, and that they've run into a few times, a couple people might have been bitten.

Three, four, five people and nobody experienced any ill-effects from a snake bite. So, that snake could be compactified or put into the group of associated things that are fairly harmless.

So, when somebody sees one of those snakes, they can pretty quickly – they don't have to waste much thought on it if they have to waste any thought on it at all. That snake is the majority snake in their environment.

If most snakes are this fairly harmless snake, they may be able to just ignore snakes in general and just walk by them without particularly, if all snakes in their environment are harmless, they are likely to not have to spend too much thought on snakes.

So, compactification frees up resources for things that require thought. It allows you to address issues rapidly, and it can help reduce error by putting things based on experience into the right class of things.

As humans, we live in the age – looking towards the future and at our past – live in the age of and embody the age of productive thinking, where animals that are less good at thinking are not going to experience the fruits of thinking.

The game theoretic payoff for trying to figure something out for a possum is that the payoff for trying something new is going to be a lot lower than for a person. We developed the cognitive capacity to look at novel situations and to have a decent chance of having a positive outcome to trying something new in situations.

Unfortunately for individual less-than-fit-people, nerds say versus jocks, there are 7.3 billion people right now. So, it's hard to come up with something new and so awesome that it leads to a change in status for you. There's only one Mark Zuckerberg, and even he was ripping off the Winklevoss twins.

A part of compactification and thought is breaking down a complicated external world into symbols that we can hold in our heads. Hawking, as he became increasingly debilitated had to develop a compact language that represented super-complex physics so he could hold it all in his head to keep doing physics.

[End of recorded material]

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