MBA 552

**Changing prespectives**

### **Learning Objectives**

* Be creative more frequently.
* Generate consciousness of breaking stale perspectives more often.
* Show your progress through the creative process more efficiently and systematically.
* Generate more and better creative products.
* Develop a better perseverance in the face of rejection.

# Module 1: **Being Creative**

## Overview

This module examines why creativity matters, what creativity is, and how to get started being creative. It is common to believe that creativity is something only some people do, or that it is only important for some tasks. In contrast, we will examine why all of us need to be creative. We will examine the range of outcomes creativity offers and the consequences of not being creative. Then we will explain why it is possible to become more creative and why it is possible to learn to navigate the creative process more efficiently. We will explain the relationship between ordinary thinking and creative thinking so that we can understand the process we go through to generate creative ideas. Finally, we will examine what shifts us away from ordinary thinking and into creative thinking. We examine the four main cues – impasse, dissatisfaction, surprise, and crosstalk – that indicate a shift to creativity. We also consider how we can become more likely to experience them so that we can take advantage of creativity more frequently.

## Goals and Objectives

Upon successful completion of this module, you will be able to:

* Identify when and why to use creativity.
* Explain why creativity is a skill you can learn.
* Understand what is involved in the creative process.
* Identify opportunities to initiate creativity.

# Creativity is a Core Leadership Skill

So, how do you take a picture?

With my phone.

I usually just use my camera phone.

On my phone.

Your phone, yeah. How would you do it?

Yeah, my phone of course.

Have you ever used a camera?

I have.

Film camera?

Not a film camera.

Not a film camera?

No

Never.

Never.

I have one, but I haven't used it for three years.

No.

Okay.

If you wanted to watch a movie at home, how would you do it?

On Netflix.

On Netflix, all right.

I usually just use the Internet.

So, no blockbuster for you?

No way. Is blockbuster even around?

I don't even know.

Everything is moving to online streaming.

If you haven't gotten that yet then you're probably out of luck.

Thank you so much.

So many, many years ago,

probably some of us can't even remember

a time when people used Kodak cameras to take pictures,

and they relied on actual film rolls to take photographs,

and this was the core strategy of Kodak.

They dominated this industry for decades.

The problem is that the world changed and new technologies emerged,

and competitors emerged that started to actually

be more effective at the very technology that Kodak had dominated for years.

The problem is that rather than think of a creative way

to shift their strategy and adapt to their new circumstances,

they kept doing the same thing over and over again.

So this highlights one of the important reasons we need creativity,

is that the people at the top need to think

creatively to solve problems and make decisions.

A decade ago, minor league baseball teams had a big problem.

They were attempting to recruit

the best players to their teams but they are being outgunned by

the wealthier and more famous teams that had more resources to recruit the very best.

So, they had to come up with a way to solve this problem in a creative way.

They ended up doing that by relying on a broader range of statistical indicators of which

players given their records were likely to perform

better than their prior record would suggest.

So, they were able to creatively use the data that was available to them to make

much more precise and targeted decisions about who they would attempt to recruit.

In doing that, actually made them able to compete on the same level

as these wealthier teams who were making sloppier decisions,

not using the data that was available to them.

So by using that data effectively,

they were able to come up with a creative solution to their recruiting problem.

Leaders also need to be creative to make good decisions.

So, for example, there was a company called Infosys that was founded in India.

The CEO of the company went through this really arduous certification process to get

something called the Highest Level of

Capability Maturity Model from Carnegie Mellon University.

He was actually the first CEO of this company to pull this off in India.

So, he was in this position of

having this unique certification that would allow him to be

much more competitive than any of the other companies in India working at that time.

The uncreative thing to do would have been just to be competitive,

to hoard that information and not share it with his other Indian competitors.

But he did something very creative that ended up making more money for him in the end.

What he did was he shared his knowledge of

that certification process with all of the other Indian companies in the fields,

and doing so elevated the entire industry so that

the industry as a whole could become more competitive with countries like the US,

and that ended up making everyone more profitable including Infosys.

So, his really clever,

creative use of his certification really paid dividends in the end.

Look, here's another example.

It's not just simple mistakes that might cost a little bit of money,

but real ethical lapses that we want to worry about.

We'd like to behave ethically.

You don't want to miss an ethical issue that's staring you right in the face.

The term of art among company executives was one that Putnam,

a former executive at Coca-Cola had never heard before.

It was called share of stomach.

To him, it was sort of a mind bending paradigm shift.

They weren't trying to get share of market at Coke,

they weren't trying to be Pepsi or Mountain Dew,

they were trying to beat every other beverage.

Putman recalled giving a presentation in which he showed

a chart illustrating how consumption of milk had dropped over time,

while consumption of soda had risen.

When he pointed to the place where the two lines crossed,

the moment where soda surpassed milk,

Putman remember swelling with pride,

"I don't have any reaction beyond we're winning."

"It's shocking to me now."

is what he later said.

But it was not shocking to Putnam at the time in any way shape or form.

They were totally uninformed about the health issues.

Sometimes leaders need to be creative just to understand others,

and this is particularly true when you're working with people across cultures.

We get those stories all the time.

I guess the story that comes to my mind is this one from Jeanne Brett.

I think she'd seen her book, Negotiating Globally actually about a pharmaceutical team,

and a group of Americans,

maybe a group of French actually working together and they had this huge blow up,

it took them half a day to work through.

They had this colossal misunderstanding and when eventually they came back to it,

they realized that one of the Frenchmen on the team was saying,

"I demande for you to do this."

What they realized was that demande in French means ask,

but to the Americans, what does demande mean?

It means demand. So, the Americans were completely insulted and it just blew up on them.

Right. So you need creative thinking to overcome those barriers

because we're all locked into our particular cultural perspectives,

and we need to see problems from

different perspectives but also people from different perspectives,

and adopt other people's perspectives so we can see ourselves more accurately.

Yeah. Those French, they have a different word for everything.

Little Steve Martin for you, yeah.

But, yeah, I mean that getting to where

other people are can require you to change your perspective, otherwise they're crazy.

They're not crazy, they just have a different perspective.

Well, we've covered a lot of ground here Jeff,

everything from Kodak to baseball,

from India to the US.

Are there any broad themes we can begin to think about as we move forward?

Well, that word actually was the one that was on my mind was broad.

It's everywhere, broadly applicable.

I mean, where can't creativity be relevant?

I mean it seems like it should show up everywhere.

Yeah. So variety of different kinds of jobs also,

anywhere in the world we can expect creative solutions to emerge from,

and really from top to bottom, right?

Yeah, everywhere in the organization.

Yeah. So, great ideas don't just come from the top.

Or from the bottom.

Right.

You're right. All over, yeah.

So, I guess one of the concerns since given that creativity is so broad,

why is it that people tend to think of it so narrowly that only artists are creative?

Right. Or the geek in the lab, right?

Right.

That it's not something all of us should do.

It's not just people, it's also tasks.

This is a task where I can be creative or that isn't a task,

or this is a space with the bean bags and the cool colors on

the walls that that's a place where I could be creative but not in my office, right?

Right. So people tend to think very narrowly.

So I guess that sets up,

you know maybe there are a lot of myths about

creativity that we should really get out of the way.

We better do some myth busting.

Right. So we're going to turn to that in the next segment,

busting myths that you may have about creativity.

About creativity. Cheers.

**Creativity is a skill you can learn**

So, creativity is really a commonly used word,

but I think the downside of that is that we all have

some intuitions about what creativity means and what it is.

And they may be very sound common sense intuitions but they're not necessarily correct.

So, Jeff, what are some myths you've heard about

creativity as you've talked about it over the years?

The one that always gets me is the light bulb.

It's a light bulb that goes off.

Right.

Right. I mean, there are lots of them though,

that you have to be a creative person.

You know, you're born with.

Some kind of genius.

Some kind of genius or you know,

craziness or something like that or there's a lot about randomness.

You know, things just happen or you would happen and notice something.

Yes, it's interesting all these examples,

seem to involve the idea that creativity is somehow out of our control.

Yes.

But that's not necessarily the case, is it?

It's something that happens to you.

No, it's a it's a process,

it's a skill, you can learn.We can get better at this.

Right. So, clearly we need to do some myth busting before we move forward, right?

A little bit of myth busting.

Play video starting at :1:29 and follow transcript1:29

Another myth that we've heard a lot about is that

creativity is something that happens to us,

as opposed to being something we do.

So we're just vessels of

divine inspiration that just comes to us from the muses from above, right.

Lightning strikes, you're unconscious just

offers something up out of nowhere. Things like that.

But it's wrong on every level.

So, the first one is you know the things that happen suddenly.

Creative aha moments.

But that's nuts. Think about it, you lose your keys,

you lose your phone and you run around your house and then eventually you go, oh!

That's where I left my phone.

Sometimes you don't.

Fair enough. But that's a sudden insight, but it's not creative.

Yes.

Yes.

Yes. And a lot of times these sudden insights seemingly quote unquote

sudden insights happen after years and years of training and preparation, right.

So, just you put the last piece in the puzzle and it feels like,

you know it fits and it feels like an insight, right.

But you've spent hours fitting together all of the other pieces

to make that happen and so it's really not quite as sudden as it seems.

Right. Yes. Chance favors the prepared mind and

we're just not powerless bystanders to our own creativity.

There are things we can do.

Play video starting at :2:45 and follow transcript2:45

Another tempting myth is to view creativity as something that is purely random, right.

The old lightning strikes kind of view of this, right.

And there's actually, there are a lot of important inventions like

everything from the post-it notes and Penicillin to chocolate chip cookies, right.

Popsicles. Yes.

Were actually invented partially as a result of random events.

But there were a couple of problems with this perspective.

One is that, it's incredibly inefficient to rely on randomness

and hope that it's going to systematically generate creative ideas.

So, monkeys typing Shakespeare.

So, relying on that is your creativity strategy is probably not such a good idea.

The second problem is that,

we have to be able to recognize random events that are important.

For that it requires insight and so randomness is only

interesting for creativity and so far it is recognized and used.

So, there is some,

it's a really limiting point of view to think of creativity as random.

But it's also that,

it's a mistake to think of it as just an ord-that

every idea is equally thinkable and is it just that we're going to stumble upon it.

So, the way I think about well think about riddles, right.

So, okay, now I get to tell you a riddle.

Right. So, okay what grows up while growing down?

Yes.

All right, so there's what,

and you're probably thinking, I don't know what to think.

Right.

I won't tell you what I was thinking.

So, the idea is that there's so many possibilities you don't know what to think.

But, it's important to distinguish between,

sort of what I know and don't know and what's currently just not conceivable,

what's literally framed out of the picture in this case.

So, in this case what grows up while growing down?

I don't know. Stairs. Stairs go up and down but they don't really grow.

Okay, that's not right. Well, maybe, plants, right.

So, plants grow up and they have roots that grow down.

So, maybe that's an answer to the riddle or maybe there's like a carrot.

A carrot actually grows further down as it gets bigger,

so maybe that grows up while growing down.

So there's a process of playing with ideas and seeing what fits.

And is there at

the end of the process you could pick something that it seems like random,

you picked it and it's correct?

Yes. But also that in thinking about it that way,

we have completely disregarded other possibilities.

Right.

So, let me give you a totally different direction on the same riddle, right.

Which is, well grows up while growing down.

Well, down means a direction, down.

But down also means feathers, right?

So, a goose grows up,

that is gets bigger while growing down as in feathers.

Right.

While I'm thinking about the plants and the carrots,

the goose one is completely inconceivable.

Right.

Because it's a totally different way to think about the riddle.

As we've seen, we've sort of immediately formed a perspective on what down is,

and that precludes us from seeing

other perspectives and changing our view of the problem, right.

That's the problem with noticing.

That randomness can happen but you framed

out and it's inconceivable to you to think about it that way and you'll never see it.

Right. And so down could be falling from

the sky and I don't notice it. It's random, right.

Right.

But I need insight to actually see how it fits into the bigger picture.

That's right.

And we also want to give you

a more systematic process for being creative on a regular basis, right.

As opposed to just relying on random events.

Chance isn't enough.

Right.

Play video starting at :6:30 and follow transcript6:30

Another myth we've heard is that creativity is somehow all about personality.

That, in order to be creative you have to be one of

these eccentric lone geniuses with crazy hair that really doesn't have any friends.

It is emotionally unstable, right.

We've all heard those kinds of stereotypes.

But in fact what we really want to argue here and convey is that,

creativity is also a process,

and it's a skill that you can learn and that once you understand how to be creative,

everyone can learn to be more creative and it

doesn't depend on your particular personality.

It's also the case that being creative also depends on the context in which you work.

So, you can engineer the context to

make everybody more creative than they ordinarily would be.

So, creativity is not just about having a particular kind of eccentric personality.

Play video starting at :7:22 and follow transcript7:22

Another other tempting myth is to view

creativity as just purely a matter of intelligence, right.

So, if we know how to measure IQ, so,

let's just had an IQ test and we can figure out

who's likely to be creative and who isn't.

There's actually some evidence that suggests that,

that might not be the best way to go about it, right.

Yes. I think after you hit about 115-120 on the IQ scale there's no difference.

Right.

In eminent creators in IQ.

So, there might be some intelligence to make world famous brain endeavors but after that.

You need enough smarts to know things,

to master your area.

There's a certain point, the most creative person

isn't necessarily the smartest one in the room,

there's something else going on.

And smarts, we have a few different views of smarts,

right raw, IQ, horsepower.

And then there's sort of domain knowledge.

I mean, there's this great story about Murray Gell-Mann,

the physicist, Nobel Prize winning physicist.

He's giving lectures on everything,

I mean just an incredibly intelligent well read guy.

His car breaks down with a news reporter in the middle of the desert,

and he says, it must have overheated and he gets out a bottle of water,

pops the hood and the reporter says,

let's wait for the tow truck before

Murray Gell-Mann emptied the water bottle into the engine of the car.

So, I don't get smart you are like you don't.

You need knowledge.

You need knowledge.

Yes, you need to know what you're doing, right.

Yes. And that's separate again from,

can I change how I'm thinking about this situation.

Right. So, understanding the underlying process of

creativity is again important for understanding how this works.

If it's about changing perspectives,

even the smartest people can get locked into

their perspectives and not be able to get out, right.

Absolutely.

And so we need to look at creativity as something

that's a little bit more complex than just raw IQ.

Yes. Asimov, famously smart guy,

Isaac Asimov like IQ of 160 and he wrote hundreds of books on every topic under the sun.

So, he tells this story in his autobiography of going to take his car in for a repair.

I'm on car repair. You're stuck with me now.

Right, and so his mechanic says,

all right, you know Doc you know you're really smart.

So, here's one for you, right.

You know a deaf and mute guy walks into the hardware store and goes like this.

Right. So, the guy at the store brings him hammer and he wiggles his fingers,

he brings them some nails.

Right, he gets what he needs, right.

So, okay now a guy who is blind walks in looking for scissors, what does he do?

Asimov report is going like this, right.

The car repairman says, he's blind.

He just says, can I have scissors, please.

Right. So, smart people can get stuck just as easily as anyone else, right.

And so, you know smart people don't have a monopoly on creativity.

So, there's a lot more to it than that.

You got to be able to switch perspectives.

Play video starting at :10:22 and follow transcript10:22

Standing in front of the main library here at the University of Illinois,

reminds me of one of the big misconceptions about creativity,

which is that, in order to be creative you just have to know a lot of stuff.

And in this day and age,

we have almost perfect access to information.

We can Google whatever we want,

we can go to libraries,

consult encyclopedias, we can consult big sources of data.

But just knowing a lot of stuff doesn't necessarily mean we're going to

have any kind of insightful understanding of what we know.

And creativity requires insight,

not just knowing what is currently known.

If we can't develop a particular perspective on that information it's

unlikely that we're going to be able to use

all that information to reach creative outcomes.

Another misconception is that creativity is really just about discovery.

It's through the creative,

insights can lead to discoveries,

but it's also true that you can sort of

force discoveries by randomly combining different things that you

know and sort of looking under every nook and

cranny and searching for solutions to problems.

But doing so at random,

again without any sense of what you're looking for or why you're looking

for it or any kind of insightful understanding of what you know and why you know it.

So, creativity again doesn't just happen because you know things,

and it doesn't necessarily happen through this sort of

rote sort of process of combining different pieces of information.

What you really need is insight.

And so, all of the research that's been done on

creativity points to a few important conclusions.

One is that we can be more creative

and we can reach more creative outcomes through a deliberate process.

We don't necessarily need to be creative geniuses and we don't

necessarily have to just wait around for creative insights to occur at random.

So, what we're going to turn to next is really

a deeper understanding of the creative process so that you can use that process and go

through that process over and over again systematically to reach

creative solutions in a predictable way

rather than just waiting for creativity to happen.

Play video starting at :13:7 and follow transcript13:07

So, we may have signed up for this class with a few myths about

creativity that all revolve around the idea that creativity is out of our control,

it's random, it's something the geniuses do.

But what we really want to convey is the idea that creativity is

a skill that you can learn to be creative through a very systematic process,

and that's what we're going to convey to you.

And that's what this course is all about,

improving your creativity toolkit so that you

can be more efficient more effective at being creative.

It's not out of your control.

## **1.2: Changing Perspectives**

1.2.1 The creative process

So, we've talked a lot about what creativity is not,

but that begs the question,

well, what is it?

What is it? We better have an answer.

It's about changing perspectives.

Creativity is about changing perspectives.

So, we have knowledge and

we take the knowledge to think about whatever it is we're doing.

That's ordinary thinking.

The difficulty comes when out of habit and repeated use,

we get committed to particular ways of seeing the world and thinking about the world.

And what creativity is all about,

the process of creativity is breaking

those commitments and changing the perspective that we take on the world.

It's not just about learning new facts,

it's about understanding things in a new way.

So, one day I was walking home,

I'm actually strolling because it was such a nice spring day and I was

looking at the beautiful lush grass and how green it was.

And I happened to look down and there among the green grass was a $10 bill,

and I reached down and grabbed it.

Now, this was a new experience for me.

It's definitely novel because it's not every day I walk home and discover a $10 bill.

And it's also useful.

Since I found a $10 bill I can use it to buy any number of things,

coffee for the next couple of days, lunch, who knows?

But it's not creative,

because creativity requires a change in perspectives or seeing something in a new way.

It doesn't mean that something happened by

accident and it doesn't mean simply acquiring a new piece of knowledge,

you have to actually change your point of view on something.

And so, just finding a 10 dollar bill may be novel,

it may be useful, but it's not creative.

So, here's a very simple example,

a study from two Illinois psychologists, Anderson and Fischer.

They had people come in and read a story about two kids skipping

school and wandering around somebody in a one of their houses.

So, two kids skipping school,

they go to somebody's house or whatever,

and the participants in the study were asked to imagine

while they were reading that they were a prospective home buyer.

So, they hear about the boys walking in this room,

walking in that room,

and all kinds of information.

And at the end of reading this little story about the boys skipping school,

the participants in the study were asked to recall

everything they possibly could from the story.

So, they remembered to say that the yard was big,

that there was new siding on the house,

that the basement was damp,

that there was a broken window or whatever.

Then they did another task.

But then what they did was they were asked to imagine

now that they were burglars looking to rob houses,

and see if they could recall anything else from

the story that they had forgotten previously.

And what's interesting is at this point

instead of being a home buyer now that there are a burglar,

they went, "Oh yeah, wasn't there a jewelry in that upstairs bedroom?"

and "Was there fine china in the cabinet?"

So, items that they neglected,

when they were thinking about being home buyers now popped to

mind that they were in the role of being a burglar.

So that is when we switch our perspectives

say from home buyer to burglar or something like that,

we're just going to think about the information that we have differently.

We're also going to remember

different knowledge and bring that to bear in a different way.

And that's what creativity is about.

When we're changing our perspectives,

we're not only transforming how we're thinking now,

we're also transforming what we get from memory,

what we remember, and what we would imagine going forward.

Play video starting at :3:57 and follow transcript3:57

So, we started thinking about perspective change and what does that really mean,

and that got us to talk about some burglars and think about,

"Wait a minute is that really a burglar or is it a rescuer?"

And in general, when you read a story or see a movie and there's a plot twist,

you're going through a perspective change.

And in that moment you are thinking,

"Hey, wait a minute,

the past isn't quite what I thought it was,

and the present isn't quite what I thought it was a moment ago",

and that leads to a whole different future.

And that's what the core of the creative process is about.

It's changing our perspective so that we can see the past differently,

the present differently, and imagine different futures.

And that means that in order to understand the creative process,

we need to know how it sits in this larger process of just ordinary thinking.

So, creativity helps us think differently which

means it's set in the context of how we normally think.

**1.2.2 Knowledge, Stories, and Perspectives**

So, let's talk a little bit about ordinary thinking. I actually thought we'd do a little university humor. So, humor me. A mathematician, a physicist, and an engineer are riding a train through Scotland. The engineer looks out the window, sees a black sheep and says, "Hey they've got black sheep in Scotland". The physicist looks out the window and corrects the engineer. Well, "There's at least one black sheep in Scotland". The mathematician looks out the window and corrects the physicist, "At least one side of one sheep is black in Scotland". Oh, I get it right. Parking order here in the university. That's actually really insightful joke in the sense that, it really conveys the idea that we can't adopt every single possible perspective on any given issue. We actually have to make choices, and in doing so we lock ourselves into a particular perspective. But is that always a bad thing? It's not always a bad thing. You're going to miss things. Right? Right. You know. Did you see this one? Yes. I mean. Voting cast. If you're so focused on one thing, you're not going to see something else. But, we don't really have a choice. I mean if you don't focus on anything, if you don't take any perspective then you can't really think at all. We have to make assumptions, because there's so much to think about in the world and we only have our poor little brains to do that thinking. There are days when I'm lucky. If I can just start of walking and chew gum at the same time. How is it then, that we can actually do anything intelligently, let alone actually creatively. So, let's try something quick. On the screen, you're going to see a few items. Right. A triangle, a square, a parallelogram. See them? Okay. Now they're gone. Can you remember them? If you had to draw what you just saw, could you do it? I mean, I hope so. It was only three items and that's usually within our ability to remember. Let's try this again. Now what about these three items? Take a look. Can you remember these, could you draw them? My bet is that you couldn't remember them fully, and couldn't draw them out fully either. All right you could stop the video. But forget that. Why not? It was only three items just like three items before. Well, these three items were complicated and new. So, each one required you to work hard to understand each one and hold on to each one and multiply that times three, we quickly go beyond our capacities. All right, we're going to do this one more time. Take a look at these items. Can you remember all these and draw all of them down? Now, psychology studies tell us that we can only think about five to seven ideas at a time. That's about it. We've hit our limit. We call it a Working Memory Capacity. Given that, you had 14 items to remember individually. That's usually well beyond our working memory. There's no way we can hold all that in mind at once. However, let's imagine re-arranging those items. Right? So, we could take those 14 items and turned it into a horse and a cat. So, if we re-arrange them and now we see a horse and a cat, then at this point we only have two items to remember and that's well within our capacity. So, what is all this really about? All of this is saying that in order to take in the amazing array of information in the world, we make assumptions about how things fit together, and how we can draw them in and use categories we already know, knowledge we already have to interpret, make sense, to pull together, and to hold on to. So, we had our horse and our cat and that allowed us to remember 14 items and when those 14 items were taken individually, we couldn't hold on to them in memory. But when they were a horse and a cat they could. Now, the problem is, having committed to thinking about them as a horse and a cat. We can remember them all but we can only remember them really as a horse and a cat. We could re-arrange those items completely, and end up with say I don't know, a camel and a fish. Right. If we have a camel in a fish, now that is a totally different way of remembering all 14 items. But it's different than the horse and the cat that we had before. So, when we are taking an enormous amounts of information, the only way we can hold on to all of that information, is if we make some assumptions, not just one assumption or two. But a system of assumptions that pulls everything together and then commit to that. So, if I know I've got a horse and a cat, or a camel and a fish, or whatever and I hold onto them in that way, well then I can think about all kinds of information. But I can only do that if I commit to thinking about them in a particular way. So, imagine you come over to my house, you see something furry, it starts to bark at you. You're not completely confused it's probably my dog. You have taken in that potentially confusing array of information, and assembled it into something obvious, right. It's my dog, it's barking at you. And so, we pick up a ball and we throw it and the dog fetches it, brings it back to me, the owner. So, now, we're thinking about a small story. Where we have a dog and a ball we're playing fetch with me, the owner. But we've put that together again in a particular way. It's not that I throw the dog and the ball fetches me, the owner. It's that we threw the ball, the dog fetched it and brought it back to the owner. So, assumptions are not only about what things are, but also how they relate to one another. Together more generally, we gather knowledge that we have and we put it together in particular ways to tell stories. The owner threw the ball, the dog fetched it, brought it back to the owner. It's a stupid little story but think about all the knowledge that just came together to form that story. Now imagine larger and larger stories. Inevitably, our stories are incomplete. We can't have every bit of information about a dog, every bit of information about an owner, every bit of information about a ball and so forth, we just have enough to put those together into stories. Because we're only taking a fraction of what we know to make our stories, inevitably our stories have to take a particular perspective. This story was from the perspective of me the owner and not from say the perspective of the dog, or the neighbor, or the pet organization, or whatever it might be. You know, 'cats forever' who hate to talk, whatever it might be. So inevitably, we take a perspective, and that perspective colors our interpretation. But we don't have a choice. We've been saying that creativity is about changing our perspectives. So, it's important to understand that a perspective is useful that we have to take a perspective otherwise we won't be able to think about anything at all. But every perspective we build is only a model. It's one way of thinking about the information that we have. It's a map not the territory itself. Right. So, we use stereotypes, or categories, or all kinds of piecemeal bits of information that are critical for going about our daily lives but have to leave out some information. The trouble that we get into is that we use this knowledge in a perspective to think about what's going on, and we commit to it in order to remember that whole story, and in order to think and reason from here about a complex array of information. So, we forget that we made the mazes, that we wander in our minds and we often solidify those mazes and because we've walked them so often, we commit to them we assume their reality, and we forget that the map is actually not the territory that maybe there is a new entrance or exit out of that maze, and that's what we're talking about when we're talking about changing our perspective. We all make assumptions just to get through our day but sometimes the assumptions we make can prevent us from seeing what's really right in front of our nose. So, I'm here at the beautiful Observatory at the University of Illinois, to tell you a story about seeing stars. But are you supposed to see stars, or you are supposed to notice something else that's even more crucial? Sherlock Holmes and Dr Watson went on a camping trip. After a good meal and a bottle of wine, they lay down for the night and went to sleep. Some hours later, Holmes awoken, nudged his faithful friend. "Watson look up at the sky and tell me what you see?" Watson replied, "I see millions and millions of stars. What does that tell you?" Holmes asked. Watson pondered for a minute. "Astronomically it tells me that there are millions of galaxies and potentially billions of planets. Astrologically, I observe that Saturn is in Leo, or logically I deduce that the time is approximately a quarter past three. Theologically, I can see that God is all-powerful, that we are small and insignificant. Meteorologically, I suspect that we have a beautiful day tomorrow. What does it tell you?" Holmes was silent for a minute then spoke, "Watson you idiot, somebody stole our tent". Funny joke, right? But I think, it actually really reveals the key insight about creativity, which is that it involves changing perspectives. Like Watson, many of us are sort of, locked into particular perspectives like astrological perspective on the issue and the time perspective on the issue, and the other grand theological questions in that. Because of that, we're actually unable to notice something that is completely obvious that's right in front of us and then maybe, perhaps even more important. So, to be creative we have to actually change the way we view issues and change our perspectives. As we go about our day, as we do work, we are drawing on knowledge to form and advance stories. Because we only use a small portion of our knowledge, because we only think about a small portion of what's happening in the world, we necessarily end up taking a particular point of view, a perspective. We don't have a choice. The only way we can think about more than a couple simple ideas is to take a perspective and start forming a story. The perspectives we take then influence where we think to take our stories. This is incredibly practical and helpful. Just think how awful it would be to wake up each morning and have to decide what morning is, what clothes are, what it means to eat something, what breakfast is, and so on. It would be a disaster. Habits of mind are the foundation of all intelligent action. Most of what we think and what we do, we think and do something a lot like we did yesterday. It's incredibly efficient that way. It allows us to be experts at something and do incredible things. Think about going to a doctor, they seem to have a name for every aspect of our bodies and what can go wrong with them. There's no way that they could practice medicine if they had to start with what you and I know and learn it all over again from the beginning, every day. Or a carpenter. Most of us would just hurt ourselves with all the saws, and hammers, and boards, and everything, but they make incredible things. Most of the time that we want to take our existing knowledge and our typical perspectives and apply them to form stories so that we can get things done. That way we know what we're doing, and we know how to think about what we're doing. We know how to make progress and the kinds of progress that it's possible for us to make. Now, we always have the option of changing our perspectives, drawing on different knowledge, or learning new knowledge, and directing our stories in new kinds of ways. But usually, we don't. That's okay. We have to balance between exploiting the knowledge and perspectives we already have, and exploring for new perspectives that might allow us to tell new kinds of stories. We don't want to be creative all the time. We only want to be creative some of the time.

**1.2.3 Using, Adding To, Changing, and Building Perspectives**

So let's talk about the process of creative thinking and

how that's different from the process of ordinary thinking.

Most of the time we are doing ordinary sort of habitual thinking right?

Yeah.

And we talked about that in the last section and actually that's a good thing,

because it helps us get through the day,

quickly and efficiently right?

Yeah. And I think the thing to realize there is that,

now I'm going to, do this task.

Here's what I'm going to do right now.

And then you start acting and making progress.

And so we're aware usually of the story that we're building while doing our work.

So if someone said to you hey, what have you been up to.

You can tell them the story.

But what's less obvious is the perspective that I took on to generate that story.

Right. So, in order to be creative,

you have to actually know how to change through perspectives right?

Which Can be challenging.

Right. So we need to separate the story of what we're doing,

from the perspective on what we're doing and that's how

we distinguish ordinary thinking, from creative thinking.

So, in order to understand creative thinking,

we first need to understand ordinary thinking and distinguish between the two.

So, once we understand ordinary thinking,

we can think about how to change our perspective.

So, I think the first really important question to ask is,

what does it mean to use our perspectives?

Yeah, absolutely.

So let's take an example right.

So let's say you work at a bank right.

Congratulations, you just got a promotion, you got a raise.

So you work in a bank and it's annual review time.

So you're going to go in and you're thinking,

hey, I did a great job this year.

You know, I had a wonderful time.

I was really productive.

I'm going to go in and have a really nice discussion with my boss,

and they're going to recognize how well I did

and give me a great bonus and whatever right?

So, that's what you're thinking.

You know, you've been through annual reviews before,

you have an idea of what you think counts as good performance at the bank.

And so, you're using that perspective to anticipate the discussion,

hold the discussion, and possibly even after you're done,

go on with your day right?

Yes I've completed another annual review.

Maybe it was painful,

maybe it was exciting,

but you know it's what I basically expected it would be.

And so in that case,

you're drawing on an experience you've had in the past.

You're putting that perspective together,

to make sense of what you're doing and how to go about it.

And so your story is advancing but your perspective isn't really changing, right?

So you're using how to have an annual review conversation with my boss,

that perspective to advance through the story

of that particular annual review conversation.

So, I've used an existing perspective to advance a story to get something done.

So, that would be an example of the kinds of

ordinary thinking we rely on to sort of get through our day.

Exactly.

And we just sort of fall through with our assumptions.

And so what does it mean then to add to our perspective?

Right. So sometimes, the world throws

something at us that we didn't necessarily anticipate or

et cetera but it's entirely consistent with

our perspective or our perspective can allow for that possibility.

So, in that case,

you're going to need to incrementally or add a little bit onto your existing perspective.

So for example maybe your boss says,

"You know we have a new forum to fill out for annual reviews."

And so you didn't realize there was going

to be a forum but it's not that hard to imagine,

it's like okay I'll put my performance down on the form and I'll submit the form.

So, it's a trivial addition to

an ordinary perspective or even something a little more dramatic.

The boss might say, "Hey you know what,

the firm as a whole did terribly this year.

We have no money. " So, bonuses are going to be thin.

You might be upset,

you might be frustrated but you understand and you can say,

"Okay, I'm going to go in and have my conversation,

I'll have low expectations.

I'm not going to get a big bonus and I'm done."

So my perspective has shifted.

Oh there's a new form,

oh the bonus will be big,

but I haven't changed how I really think about anything.

I'm just updating information.

So the world changes around us and we have to make

incremental changes to our existing perspective that sort of add on,

but don't really dramatically change our view of the world.

Exactly, we accommodate them,

we accommodate the change.

Right. So that's an example again of

their ordinary process of thinking through things as they happen.

Exactly.

Then that begs the question,

how do you change your perspective rather than just add to it.

Right. So now we get to the good stuff.

So this is creativity.

So using and adding to our perspective,

our ordinary thinking processes.

And so the difference with creativity is that,

we're going to change our perspective.

So all right.

So maybe you get the form from your boss and it says something like,

how many times did you help a colleague win a client?

And you're thinking, wait a minute,

my annual review is about my individual performance, what's this?

Or maybe you think,

well the the firm doesn't have any money to give out but what else could they do for me.

Is there something other than money that I could ask for?

And that could be a shocking revelation.

You could go wait a minute.

You know, I didn't know they were measuring this kind of performance.

And now I feel totally differently about what I

did last year and what I might do next year.

Or you know can I think of something other than make money as a bonus from the bank.

Now, I think wow,

that introduces a whole new set of conversations.

So I've had a change in perspective.

And that involves reaching out of your sort of narrow point of view and

into areas that maybe are unfamiliar and then using those to move forward.

And go backwards.

So what's interesting about perspective changes is

not only do they open new pathways going forwards,

but they can change where you think you are right now,

and where you think you've been.

And you can completely reinterpret where

you've been, based on this change in perspective.

Right. It's like a plot twist in a story right?

It makes you go, "Oh,

that was what was going on earlier."

That's why nobody sits with me at lunch because I dint know that was part of my job.

So then, but there there's yet another sort of layer here

which or step here which involves completely changing your perspective.

So what's the process there?

Building an entirely new perspective.

Yeah. So not only can I flip from one way of looking at it to another,

but I could say well my old way isn't working,

but I don't have a new way and I have to construct that right?

And so you know, wow,

maybe I don't know anything about

non-monetary financial compensation, because I'm a bank.

I don't think about that stuff.

And so you might have to go out and learn right.

Oh, there's maybe flex time arrangements.

Never thought of that. Or you know whatever it might be.

Maybe they can put me up at night in a hotel.

So, I don't have to drive all the way home if I have

a late meeting and an early morning the next day.

So, you know, maybe they can get me a membership to a golf course,

so that I can develop new clients because that's where those people are.

So you may have to build entirely new ways of thinking about that conversation,

what it might be so that you can invent new options.

Right. And at this point that's very far from

where we begin this conversation in terms of

merely sort of adding to what you already know

and moving on with your life in a very incremental way,

assuming that there aren't any big surprises.

You know, completely changing your perspective

requires re-thinking everything you think you know,

and moving into something completely new which can be pretty scary.

Absolutely. Well and it might mean you have to go learn, right.

You know it might be, I don't know.

You know, let me get back to you

next week and I'll figure out what I should even be talking about with you,

because right now, I'm blank.

I've got to build a new way to think about it.

Yeah. So, I think what we're building to is this really important distinction where we

can actually talk about what differentiates ordinary thinking from creative thinking.

Yeah. So using and adding to our perspective is ordinary thinking.

And what that means is,

our perspective is not changing very much at all,

but our stories are progressing.

Whereas when you change your perspective or you build a new perspective,

usually your story isn't advancing much at all.

But your perspective is changing like crazy,

because we're figuring out a different way to even understand what we're doing.

And so, our stories stop,

but our perspectives change or get built and then that in turn is going to allow us

to feed back and tell entirely different stories than we had before.

Assume given how easy it is to stick with our habits.

One important thing that we are going to talk about would be,

what even leads us down that path?

Right. Yeah well we're going to get to that in a bit.

But I think that's why it's really helpful to

think about the difference between a story and a perspective.

So we often think about the story.

What am I doing now,

what did I do before,

what am I going to do next.

But it's also important to remember,

that there's not just the story,

but also my perspective on what's happening in my story.

And creativity is really about turning our attention to the perspective,

away from the story to the perspective and then making changes or building

new perspective so that we can see things going on that we had left out of our stories,

and see new openings,

for where our stories can continue.

And so rather than continuing to push our stories forward,

we push our perspectives,

and that's really the heart of the creative process.

**1.2.4 Separating Stories from Perspectives**

The distinction between a story and

a perspective is really quite useful.

It's useful to separate the series of actions that occur,

the story that is,

from the way in which you're thinking

about those actions, the perspective.

To see why, let's consider one more example.

So imagine you run a fishing business.

Maybe your family has fished for

three generations and now you're in charge.

The business is a big part of your identity,

and many family members have

been a part of it over the years.

In the last two months,

the amount of fish you're catching is

lower than what you expected to catch.

So what do you do? Now it's possible,

you just explain it away.

There are always some fluctuations,

there's variability, sometimes you're up,

sometimes you're down, maybe you're just unlucky,

your expectations are never exactly on target.

So you just keep doing what you're doing.

You use your existing perspective

and keep advancing your story,

taking the actions that follow from

that perspective and interpreting

what's happening in typical ways.

That's entirely possible.

Now alternatively,

you might see if there have been problems with your team.

Your little brother,

the troublemaker joined the team two months ago,

and this is a family business,

you wanted to give him a chance to redeem himself or you

felt an obligation to be his employer of last resort.

So you check in with the team leaders,

see how your little brother's doing,

and see if you can step in to help improve performance.

So in this case, you're using your existing perspective,

and then possibly adding to

that perspective as you find out more about

your little brother's performance and how it's

influencing the team's performance.

In that case, what you're then doing is

continuing your story with

a little bit of addition to your perspective.

Now in contrast, instead of advancing your story,

you could stop and consider a different perspective.

Maybe you can consider the catch going down

to be a positive outcome and not a negative outcome.

It's a crisis that gives you

an acceptable reason to let your little brother go,

the one you never wanted to hire in the first place.

Or maybe there are criticisms

of your company that you've been overfishing,

and you realize that if the catch

shrinks just a little bit more,

you'll hit the reduced level that your critics have been

calling you to do in the past.

So you decide to tell the team to catch even less fish,

and generate a marketing campaign emphasizing

your commitment to sustainable fishing practice.

So stepping back, a change in perspective enables you

to consider lines of action that you

would not otherwise have considered.

You can feel productive if you

just keep advancing your story.

If you change your perspective though,

you might find a better way to advance your story or even

realize that you might want to tell

an entirely different story.

But to change your perspective,

you usually have to stop advancing your current story.

It can feel like you're not being very productive.

The difference between advancing your story and

stopping to try to change your perspective is critical,

and it's well-described by

a great quote from Amos Tversky,

one of the great psychologists of the 20th century.

He said, "You can waste years if you can't waste hours."

## **Lesson 1-3: Cueing Creativity**

So, the creative process is about changing

our perspectives and building new perspectives.

Most of the time, we're relying on existing perspectives and habits and conventions,

rather than changing our perspectives.

Yeah.

And we've seen that that's actually a good thing,

that helps us get through our day efficiently.

But then the question is,

we've talked about the importance of separating our stories from our perspectives.

So then, who do we turn to next?

So, we have a process question, right?

Right.

So, if most of the time we are just using and adding to our perspectives,

and creativity is changing and building new perspectives,

then the question is, what kicks us out of the ordinary and into the creative?

Right.

When do we turn away from advancing our stories to changing our perspective?

So if we normally engage in ordinary thinking,

and we normally just add and use our existing perspectives to tell similar stories,

there must be something pretty dramatic to jolt us out of that mode, right?

So, what gets us to change or build new perspectives?

Yeah, it's a huge question, right?

I mean, if you look at discussions of creativity,

at discussions of innovation,

this is the magic question.

Organizational learning, exactly.

Organizational culture and all the kinds of spots where this comes up.

Yeah. What is the value of exploiting our current way of doing things?

Right.

And what's the value of exploring a new way of doing things?

Right.

And we have that same question.

So, we're going to tackle it here.

Exploitation's incredibly appealing, right?

If you have the right answer or the environment's not changing,

then why bother with creativity stuff?

Exactly.

So really, where we need to get to is what cues people

to get going with creative thinking.

Exactly, what makes us explore.

So, our task now is to learn about each one of

the cues that lead us to stop advancing our stories,

and instead, consider changing or building a new perspective.

**1.3.2 The Impasse cue**

One reason we stop advancing our stories and instead consider changing

our perspectives or building

a new perspective is that we can't think of any way to advance our stories.

Essentially, we're stuck, we're at an impasse.

Sometimes the queue to depart from ordinary thinking and

moving to more creative ways of thinking can come from an impasse, you hit a brick wall.

And I think, a really nice story that illustrates this is the story of Burt's Bees.

You've probably heard of the lip balm right?

But, there's an interesting back story

there that involved a lot of frustration at the beginning.

It all started when Honey salesman Burt Shavitz met an out of work waitress,

Roxanne Quimby in 1984 and they decided to make

some extra cash by making candles from beeswax.

By the end of the first year,

sales stood at $20,000.

Really impressive for them at the time but not enough to sustain a decent sized business.

The breakthrough though came when the duo started cooking up natural soaps and

perfumes on gas stoves while an accompanying lip balm became a best seller.

This was just a lip balm they sort of

experimented with and added in as part of a package.

And pretty soon the lip balm started outselling all of their other products.

In 1991, the year the business incorporated,

it was making 500,000 candles a year,

as well as, the natural soaps and perfumes.

It also had 40 staff,

as orders started flowing in from across the U.S. And Quimby,

the beeswax seller initially talked about these early years of frustration.

And he said in the early years he had

some 'Midnight of your soul type of times' as he put it.

And one time he came home from work and he found the window in his cabin was blown in,

snow was all over.

It was 20 degrees below zero outside at three in the morning.

He was broke. His car just barely made it up the driveway before it broke down.

And in that moment he had the sense,

and we talked about an impasse where the business wasn't quite working out.

They really hadn't come up with that product that really hit.

And he talks about his belief that,

and I think this is really insightful, that,

"Success is just getting up one more time than you fall.

And it doesn't come from one brilliant idea but

a bunch of small decisions that accumulate over the years."

And I think that's a really wise insight there.

That really tells us that you meet a lot of impasses along the way.

You hit a lot of brick walls.

But you have to really think of a way to profit from those experiences.

And so, part of the way that he profited from impasse

was not being sentimental about any particular existing product.

The product either sold or it didn't.

And they tried lots of things.

They hit a lot of brick walls.

They encountered a lot of impasses, but eventually,

they hit on that beeswax lip balm that you probably

know and associate today with Burt's Bees.

And it was very clear early on,

as the lip balm started to sell ten times

faster than for example their beeswax furniture polish,

that maybe that was the direction the company should take.

Play video starting at :3:38 and follow transcript3:38

As we saw with the example with Burt's Bees,

sometimes impasses happen and

they can actually be helpful on this journey toward creativity.

So, I think we needed to talk more

about the idea of an impasse and how it relates to the creative process.

So, I think one place to begin was,

why does an impasse happen in the first place?

Yes. And it's almost always a shortcoming of your perspective.

So, your story is stuck.

The world is against you or you don't have

a very good understanding of what's going on and you've got nothing left.

Your perspective doesn't give you a way that to use it.

You just kind of hit a wall.

And that's your story. Yes, that's usually why perspectives happen.

I mean it could be somebody else saying no.

It could be the world saying there's a barrier.

So, the creative process could end there.

Absolutely.

I quit. So, I think

the important question to asks is

why could an impasse cue us toward creativity in particular?

No. Absolutely, because I think often we rationalize away.

"I'm stuck. That's it.

There's nothing I can do."

Or, "I'm unlucky."

Or something like that but instead,

I think impasse can cue you to be creative.

And I think that's largely because you think,

"Well, there's got to be a way."

And so you can think about,

"Okay, I'm stuck, there's nothing I can do.

Oh well, I give up."

But you can also think, "Well,

maybe there's something I'm not thinking of.

What else could I be thinking about?"

And that's usually my story is stopping

and now I'm going back to my perspective and saying, "What am I missing?

What am I missing? What else could there be?".

So, one assumes that there is a solution and then the impasse really is a cue that

clearly you're missing something and so you have to go back and

rethink and perhaps change the way you're thinking about things.

Exactly. So, if we take that hit of we're stuck to mean I give up,

well, it's not a cue to creativity.

But if I take it as,

"Is there anything else I can do?

Is there anything else I'm missing?" Well then it might be.

So, that's how we could experience the same situation

but one could lead us to creativity and one could not.

Creativity flourishes where impasses meets optimism.

And it reflowers from there.

And the other side is, remember, this is impasse.

So, what happens normally?

Normally, our stories continue.

And so there's this perverse thing about

success which is of our stories are just continuing.

We are not creating.

You don't have the opportunity to rethink or

any cue that maybe rethinking is a good idea.

Exactly. So we just continue on.

So an impasse by stopping your story,

can make you think I should change my perspective.

But if you don't have an impasse,

you may never stop to rethink your perspective.

You'll just keep going.

So, speaking of perversity,

I have a perverse question for you.

If impasses are helpful for

the creative process how do we encounter them more often? What do we have to do?

I feel like I encounter them enough,

by the way, every day but maybe,

people at home are wondering.

I'm particularly a creative person.

Well, we have competence traps like I'm

good at doing this and I'm good at doing it the usual way and so I

never experience an impasse because I'm pretty

good at this and I just move ahead and do it.

So, what could make that flip for us and make us feel an impasse that could be

fruitful by spurring us to change our perspective or build a new one?

So, the first one,

clearly we saw is you've got to care about your goal.

Otherwise an impasse is like, "Oh!

Well, I give up. I don't want to expend the effort."

So, it does have a motivational element that we have to care about what we're doing.

And then there also has to be a self efficacy piece.

"I have the capability to get through this."

So I'm stuck, "Oh!

Well, I'm bad at this I'll give up.".

And then maybe a certain amount of enjoyment for the task itself right.

Absolutely.

I like doing it and so rather than being purely frustrating, it's a challenge.

Right. But also the nature of the goal matters and not only do I feel like I can

achieve this and I care about my goal but what is the goal?

So, if your goal is to do a little bit better than yesterday,

you'll probably do basically the same thing you did yesterday.

But if your goal is to be at a whole different level,

well then, maybe there's no other way but to rethink it.

So, Google is probably famous for that.

Not 10 percent better but 10 times better.

You can maybe do the ordinary thing faster and get 10 percent better,

but you're not going to do the ordinary thing and get 10 times better,

you have to rethink it.

Like some of our most admired companies we can point to with strong cultures talking

about big hairy audacious goals was from the [inaudible] horse book.

I think is very much-.

Same idea. It forces you to rethink.

The way you normally think about it,

it's never going to get there.

So, the other piece is you can acknowledge constraints.

So, to experience an impasse,

you have to bump up against something.

So, by noticing where you're constraints are limited,

you're going to realize that's a direction in which your story is stuck and stopped.

So, there is sometimes a tendency to think, "Oh,

creativity is about freedom and lack of constraint."

But actually, the constraints themselves are what create the impasse.

Yes, that's interesting.

So that's a way that they can be helpful.

And the last one is conflict.

So, you say, "No," and I say,

"Yes," and now we're at an impasse.

So, seeking out people who are different from you who have different perspectives.

Exactly.

Or maybe going to places where people think differently.

You bump up against these blocks.

Exactly.

And you think, "Wow! Maybe what I assume to be true doesn't quite

work here and it's a cue and a signal that maybe,

I need to rethink my own perspective.

That's right. So one cue that we can try to be sensitive to is

the impasse getting stuck as an opportunity. Take it.

**1.3.3 The Dissatisfaction Cue**

One reason we stop advancing our stories and consider changing our perspectives,

or building new perspectives,

is that we're dissatisfied with where stories are headed.

The usual way of doing things is for some reason just not good enough.

Things are working, but it feels mediocre,

it's suboptimal, it's meaningless.

There's got to be something better out there.

You're looking at me. Dissatisfaction.

That's right.

I can make you part creative. Excellent.

Sometimes we find ourselves in a position

where our existing perspectives are getting us through the day,

and we can see the road ahead,

but it doesn't have any meaning.

We have this sense that the solutions we're pursuing,

or the way we're doing things, maybe okay,

but there might be something much more meaningful,

much better out there,

and that what we have isn't good enough.

And this kind of dissatisfaction can also be a cue to pursue creative thinking.

So, there is a really great story that illustrates this.

There were two friends, Adam Balam and John Wright,

and a third friend that joined them later Richard Reid,

who appeared to have been pretty well set after leaving Cambridge University.

The two of them became management consultants,

one moved into advertising.

They all made really good money.

They lived perfectly comfortable lives in London,

but the three of them had this shared nagging feeling that there

was just something more to life than what they were experiencing.

And one time they were out on a snowboarding vacation, back in 1998,

and the three did little else except throw around ideas for a new business,

because they were hoping to reach out and do

something different with their lives and maybe something a little more reasonable.

And through the course of these conversations,

they realized there was a gap in the market for a new type of smoothie product.

One based on natural ingredients and overtly ethical values.

After spending six months blending different combinations of fruit at home,

the trio set up a stall at a music festival to actually test out the concept.

And they did a really interesting thing.

They actually left the decision of whether or not to abandon their comfortable lives,

or pursue this sort of risky smoothy venture,

they left that decision entirely in the hands of consumers in a really clever way.

And what they did was, they put up a sign above the stall that read,

"Should we give up our jobs to make these smoothies?"

And one garbage bin read "Yes," and the other one said "No."

And customers would make their judgment by throwing their empty bottles into either bin.

And it turned out that at the end of the day, the "Yes" won.

And so, the three of them went on to write and rewrite their business plan 11

times before being turned down by

a succession of potential investors and banks for funding.

But, eventually they did succeed,

and now Innocent Drinks made its first million in turnover in its second year,

and now sells around two million smoothies a week

commanding a 75 percent market share in the UK.

And so, what this shows is that,

a sense of meaninglessness,

a sense of dissatisfaction with the current state of affairs can motivate you

to give up your current path and pursue a more creative line of thinking.

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So, sometimes we can find ourselves in a position where things are good enough,

but there is a sense that it's just not meaning much.

Things could be better, things aren't really very good.

So that, I think begs a number of question.

One is, why does dissatisfaction happen initially in the first place?

Yeah. I think it's because as we form habits and we have done things like this before.

Not only do we have a perspective on how the story is going to start,

but we have a pretty good idea of where the story is going to end.

Right.

So, that leads us to anticipate that ending and go,

"That's not really where we want to be."

Right.

Yeah. And so that in turn can lead us to go,

"Why even go down that path?

Why even tell that story?"

Because it's going to be an effort.

Telling the story is effort, it's work.

And that's interesting that again we get this perspective

that creativity can originate in something that isn't necessarily positive,

with an impasse, or a sense of meaninglessness.

I can see the road ahead and I don't like where I'm going.

That leads us to creativity that's actually,

it's an interesting point of view.

Yeah.

So then, we're in this position of trying

to re-evaluate what we're doing and potentially changing course.

Why does dissatisfaction prompt change?

As opposed to just,

I just keep moving forward,

and miserable, and cynical.

Or giving it up.

As some of us do.

Or giving up.

I think those are the two things.

It's meaningless, but it gets my paycheck, whatever.

So we rationalize the meaninglessness because

we find some other reason to do it that's good enough to keep going.

Right.

So, I think there are lots of reasons why we don't take this cue.

So, what? It gets us on the other track.

So, yeah.

Like how I made something out of this.

And I think there are two main reasons.

So, one is values. I care about this.

This matters to me, it's important.

I don't want to just do something good enough.

Yeah.

Because that violates some sense of who I think I am,

or what I think matters in the world. I think that's part of it.

Yeah.

I think the other though is an element of achievement,

which is, "Well, everyone else is doing that.

So, what's the point of doing that too?"

If I go in that other direction,

if I find something,

no one else will find it.

So, there's an element of.

So again, I think what's interesting too,

is that this points to a fork in the road.

Some people will respond,

so we're continuing with their perspective and

other people will be inspired to change it.

And so, it's interesting to think about why people choose one path or the other.

Yeah. Well, and I think so that indicates that we

have a choice at how do we deal with the dissatisfaction.

We can be alienated from what we're doing and get through it,

or we can actually dive in and engage with it more deeply.

Yeah, so how can we use dissatisfaction then to prompt creativity?

Yeah. Well, so one is,

you've got to care about what you're doing.

So that's one avenue, and the other is,

even if I don't care about this particular thing,

I might hold some broader values;

truth, beauty, justice, aesthetics.

Right.

This really matters. This is another human being and their life.

And so, I want this to really be as good as I can possibly make it,

not just good enough.

And that push, because of some greater value, deeper need,

either because of the task or because of the other person,

or because of something about myself,

I don't want to just go along and do good enough.

I want to be great.

I want where I'm spending my days on to be meaningful.

And so part of it could be personal ambition.

That I want to be the best.

Yes. That's right.

At something, but you're also pointed to a really different motive too,

which is, I want to do the best for other people.

And those are very distinct motives.

It's interesting to think about those two things as cues to creativity.

Right. I care about the work,

I care about my sense of achievement,

I care about other people.

All of those could be reasons for dissatisfaction.

And the key is,

if you take those seriously,

it's going to force you to think,

how can I do better?

What else could I possibly do to make this story have a better ending?

So, wherever the source of the meaning is that drives you,

I think that's what we need here with dissatisfaction.

And what was interesting is,

when we interviewed creators about what promoted creativity for them, we were floored.

Dissatisfaction was the cue that seemed to pop up with the most,

from the most eminent creators we interviewed.

Right.

So I don't know if that's accidental.

We haven't done the full research study on that, but I don't know.

Maybe there's something about having a pretty high bar for yourself,

that pushes you and drives you to keep looking for another way.

And I think with impasses too,

there's also a bit of optimism mixed in there.

Yeah.

Not only are things not good enough,

but I can make them better,

and I think maybe those are the two things that go together.

That fuse, dissatisfaction and impasse. I think you're right.

So, look, one way we can cultivate

a little bit more creativity and think about

changing our perspectives and building new ones,

is to cultivate a little bit of dissatisfaction.

Having high standards and having values and meaning,

those can be good things that push us to

consider our assumptions and maybe change our perspectives.

**1.3.4 The Surprise cue**

Sometimes we stop our stories because something happens we didn't expect,

we're surprised.

So that is another que to creativity. >> Some of the most

famous creative insights came about as the result of a surprise.

So people have a particular perspective but they may encounter information or

other perspectives that completely change their point of view and

I think that there are many famous examples,

but we can point to one in particular which was the invention of Teflon.

So the story goes in 1938 Roy Plunkett was a scientist with DuPont and

he was working on ways to make refrigerators more home friendly.

By searching for ways to replace the current refrigerant,

which was primarily made of ammonia, sulfur dioxide, and propane.

After opening the container on one particular sample he had been developing,

Plunkett found his experimental gas had completely dissipated and

all that was left was this strange,

slippery resin that was resistant to extreme heat and chemicals.

In the 1940s, this material was actually used by the Manhattan Project that

was busy developing nuclear weapons.

A decade later, it found its way into the automotive industry, but

it wasn't until the 1960s that Teflon would be used for its most noted

application, which is non-stick cookware. >> Right,

sometimes we're moving forward with our existing perspectives and

surprises happen right? >> [LAUGH]

>> And

then that can cue us to the possibility of creativity and so

I think one starting point to think about is why do surprises happen?

What does it mean?

I mean it sounds like an obvious question. >> [LAUGH]

>> But if we think about it more deeply

it's not obvious why I react with surprise in a given situtaion.

>> No absolutely,

I mean two main reasons, right?

So the first reason we experience surprise is

we have to remember our perspectives are limited, right?

We don't think of every possibility,

we can't have all knowledge brought to bearing in every situation.

So, a perspective is a limited view on what's going on.

And as soon as you have a limited view of what's going on, something may pop up

that's beyond the view, right. >> [LAUGH]

>> So

partly it's a matter of just ordinary thinking.

The limits of our little poor brains mean that things are going to happen that

are beyond what we've brought into our perspective in the first place.

And then, the second piece is, the world changes, right.

You know so chance happens, things occur that you didn't expect,

didn't predict, couldn't have known about etc.

So those are reasons why the world doesn't fit your prospective and

that means, what's going off right?

A surprise. >> And so if we live in a world that

never changes right? >> That never happens right?

Clearly something we have to grapple with, so why did then,

does that surprise response prompt change?

What's the underlying process there? >> Mostly it's a desire to understand.

Right so I didn't expect that.

And what does that mean?

So, if you're surprised it means,

my perspective just failed me. >> Right.

>> So surprise is, another name for

surprise in the academic literature is expectation failure.

Yeah. >> Right.

Your perspective led you to have an expectation.

>> I prefer the term surprise myself.

[LAUGH] >> [LAUGH] And

that expectation failed. >> Yeah.

>> No, surprise is much

better. >> Yeah.

>> But I think that gives you

an indication that we don't want a world where we don't know what's going on, where

we can't explain what's happening, right? >> Right.

>> That's incredibly scary and

anxiety provoking, right?

We want to have some sense of being able to have an understanding of what's

happening around us.

So, when we're surprised it means, hey you gotta learn something because you didn't

predict this. >> Yeah, and

it's interesting that, I mean I think again we see a fork in the road.

You could reach for

really superficial explanations. >> Yeah, yeah, yeah.

>> To dismiss the surprise and move on,

right, and not change. >> Right.

>> Or you could engage in

deeper thinking, right? >> Yeah.

>> And I guess that would be again,

motivated by curiosity and your genuine desire to understand things.

>> Absolutely.

Yeah, yeah, the computer just does funny things.

Like, well. >> Right.

>> So you can just ignore it right and

explain away. >> Which would be superstitious learning

or you just try and you reach for these superficial

explanations that allow you to preserve your sense that you know what's going on.

But it doesn't

really lead you to deeper thinking. >> That's right.

You preserve your persepctive instead

of changing it. >> Right.

So how do we avoid that?

Actually use surprise to our advantage?

How do we? >> Yeah.

Use it. >> Well, oddly,

the thing that really struck me when we were thinking about this,

Play video starting at :4:56 and follow transcript4:56

is you have to make predictions to be surprised.

And so I think there are many situations where we go in thinking I'm not really

exactly sure what's going to happen, and so whatever happens is okay, right?

As opposed to I think this is going to happen and you might be right and

you might be wrong.

And if your wrong, you could be surprised >> Yeah.

>> So, there's an element of sort of

chance favors the prepared mind. >> Right.

>> If you don't go in with any sense of

what might happen, then it's hard to be that surprised by what

does happen. >> Right.

>> And as a result,

the simplest thing to do is simply generate some expectations.

Right. >> And so

that requires preparation, studying- >> Yes.

>> And developing a perspective-

>> Yes.

>> That then will allow you to experience

surprise when new information comes in.

But if you're approaching a problem as a blank slate,

right, which I think rarely happens. >> No.

[LAUGH] >> It's hard to remain in that state for

too long. >> Right.

>> Then were unlikely to really capitalize

on it. >> And the other piece is put yourself in

situations that are changing or different. >> Yeah.

>> Right, so if you're in

the same setting all the time- >> Yeah.

>> And

not a lot of a change can happen, well then,

not a lot of surprise can happen either. >> Right.

So you have to put yourself in situations where it may not be like yesterday and-

>> And it's actually interesting that

we talked about introducing impasses. >> Right.

>> That way and so

all of these things can happen at once, right.

So we actively seek out new situations and we can experience impasses,

meaninglessness. >> Right.

>> You know surprise all at once and

perhaps have to sort through all that to be creative.

>> Absolutely, yeah,

no the cues don't have to stand along, they can work together and

some of the same kinds of situations can invoke some of the same cues but

of course they do pop up in different places.

So yeah, yeah.

So look, one cue that can help us to stop advancing our current story and make us,

hey, wait a minute, consider changing our perspective or

building a new perspective is a surprise.

1.3.5 The crosstalk cue

So the fourth queue that might lead us to

stop telling our existing story

and consider changing our perspective is crosstalk.

Crosstalk is when we connect two different stories.

For example, maybe you're at work

trying to figure out how to motivate a team member.

That night you attend

a parent-teacher meeting at your kids kindergarten,

and the teacher talks about

the schedule of a typical day.

You noticed that the students are doing

different things every 30 minutes or so,

nothing lasts very long.

Then you wonder, does your team member who's not very

motivated happen to work on the same task all day long?

The crosstalk between the two stories,

the team member at work and

the parent-teacher meeting at your child's school,

prompted a new set of ideas to

explore about the team members tasks and whether

a change in the design of their job could provide

a new avenue for increasing their motivation.

It's just one example.

Whenever you realize that something in

one story might be related to something in another story,

that's crosstalk prompting you to

consider changing your perspective.

Here's another example.

So I don't know if you've heard of Benoit Mandelbrot,

but he was a really famous mathematician

and one of the founders of fractal geometry.

So he studied Pareto's mathematical descriptions

of income distributions during his education.

Maybe you've heard of this, the 80-20 rule,

that a small number of people has a large percent of

the money and a large percentage of

the people have a small percentage of the money.

Well, that's Pareto's rule about income distribution,

and Benoit Mandelbrot studied that during his education.

After graduating, Mandelbrot worked at IBM,

and one of his early projects was on

noise in communication lines.

They were trying to make communication

more reliable over the wires.

Well, the distribution of noise in the wires looked

a lot like the distribution of

income that Pareto had described.

That little bit of crosstalk lead Mandelbrot to explore

whether there was a deeper commonality

in the way patterns form,

which led to his contributions

to what we now call chaos theory.

One more bit of crosstalk just as an example.

So maybe you've heard of Page and Brin,

the founders of Google,

and they were learning about

web search during graduate school.

They realized that just like

academic articles written by professors

could be evaluated for their importance

based on how many other papers cited them,

maybe webpages could be identified as more and less

important based on

how many other webpages linked to them.

That approach led to a huge step forward in web search.

Crosstalk is not just individual with

one person connecting two of their own stories.

It can also be social.

The two stories being connected could be mine and yours.

Thus, it is crosstalk that is a queue

that's in play when we're at the office water cooler,

when we're hanging out in the break room,

or when we're simply walking

down the hall and we happen to have

an unplanned conversation with

a colleague that spark something new.

An interesting example of this happened at

the University of Nottingham not long ago.

A biologist, who was an expert on spiders,

met up with a chemist.

The biologists wanted to better

understand how spider silk worked,

and asked the chemist whether it might be

possible to make spider silk in the lab.

Talking about the properties of

spider silk with the biologist,

the chemists realized that

artificial spider silk could

be really useful for medicine,

and that advances in click chemistry

might allow the embedding of antibiotics into

artificial spider silk and that this would have

applications in healing some really complicated wounds.

So from a chance encounter to antibiotic spider silk,

crosstalk is what got that started.

Crosstalk is one reason

why we think about putting together

interdisciplinary teams or teams

comprised of experts in different areas.

The hope is that crosstalk between two of

their areas of expertise might lead to a new perspective,

perhaps one that neither one

alone could ever have formed.

When crosstalk occurs in conversations between people,

or with one person juxtaposing two of their own stories,

the same key barrier is being crossed.

When we are telling our stories,

there's a certain collection of information and

knowledge that we think

fits or goes with what we're talking about.

That is, we adopt a perspective when we tell our stories.

That perspective helps us to keep advancing our story.

But it also limits us from

thinking about our story in other ways.

Stepping away from one story and

into another story can free us

up to consider our initial story in

a different way outside of the original perspective.

The poster you happen to walk by,

or the magazine article that you happen to read,

the person you happen to hear from,

all of these things can present something we weren't

thinking about and wasn't part of our perspective.

That exposure, because of crosstalk between stories,

can prompt us to consider changing our perspective.

It could lead me to go,

I wasn't thinking about that.

I didn't have that in mind.

Now of course, many times we just

walk right by that poster,

and we don't make the connection.

Crosstalk relies on us noticing that connection.

We have to be open to new sources of information.

More generally, there are some contingencies

that are important to crosstalk

serving as a cue to creativity.

It's only crosstalk if you pay attention to it.

If we don't notice it, if we don't take it in,

if we ignore other people,

if we don't look at anything else in our environment,

if we don't talk with different people

than we usually see,

then we're not going to experience crosstalk.

We can all be in our isolated little boxes,

with our typical perspectives dominating our thinking.

Being open to crosstalk can

be distracting and uncomfortable.

Do I really want to stop what I'm doing to go have

a random conversation that might not go anywhere?

Is that efficient?

Well, we can try to encourage forms of

crosstalk that are more

rather than less likely to be useful.

If we're communicating with

the same small group of people who are like us,

then we're probably not going to

experience crosstalk very often,

relative to if we're communicating with

a larger and more diverse group of people.

If we're going to the same places,

seeing the same things,

thinking about the same stories,

then we're probably not going to

experience crosstalk very often either.

In contrast, if we go to new places,

if we seek out new things,

and think about new stories,

then we're more likely to experience crosstalk.

Maybe read a new website,

maybe go to a new part of town,

maybe go to a different conference

than you'd normally attend,

maybe try a new activity, a new social group,

sit somewhere else at lunch,

go to lunch with different people.

The differences don't have to be all that large.

We're not suggesting that if you're

a microbiologist specializing in E. Coli or spiders,

that you should jump to talking to,

I don't know, taking up

the banjo to generate useful crosstalk.

Maybe just instead of reading something about E. Coli,

read something about yeast.

Picking a neighboring item,

the thing that seems different to you,

but similar to someone outside your field,

is actually often quite fruitful.

The second part of crosstalk

that is important to think through is attending to,

listening to the information you are perceiving.

For Crosstalk to prompt you to change your perspective,

we typically need to think that the story

we're encountering is worth listening to.

There's an element of respect that's important here.

We can't just dismiss new information or the new person.

It's not enough to try something new,

you also have to do it with an open mind,

and a willingness to consider

whatever it is you're experiencing,

or hearing, or seeing.

It's hard to talk to people who are different.

We don't necessarily know the way they use

words and the things they're referring to,

it's hard to take in information from unfamiliar sources.

It's not just in my world,

we have to be up to making

the effort to take in new information.

If we're up for it, there's no telling

though where crosstalk might lead us.

Crosstalk is the fourth cue

that can prompt people to change their perspectives,

or perhaps build a new perspective.

It involves making links across stories,

whether it's one's own stories, or somebody else's.

Just as we saw with the other cues

of surprise, dissatisfaction, impasse,

we might seek crosstalk out and respond to

experiencing it by considering a change in perspective.

We might not seek it out,

and we might ignore it when it arises so we can keep on

using our existing perspective to get on with our story.

To be clear, most of the time,

we do just use our perspective so that

we can keep just advancing our stories.

That's normal, it's appropriate,

it gets us through our day.

But sometimes we have an opportunity to change

our perspective so we can tell

a better story or a different story.

We might have a problem that's really challenging,

we might have an opportunity we could develop,

we might have an ethical concern that comes up,

but we aren't really paying attention.

We might be on the verge of making a disastrous mistake.

Cues are the prompts to

consider changing our perspective.

They are opportunities to think more flexibly.

They are an opportunity for creativity.

The question is, do we take that opportunity?

To take any of

the cues and jump into the creative process,

requires a measure of confidence.

We do not have to take these cues seriously,

we can give up, we can rationalize the cue away,

we can feel lucky or unlucky,

we can further commit to our existing perspective,

and just try to keep

telling the story we're trying to tell.

If we consider changing our perspective,

we might think this could be a waste of time,

we might think, what if I can't think of anything?

We might wonder, I have no idea where we're going,

and no idea where we're going to come out. It's scaring.

To enter the creative process then,

takes a degree of confidence that we

can generate new possibilities.

We're often busy, we're often under deadline,

we're often not confident that if we try to be creative,

we'll be able to think of something worthwhile.

This course is intended to

help you build that confidence.

Take cues seriously, acknowledge an impasse,

be dissatisfied, be surprised,

make opportunities to experience crosstalk.

See where it takes you. See if you

can come up with something worth trying.

The better you get at going through the creative process,

the more often you're able to

find a change in perspective,

the more you will have

the confidence to start your story,

and manage the ambiguity and

uncertainty of trying to think in a different way.

Being creative is part of your skillset.

# **Module 2 Overview**

# **Module 2: Raw Materials and End Products**

Creativity involves changes to our thinking so that we can generate new outcomes. Thus, in this module, we learn a way to break down what it is we are currently thinking so that we can consider changing it. Our thinking is guided by a perspective, and perspectives have five main aspects, which we remember using the acronym PAGES. Understanding PAGES allows us to work through our current perspective systematically and so enables us to be efficient in navigating the creative process. In addition, to understand the value of the creative process, we examine the three types of creative products – insights, inventions, and enlightenments. These products differ in how they are generated and in the effects they have. Understanding what kind of creative product, we are trying to generate can help guide our process. Taken together, understanding what has to change, how to make changes, and what kind of product we are aiming to generate as a result of those changes allows us to make the creative process more concrete and more tractable.

Goals and Objectives

Upon successful completion of this module, you will be able to:

Learn to break down your current thinking to understand your current perspective.

Learn to surface assumptions about what you are currently thinking.

Identify the types of creative products.

Decide what type of creative product you are aiming to generate.

**2.1.1 Ideas and Perspectives**

If the creative process is about changing perspectives,

then it would help to know what a perspective is.

Right. And often, we hear a lot about people generating ideas too,

but we kind of take for granted what's an idea.

That sounds sort of philosophical, right?

Yeah, right.

What is an idea?

But although it's philosophical,

it could be useful to actually know what these things are, right?

So, let's dive in. Let's do it.

Let's talk about what a perspective is and what ideas are.

So here's a picture of a dog.

It's a specific dog in the world.

Actually, my family's dog.

His name is Romeo.

There is also our concept of dog that we use to understand this specific creature, Romeo.

We hardly have any information about this particular dog, or at least you do.

But because you have a dog concept,

you probably know that he eats.

He probably likes playing with that ball.

He definitely can't fly, right?

So we can think about that creature as a dog.

We can think about it as a pet.

We could think about it as an eater,

as a fetcher of balls,

as our creature that does not come when called.

And we can use different concepts for thinking about the very same thing.

Some of those concepts seems really central and

enduring and some seem pretty circumstantial.

None, however, are the dog itself, right?

It's none of those are Romeo himself.

They're all concepts about Romeo.

And they help us think about Romeo,

but only captures some of the ways that we might think about him.

So, it's important to separate a concept of something from the thing itself.

We don't actually think with actual dogs.

Instead, we think with concepts of dogs.

Furthermore, we don't think with just one concept but rather with

many concepts put together to represent all the different elements of a story.

That's what we call the perspective;

the concepts that we're using to comprise our stories.

One of my favorite examples of perspectives comes from

Norton Juster in his wonderful book for children, "The Phantom Tollbooth."

For instance, "From here,

that looks like a bucket of water," he said pointing to a bucket of water.

But from an ant's point of view, it's a vast ocean.

From an elephant's, just a cool drink.

And to a fish, of course, it's home.

So you see the way you see things depends a great deal on where you look at them from.

What I love about that quote, of course,

is that it separates the thing itself from

the interpretation or perspective on the thing.

We don't think with actual dogs and actual buckets of water,

we think with concepts of dogs and concepts of buckets of water.

Furthermore, we don't think with just one concept,

but rather we use many concepts put together

to represent all the different elements of a story.

And we call that collection of concepts and

the interpretation collectively that it generates a perspective.

Now, perspective is the collection of concepts to make sense of a story.

In Norton Juster's example,

one perspective is that we are ants,

that's our self concept,

and we see a vast ocean, that's the part.

When we're talking about creativity and we say that we have had an idea,

what we mean is that we have realized that we could change our perspective

somehow by changing some of

the concepts we were using previously to think about our story.

A different perspective, for example in Norton Juster's case,

is that we are elephants and we see a cool drink.

The switch from one perspective to another

by changing the concepts we use to represent some of

our stories in this simple case from oceans to

drinks is the center of the creative process.

So to understand what is happening in any situation that we're in,

we draw on concepts we already know and then we put them together.

So for example, if I tell you about an orange helicopter in

Sweden that flew to rescue a lost girl in a puffy coat,

you could put all those concepts together and start imagining that story.

If we are making a movie of that story,

we would have to cast actors to play the roles

and get a costume designer and a set designer and so on.

Well, we can think of our minds as casting

concepts into roles to represent all the elements of a story.

For example, there's a story that Jackie Torrance,

the brilliant American storyteller,

actually so well-known that she was called simply "The story lady," used to tell,

"It's a story about casting elements into roles to make a larger reality."

And I shall tell you the story of the human being.

It was a time many years ago when the great creator had a garden.

And in that garden,

he grew fingers, and toes,

and elbows, and arms,

and necks, and ears,

and tongues, and backs,

and eyes, and lips, and noses.

And the great creator thought them to be the most beautiful thing he had ever seen.

And he gave them this garden and he said,

"Take care." And they did.

And they lived together happily,

except for one thing,

and that was something that stayed far back in the garden, in the dark.

It was called "belly."

Play video starting at :6:16 and follow transcript6:16

And every day you could hear belly say, "Growl."

Play video starting at :6:27 and follow transcript6:27

But the great creator knew that this was the nature of that creation,

so he never bothered it.

One day, something happened.

Fingers started to point,

tongues began to wag,

Play video starting at :6:46 and follow transcript6:46

eyes started to roll,

ears started to listen,

feet started to walk to the left.

It was horrible. Backs turned, noses turned up.

And the great creator came down and he said, "What is this?

Why do you not live happily together?

Can you not tell me fingers?"

And the fingers said,

"We just pointed a little."

And the ears said,

"We heard it, we heard it, we heard it."

And the tongue said,

"Well we said it, we said it, we said it."

And back said, "We avoided it."

And nose said, "We smelled it."

"Oh," he said, "This is horrible.

Can you not live together in peace?

I shall make you live together in peace.

I shall form something that will keep you together."

So the great creator put together a marvelous creation.

From 10 fingers, he placed on the ground.

On top of the 10 fingers,

he placed 10 eyes.

And on top of the eyes,

he placed 10 ears.

And on top of the ears,

he placed 10 elbows.

And on top of 10 elbows,

he placed 10 necks.

And on top of 10 necks,

he placed 10 knees.

And he looked back

and he said, "Oh.

This will never do."

Play video starting at :8:41 and follow transcript8:41

So he started all over again.

He gathered together 10 toes.

Behind the toes, he placed the foot.

On top of the foot, he put ankles.

And on top of the ankles, he placed the leg.

And on top of the leg, he put a knee.

And on top of the knee, he put a thigh.

And on top of the thigh, he put the hip.

And on top of the hip, he placed the body,

and on and on and on.

And then, he placed the head on top of all of that.

And in that head,

he placed two eyes,

a nose, and placed two ears.

Then he hung two arms from the side and fingers.

And, oh, was it nice?

But in the middle, there was a great big hole.

And he said, "Oh.

Play video starting at :9:34 and follow transcript9:34

This will never do."

And then he heard,

"Growl." "Hmm," he said.

He went back into the garden picked up belly and put it in the middle of that hole.

And then he said,

"You shall now live together to keep belly happy."

Play video starting at :10:6 and follow transcript10:06

Whether it's a helicopter rescuing a girl in Sweden or

a fanciful tale about whether we're driven by hunger,

no matter what the story is that we are telling,

as we go about solving a problem or

making a decision or otherwise thinking and acting in the world,

we regularly draw in concepts to play five roles.

The first role that we cast our concepts into is the role of parts.

What are the specific objects, people,

places that are involved in our story?

The second role is actions.

What are the operations, the behaviors,

the transformations that we can make to advance our stories?

The third role is goals.

What are the objectives, the motivations,

the purposes we are striving towards in our stories?

The fourth role is the event.

What kind of situation are we in?

What is the larger story we are telling all about?

The fifth role is the self concept.

Who are we, the storytellers?

Together, these form an acronym,

PAGES: Parts, actions, goals, event, self-concept.

These are the five main roles our concepts play as we build stories for our experiences.

If creativity is about changing our perspectives,

then our first task is to understand what our perspectives are right now.

The concepts we use for the five roles,

for the pages, comprise our perspectives.

To change our perspectives and so to be creative then,

our task is to rewrite what's on our pages.

Play video starting at :11:44 and follow transcript11:44

So, we have a perspective and we can break that perspective down into PAGES,

which means that we can actually change our perspectives deliberately and

intentionally and develop our skills at doing that systematically.

Yes, what I really like about your model, Jeff,

is that it really breaks the process down into pieces

that we can understand and then deliberately attempt to become creative.

And it may be something that these highly creative people,

that we've been talking about do intuitively,

but you've really broken down and made it easier for all of us to engage in the process.

When it's implicit, you feel like,

"Well, is lightning going to strike today?"

Right.

Whereas if we say, "Okay,

it's about changing a perspective.

What's a perspective?"

Well, it's these five things.

Then I can say, "Okay,

what am I currently thinking about

these five things and can I tweak or adjust any of them?"

Right.

And where does that take me so I know what to do?

Yes, exactly. So let's maybe practice PAGES.

Let's do it. Let's take a few problems and break them down. Let's see how we do.

**2.1.2 Pages**

Maybe you saw this puzzle before,

and you remembered the solution.

That's one way to solve it, right? That's great.

But if you wrote down that solution and stopped or simply felt

that you saw it before and remembered it and would just continue on,

then I'm going to point out right now that this was

intended to be a puzzle to illustrate creativity,

and you decided to rely on habits instead.

That's pretty common actually.

Why be creative if we have a solution and it works?

Well, we might find a better solution,

and we might learn by finding different ways of solving even the same problem.

It's helpful to remember though,

that creativity usually only happens when we stop

relying on habits of mind and our usual ways of behaving.

For those of you who are new to the problem,

never seen this before,

here's the classic solution.

This puzzle is the origin of the phrase,

"Think outside the box," because you have to draw

outside the box form by the dots to generate it.

But people told to draw outside the box don't seem to do any better at the problem.

Instead the problem seems to be that too many dot to dot puzzles when we were children.

So if you did too many dot to dot puzzles then it may make you think that

the action of drawing lines has to connect two lines at a dot.

But we could take a different perspective on the action of joining

lines and in that case new solutions are possible.

Now, what about the other solutions you generated?

Or did you just generate one solution and stop?

This is a creativity problem.

Why would you stop at the first solution you found

rather than continue to see if you could find another one?

Maybe a better one. This is another tendency that keeps us from being creative.

It's often difficult to go through a creative process and change our perspectives.

It's much easier to rely on habits,

and it's even easier still to just watch the video and let us do all the work.

But you're trying to learn to be creative, so give it a try.

Try to change your perspective on the problem

and see if you can generate another solution.

Play video starting at :2:29 and follow transcript2:29

The way I would generate another solution is to think about PAGES.

What are the parts of the problem?

Well, there are some dots.

That's obviously a part of the problem.

We can think about them a little bit.

They are dots, spots on the page,

poker dots arranged in a rigid way,

little circles, dots and circles can be little.

But dots and circles can also be big.

What if we made a change and drew the dots a little bigger? What would that do?

Now, when we draw lines,

the lines might only go through the edge of

a dot instead of the middle or the entire dot.

That gives us an opportunity for a solution with just three lines.

Well, if the dots can be small or large,

what if we think about another part of the problem and change that?

What about the lines?

Lines can be thin,

lines can be thick.

If we have a really thick line,

we could draw a single line that goes through all nine dots.

What about the other parts of this problem?

We talked about the dots,

we talked about the lines, what else is there?

Well, what about the paper?

What thoughts do we have about that concept?

Perhaps, we've been assuming the paper needed to stay flat,

but we can make changes to the paper.

For example, we can roll the paper in a cylinder,

tilt it a little bit and draw a line around

and around that goes through all nine dots. That's another solution.

Any other assumptions we're making when we're thinking about the paper?

My younger daughter's favorite solution to the problem is this one.

Who said the paper had to remain whole?

What if we rip the dots out of the paper,

put them in a line,

and draw a line through them all?

At this point, we have seen changes to parts,

dots of different sizes,

lines of different sizes,

paper shape, changes to actions,

lines connecting not as dot,

ripping dots out of the paper,

and changes to our goals,

a four-line solution, a three-line solution, a one-line solution.

These changes might have seemed delightful.

But sometimes some people think these changes seem like cheating,

and this happens with creativity.

When you're changing perspectives,

sometimes you find yourself thinking that you are breaking the rules.

Worse, sometimes a change that you think is creative,

other people think is breaking the rules.

Creativity can be dangerous, disruptive, threatening,

so what might make someone upset about our discussion of this problem?

Well, I usually find that people who think these solutions are

cheating have taken a perspective drawing from geometry.

They think the event here is to solve a geometry problem,

and their self concept includes the value that it is good and

appropriate to adhere to the rules of classic euclidean geometry.

The dots are points, the line is a classic geometry line so it has no width,

and everything is set in a single plane.

In this case, the classic solution is probably still perceived as

a genuine solution but everything else probably feels like cheating.

One question is, why did we take this perspective on this puzzle?

Why was this a geometry event,

and why was there self concept so committed to that interpretation?

But, okay, let's take that perspective as a given.

Is there anything we can do?

One of our colleagues here at Illinois proposed a solution

following from an observation of Einstein's,

"All parallel lines meet at infinity."

We'll leave it to you to decide if this counts as not picking up your pen.

The nine dot puzzle is a classic problem in the history of creativity.

Play video starting at :6: and follow transcript6:00

The nine dot puzzle is a classic in the history of creativity.

I think that's fair to say.

There are tons of papers using it. Have you used it?

Oh, absolutely. In classes over the years,

and it seems like people approach it in so many random ways.

But the nice thing about PAGES is that it gives us a systematic framework for thinking

specifically around how do we approach the problem and solve it more deliberately?

Yeah, well, and what was changing when they

came up with that seemingly random solution, right?

Right.

Oh they flipped the event or oh they flipped the part.

So, all those inside skin.

We don't have to reinvent the wheel,

we have a way of getting there through a systematic process.

Yeah, and there are wonderful histories on this.

So if you're really jazzed by the nine dot problem,

I think one of my beginnings of this was James Adams's work in Conceptual Blockbusting,

a really fun book with eight million ways to change your mind.

And it's traveled far from there, right.

There is a Taco Bell ad campaign,

"Think outside the bun," right.

That come directly from the nine dot problem.

How far we've fallen out.

So yeah, and that was the reason to use it here.

Let's start with the classic problem.

But I think the the fun part from here is maybe we can move

on and look at this and

maybe some other kinds of problems that are a little more every day,

a little more approachable and see PAGES work there too,

so that we can think about how we can use it

to systematically change our thinking and generate new solutions.

Sounds good.

So, let's try breaking down a problem maybe a

more everyday problem in the pages so that we can think

about changing some of those pages to generate

new avenues for solving new problems, doing new things.

So I thought, we'd-.

Think outside the bag.

Think outside of the bag.

A good friend, SC Johnson,

sends us Ziploc bags,

right? We'll keep it simple.

Let's think about a Ziploc bag, right?

Let's see what are the parts.

So, there's a box, right?

There's an opening.

There's an opening, right? There's an opening. There's a-.

Mechanism for closing it.

A mechanism for closing it.

There's a seam at the bottom.

There is a seam at the bottom.

There's a bag with some plastic,

transparent plastic. So, parts?

Right?

I think about changing those parts, right?

So intervening and thinking about the new parts.

Yes. So, that's a new part.

I can think of glass rather than plastic, right?

Absolutely.

And then it could be an artistic display, right? What do you think?

Right. Absolutely yes, or it could be colored,

so you could have blue, and green,

and pink, or whatever colors to it,

so you can color code whatever your doing.

Right.

We've seen all kinds of openings, right?

So this one has this little tab thing on top to make it a little easier to open a bag,

that was apparently an innovation.

Right.

Then there are slidy things to close them, right?

There some bags with sliders.

Perhaps, the shape itself could change.

Right.

Depending on what you want to store in it.

Yes. So they could be longer or a bigger, right?

Square. Right.

I mean packing a big sandwich for lunch.

So, what's the next element?

Okay. The next one is Actions.

Actions, right?

What can you do with this?

Right, well, you could store things.

You could store things.

You could hide things.

Well, it's hard with a clear one,

but if it's not clear,

you can hide something in it.

So, each step builds on the other, right?

Exactly.

Actually, you make unique combinations depending on what I did earlier.

Right. So if I change the coloring then maybe the actions there or change the opening,

the action is different, right?

Right. Yes. But the slider opening,

it may not hold liquids so well,

but if one of these openings,

you could turn it upside down and carry a goldfish.

Right.

Would be an actions. So you can put things in it. You can open it.

You could blow it up. I don't know,

you could maybe suck the air out of it, right?

Yes, which could be useful.

Could be useful.

Draw something.

Yes, all kinds of things. So, actions?

Right.

Goals.

Goals, right?

What might we do with one of these things?

So, I might want to store something in it, right? Organize something.

Organize, right. Put things into different bags.

Right.

Yes, what are the goals might I have.

Well, you can also think about,

I'm going to carry food in it.

I'm going to organize parts in it.

I'm going to put a gift inside of it.

So, goal might be organization? You might think about.

Yes.

I'm in the mindset of trying to organize something.

I could be in the mindset of trying to entertain people,

so I could use the bag, right?

As a source of entertainment,

toss it in the air, I don't know.

We don't get out much.

Right.

That sounds fun to me.

Well, I'm stuck here,

playing with plastic bags.

I love it. So goals.

Right.

And then event, right? What's the overarching event that we're dealing with,

might making the kids lunch.

It's a Birthday party.

It's a Birthday Party.

I can use it to store the gifts that you give kids on the way out.

Right.

Yes. Party favors.

Yes. Maybe these could be decorated with designs or drawings, right?

Rather than being sort of very functional and not maybe so decorative,

if you could have a decorative version,

and then you could just be given right away.

The event is a crime scene.

I could store fingers in it.

That's different, or traveling.

I supposed to push that thing.

Or traveling? We could put clothes inside if it was larger.

That's right.

Yes. We're playing with possibilities.

Yes. Exactly. And then self-concept, right? Who am I?

Right.

So, we just talked about a party host story, a gift giver.

A nice person, so I think about,

I'm going to give gifts in that bag, right?

So my goal motivates what I think about.

If I'm not a nice person that opens up another area of possibilities, right?

I could put it over your head.

I don't want to listen to this guy anymore.

You listen to more ideas.

That's right. So, the intuition you're having is

exactly right which is that when you change one of these aspects,

the parts, the actions,

the goals, the event,

the self-concept, it might cause a change to another one.

Right.

What we've been noticing is that a part or action change tends to have smaller effects,

whereas goal, event, and self-concept changes tend to be much larger.

And I think those are the ones you often take for granted, right?

Exactly.

The value of the framework is really highlighting and the need to think

systematically about each part of the process, right?

And I think that we sort of tend to get locked into

one particular one and ignore all the possibilities, right?

Yes. So what if I was a dog walker versus what if I'm

a party host that sends you down completely different pathways, totally different events,

different goals, different actions, different parts,

and by starting with self-concept,

or event or goal, you're much more likely to go in a broader array of directions.

Right. Generate more divergent possibilities.

I think we just did that with that Ziploc bag.

All that with the Ziploc bag. Excellent. One more example

of pages breaking down a problem.

All right.

We did a deep dive with a Ziploc bag, which is fun,

but just to get some practice with the framework, let's do another,

work through another example of using pages to systematically change our perspectives.

So I want to talk about one problem that's a little bit richer and more complex,

and when you've probably often read about in American newspapers which is,

how do we reduce gun-related deaths in this country?

Sure, like a brainstorming prompts, so what could we do?

What can we do about gun-related deaths?

What are some solutions to that.

Well, so let's break it down.

What are the parts?

Bullets, gun, bullets.

Right.

Can we maybe change those parts, right?

So we think of arrows instead of bullets.

That would be one related to the gun-related deaths.

Right.

Yes. Well, I mean, so that kind of thinking leads to things like tasers, right?

Right.

It may incapacitate someone, but not kill them, right?

So we reduce gun-related deaths by having

a different object instead of a gun, and different bullets, right?

You have rubber bullets or something like that.

Great.

And we make a gun less likely fire accidentally,

right? Smart guns are-.

So intervening on the parts,

does make a certain amount of sense at least to start.

Yes. What about the next one, actions are?

Yes. What are some actions that we could think about?

And we're thinking about gun-related deaths.

Sure. You can think about all the different processes.

Where do you buy a gun?

And then you think about who gets to shoot one?

Right.

Whether you can train people.

You can also think about faster emergency arrivals, right?

Okay. If the ambulance shows up more quickly then fewer people die if will get shot.

Right.

Better hospital care for people who are shot.

There are lots of different actions that you might think that are part of that process.

Change about the gun.

The next one is,

what came to mind was guns.

Guns-related deaths. All right.

So goals, that's one of the goals.

Goals, right.

We could reduce deaths.

We could increase care for people,

but you could also think about sort of reducing suicides, right?

One of the big areas of gun-related deaths is, people committing suicide.

So that may be a goal is to tamp down the suicides.

And reducing accidents, which would lead to the training again,

right? As a solution.

Or reduce homicides, right?

Which is probably what first came to mind,

so that might be policing or community efforts, things like that.

Yes. What's the next one? Yes. So events, what might be the event?

We're just thought of it here, right? You think about?

Crime. Crime, right?

There's also domestic violence to consider, right?

So, that the event is often triggered by that's event.

That we see a different set of potential solutions revolving around the home, right?

Right. What other kinds of events we could think of,

a shooting galleries maybe, right?

Or hobbies. They can go, right.

Yes.

People, there are actions to take ways there.

What are the kinds of events might be you think about the context of guns.

Well, you can think about also-.

Celebration.

Celebrations. I had a wedding in Russia and guns went off.

Guns went up in the air? Wow! Congratulations.

Play video starting at :9:19 and follow transcript9:19

I think you're right exactly.

And then self concept. Who are we?

So, are we in a city,

am I in urban environment?

Am I living in a rural environment?

Am I a hunter? For example.

That might be a very different mindset.

Concerns for my own safety versus my out to have fun.

Yeah.

They're two very different self concepts.

Yeah.

Someone who is a hobbyist versus someone who

sees themselves as under threat versus a collector.

Right.

Another sense of self that would potentially change.

And then, some formal roles like policeman or police woman or soldier.

Right. They are very different.

Very different kinds of situations that

would make you think differently, it's like body armor.

It starts to come to mind.

Father of a girl who just started to date might be another concept.

I have no idea what you're talking about.

I have no idea what you're talking about.

So, yeah, if we think about that you could think about,

if we jump back to say parts for example.

So, where does that lead us?

And we've talked a little bit about that,

but you could think about well,

are we dealing with a domestic violence situation so then that might lead to

a certain set of solutions whereas if you're thinking

about suicide that might be different.

If you're thinking about Regent say for up

north versus down south or in the city which is out of the city,

now we have different-

We have different parts themselves,

what kinds of guns are you thinking about?

Change by the role and by self concept by dealing with an AK47,

it's myself concept to a member of a gang that's under threat,

these are very different way

of framing the problem and also a different set of potential solutions.

And we can spiral out from there.

So, gun related deaths where guns are manufactured.

Maybe the manufacturing is really dangerous.

I don't know maybe it's really polluting or something.

Right.

So, there may be all these peripheral ways of thinking about this process.

And also even just could be the event itself.

We're talking about death but death is actually a very narrow frame as well.

We can't think about injuries.

Yes.

Debilitating injuries that occur which may be another big problem.

Right.

So, all of these things kind of feed on each other.

Yeah. But by thinking about PAGES,

we broke down and generated

all these different starting points for

thinking about things that you might be able to do.

And I think that's the benefit of a framework is that,

it can be a little more systematic.

Right.

And a little bit more guided as a process.

So, it might be your problem we can actually solve at some point.

Exactly.

Yeah, hopefully.

It takes practice to break situations down into PAGES.

So, I wanted to provide

two more examples as practice and to make an important point about the process.

Here's a problem that I think I got from Professor Dick Failer.

Restaurants attract attention when they first

open and often have waiting lists for reservations.

But a year or two later,

many of those restaurants are gone.

What can a restaurant do to capitalize on the initial attention they

get when they first opened to make it more likely they'll still be around?

So, let's start with what's obvious and then use

that to help identify the maybe less obvious.

For example, we're talking about a restaurant maybe it's in Chicago.

So, that's a part, waiting lists that's a part

too and it implies an action, taking reservations.

Why do restaurants take reservations?

That is what goals do they have in mind.

Well, one goal might be to keep people from waiting.

Another goal might be to commit people to coming.

And whose goals are we talking about anyway?

That is which self concepts are we considering?

Perhaps we are thinking about the restaurant owner,

that's one self concept or the person coming to dine,

that's another self concept or walk ins,

that's a different self concept for a diner.

Each of these are companies at different situation or event.

A last minute idea as part of a night out,

that would be a walk in.

A plan for a great evening,

that would be dinner with a reservation or running

a successful restaurant and that would be the owner's perspective.

Here's a different example.

You are a human resource manager of a large company

with a reputation for treating employees compassionately,

a long period of weak sales and high operating costs are threatening your business.

What do you do? Well, again we can start with the obvious,

a human resource manager is a self concept.

A long period of weak sales and high operating costs, is an event.

What goals might we have?

Lowering costs, increasing sales or perhaps freezing hiring.

What actions could we take?

We could increase prices.

We could re-negotiate with suppliers,

we could start a voluntary separation program.

And then what parts are there?

There's a company, a reputation,

a set of suppliers, and on we go.

There's an important point to make here.

We can think of the same element of a situation in different ways.

For example, maybe a voluntary separation plan could be

an action in the poor company performance event,

or maybe the voluntary separation plan is an event

all to itself with a series of actions involved in it.

That is, the very same element can be

interpreted differently depending on whether we see it as an action

within a larger event or as a larger event itself within which many actions take place.

So, as another example think about I don't know,

something ordinary, making a bed.

That could be the event with actions like

removing the sheets or putting on fresh sheets and so

on or making a bed could be an action within the larger event of cleaning the house.

So, we can form a different interpretation of the very same element,

say in this case making a bed,

that places it in a different role,

say an event or an action within our perspective.

The point of using PAGES to help us articulate our current perspective is

not to determine what some aspect of a situation really is.

We can think about items in different ways.

Instead the point of using PAGES is to help find out how to change our perspective.

Can I see making a bed as an event?

Yeah. What could follow from seeing it that way?

Could I see making a bed as an action?

Yes Again, what would follow from seeing it this way instead?

Our goal is to articulate our current perspective,

whatever that may be so that we can help ourselves use

that perspective to generate ideas as well as to

help ourselves change our perspective to provide

an alternative foundation for generating new ideas

So, we're always forming

stories to account for what we're doing.

Maybe we're just getting up,

going to work or maybe it's the biggest deal of our lives at work.

So, whatever it may be.

You're forming some story.

This is my day. This is what's happening.

And in the course of forming that story,

you have to think about things in a particular way.

This is a mug rather than a paperweight.

And we do that because we have to make choices because we can't take into

account all possible sources of information.

So, in forming our story,

we make these choices that end up forming a particular perspective.

Exactly. And now we know that that perspective has parts and

actions and goals and an event and

a self concept for who we are as the narrators of our stories.

And then once we change our perspective,

it then becomes an opening through which we can now change

our story moving forward or even rethink prior assumptions.

Yeah. So, who we think we are and what we think we've done,

what we think we could do and change.

Right.

Yeah. And so the story,

that history may stay the same but our interpretation,

our perspective on it may change and that may open up new pathways for us to take.

Yeah. Exactly. So, putting it all together,

we have concepts we've put them into roles,

the different functional parts of our perspective,

and we use that to guide our stories.

And then if we change the perspective, new story.

**2.1.2 End Products**

So we want to get better at the creative process

because it helps us generate

better outcomes, better products.

So we've spoken about a wide range of products already.

We've talked about new uses for

a Ziploc bag, for example.

We've talked about how we might reduce gun violence.

Earlier we spoke about

ideas for new products like Burt's Bees,

lip balm, and new services and more.

Yeah. We often, when people talk about creativity,

we hear all things like,

I had this great idea that strike me the other day.

Then sometimes we talk about creative products.

Did you see that thing at the store or can you

believe that thing that some company invented?

So there's a wide range of

different ways we talk about creative outcomes,

but it can start to get a little confusing.

As we start to, how do we compare

a service to an idea, to a product?

Yeah.

Are they really all the same thing or are there

some differences we should pay attention to?

Yeah. So when I looked at the literature,

it seemed as if there were some clean breaks,

and would be useful to differentiate into three types.

So the first type for me is an insight.

This is the idea, a light bulb goes off.

Or I have this notion that, "Oh,

instead of looking at it like this,

we could look at it like that."

Something about our perspective, our pages, changes.

Or we have an idea about how it might change if we

only could fill it out

because we don't know. So insights.

But that's really the beginning,

essentially of the process and short.

It's usually fairly quick

and it's usually all about how we were thinking.

Yeah.

Whereas, then I talked about inventions.

So I've actually produced something.

I've made a technological device or I've made a painting,

or I've written a screenplay or whatever.

Or even a lip balm.

Or even a lip balm, exactly.

So I've made something.

So it's not just an idea in my head.

Yeah.

I've actually produce some solution

or resolution to story.

That's a really comment. It strikes

me that when we talk about creativity.

We're really often talking about

products or things that

are tangible that we can think about.

But there's a third type though,

and that's the thing that surprise us,

the more we thought about this.

I think there's also what we call them enlightenments,

like we've learned things.

So I set about to study this

or we're making lip balm or whatever it is.

I learned something that goes well beyond lip balm

or a watch, or a mug.

I realized, "Oh, there's an entirely new way

of constructing something or thinking about time,

or understanding the human body or wax or what have you."

That goes beyond the product itself.

So an insight is a change to my current perspective.

Invention is really a resolution of my current story.

An enlightenment is a change to my knowledge.

Right.

So there's a product for each of

those pieces that we've set up already.

An enlightenment has downstream implications

that could tie together

a number of different products or perspectives.

So someone's like a paradigm shift [inaudible].

They could change all the stories

that I tell from here right now.

Exactly. So insights, enlightenments, and inventions,

we'll talk about all three of them

one at a time starting with insights.

Insights are realizations about how we might change

our perspectives or how we might

start on building a new perspective.

These can be everyday changes.

They don't have to be anything dramatic or fancy.

For example, I'll give you one of

my more embarrassing moments.

One day I was cleaning up after dinner and wanted

to put some leftover food in the refrigerator,

and I could not find any Tupperware.

We'd have some plastic containers and

some glass containers just for putting food away.

It seemed as if we're all out.

So I was thinking about going to buy more.

Then I was loading the dishwasher and

noticed a Mason jar on the top rack.

Now, in my family, Mason jars were used for one

thing and one thing only, my mother's jam.

It's the only thing I had ever

put in a Mason jar in my life.

So the ordinary little insight that I had was that

a Mason jar is just a glass Tupperware container,

just a different shape.

So I share this amazingly dumb little insight to show you

just how blind we can be to

the possibilities all around us,

if we could only change our perspectives.

Now insights can also be astonishingly brilliant.

So the classic example,

maybe apocryphal, we don't really know,

is the ancient Greek mathematician Archimedes,

getting into a bathtub and shouting, Eureka.

Apparently, Archimedes was asked to assess whether

an irregularly shaped crown was made of pure gold,

or if some of the gold had been replaced

by less valuable and lighter silver.

So he went to take a bath,

still puzzling over the problem,

and upon entering the bath was struck

with an insight that led him to shout Eureka,

and run straight from the bath to the king.

Now Archimedes insight was that

the crown when placed in water,

should displace an amount of

water equal to the volume of the crown.

More specifically, if you take

a balanced scale and you set the crown

on one side and an equal weight

of pure gold on the other side,

if you submerge the entire thing,

the scale, the crown,

the gold in water,

you should be able to tell if

the crowd and the gold are still in balance.

If so, then the crown's weight and volume

matched the golds weight and volume, and all as well.

If not, well, all is not well for

the crown's maker who stole some gold.

For Archimedes, maybe he could have

generated that insight in a flash.

But the insight maybe was

something more like water displacement.

Now it isn't obvious that if you are trying to

figure out whether a crown is

solid gold or water displacement is the key,

but the insight might have changed

his perspective and led him

ultimately to work out the solution.

Now, usually, the solution to

this problem is presumed to be concerned with

testing how far water rises when the crown is submerged.

However, the tiny difference in

displaced water between pure golden and an impure crown

would be hard to detect when spread across

a surface area large enough to submerge an entire crown.

Archimedes, he was cleverer than that.

Insights are no better or worse for

advancing our stories, for arriving suddenly.

The suddenness might make it seem exciting and memorable,

but it doesn't make it any better of

a possibility for how to change our perspectives.

After all, we have all kinds of

sudden realizations that are not necessarily creative.

That's where I left my keys.

Thoughts that arrive suddenly

are not necessarily insights.

It's also true that insights that arrive slowly can be

every bit as important

in where they allow our stories to go.

It is just more exciting and more

memorable when insights arrive suddenly.

When we have an insight,

we're not necessarily generating

an idea for how to solve a problem.

We probably will not know

where the insight will even take us.

Instead, an insight is a realization about some aspect of

our knowledge that is not currently part

of our perspective, but that might be.

An insight identifies knowledge that we

could bring into our perspective to change it,

or a direction in which we

could go to build a new perspective.

Usually, an insight gives us a way to change

our perspectives so that

our stories can progress in a new way.

Insights can also reveal that

a pathway that looked promising for our stories

to take is actually terrible or impossible to traverse.

Insights do not always expand our stories,

at least in the short run.

Just a simple example,

I had a student from Hong Kong who

graciously listened while I explained

a project and said he understood what needed to

be done next when we asked him to help.

Two weeks later, upon

discovering the student had done nothing,

I had a similar conversation.

Another two weeks later,

still nothing had happened.

I went into the students advisor's office,

was pretty angry, to explain what was happening.

He smiled graciously and then said that

the problem is not with the lazy student,

but with me and my own cultural blindness.

The insight was that from

the student's cultural perspective,

he would be insulting me if he said no,

directly, to taking on my project.

Instead, he was providing all kinds of

indirect hints that he could not

possibly take on my project.

I was just too blinded by

my own cultural perspective to notice.

In this case, the insight

closed off a pathway in our story.

Still, the insight made something inconceivable,

thinkable, and so changed where our story could go next.

It made me believe a new perspective on culture,

indirect communication,

and realized there were different ways of saying no.

Now, we can think about insight in all kinds of domains.

You can think about the insights that

you've probably experienced at work.

Maybe that first time you heard about

a stand-up meeting rather than a sit-down meeting,

or maybe even a walking meeting.

Thinking about defaulting to sharing information,

making it open to everyone to see,

rather than defaulting to keeping information

private and limiting it to just those people,

as a procedural approach that you've heard about.

Think about inclusive decision-making processes

rather than top-down

authoritarian decision-making processes.

All of these insights that we might experience in

an average day in our organization,

those are insights about what a meeting had to be,

or how information should be kept,

or how decisions should be made,

whether it's a process in your company,

whether it's a product in your organization,

whether it's a way you work with your teammates,

whether it's the way you construct

and design the service that you offer to a client.

Insights are an opportunity to rethink it,

and try something else that

you wouldn't otherwise have done.

Play video starting at :10:16 and follow transcript10:16

One crucial product of

the creative process is an insight,

which is an idea about changing

our perspectives or building a new perspective.

It's not a solution,

necessarily, it might not work,

it might simply indicate that what we

thought was a good way forward is actually not.

But it is an important product of the creative process

because it's the smallest unit of creativity,

it's a shift in perspectives.

Yeah. I think of it a

little bit like turning and driving.

So an insight is like a plot twist in this story,

it's like a turn when you're driving.

So if you only go straight,

you follow the road while you're driving,

you can get to a few places,

but not very many. Right?

Right.

But if you have that turn,

if you have a plot twist, well then,

you can go in

all these different directions and get to new places.

Although that, I guess, explains why it's so tempting to

just stay on the straight and narrow, right?

Exactly.

The turns are a bit tricky,

but that's where insights happen.

But that's an insight.

That's the role of an insight,

is to redirect your story in a new direction.

So of course, if we're

used to traveling and

following this road, that's where we get.

If we turn, we can get somewhere new.

Of course, if all we do is

turn and you don't get anywhere,

so you need all of that ordinary thinking of

just following the road to actually get anywhere.

That's the role of insight.

It's that small unit of creativity,

it's that shift where,

maybe, our story takes a left.

But that turn is not necessarily

enough in and of itself, right?

Yeah, and it might be a dead end.

Sometimes you need multiple turns.

Speaking from experience.

Play video starting at :11:51 and follow transcript11:51

You're right. One turn,

usually, is not enough to get anywhere.

Right.

Yeah. Normally, you'd do more than one turn.

Exactly. So as long as we have

an insight about how to change our perspectives,

and that allow us to turn our story in a new direction,

but it could be a dead end,

and there might be more turns needed,

but if we don't turn anywhere,

we're not getting anywhere.

So we need those turns,

we need those insights.

**2.1.3 Inventions**

So earlier, we spoke about knowledge, stories, perspectives.

We draw from our knowledge to form stories and in doing so,

we have to take a perspective,

insights or realizations about how to change our perspectives.

On their own, they're just that,

a change to our perspective.

It might take our story in a great new direction or it might not.

But if it does, if it allows us to continue

our stories and generate a resolution to our stories,

well, then we have an invention.

So, it's one thing to have an idea for a screenplay,

it's an entirely different thing to have written a screenplay.

Right.

So the insight is maybe, "Oh,

I have this idea about a screenplay."

And then in the invention,

well, that's the screenplay itself.

Which could contain many insights,

many failed insights, dead ends,

turns, and plot twists, right?

Exactly, exactly.

So, we have to really understand not just the most basic unit of analysis, but also,

how all those things come together to produce something that we

normally associate with creativity which is kind of more like a product.

Yeah, and those can take a very long period of time.

Right. So, the insight tends to be fairly quick,

tends to be about thinking,

but an invention, that can take decades,

and lots of dead ends along the way.

Although, obviously, we're going to try and get better at that.

Right.

Better at forming inventions.

The Wright brothers, Wilbur and Orville,

are famous for inventing and flying the first airplane.

Now, the idea of building a machine that people could fly was hardly new.

There are drawings and stories of human flight going back thousands of years.

And in the 19th century,

engineers and hobbyists were making concerted efforts.

In the late 1800s,

a variety of people were designing and trying gliders of various sorts.

In effect, large kites that a person could ride.

And how did Wilbur and Orville Wright come to the problem?

Well, they designed, made,

and repaired bicycles, and they were readers.

They grew up reading.

One of their first concerted acts on

the flying machine was to send a letter to the Smithsonian,

a Museum, for the current scientific achievements around flight,

so they could read up on all that everyone else had been doing.

So, the Wright brothers came to the task of building

a flying machine with their own technical skills,

designing and building bicycles,

and the state of the art knowledge of what others had learned about flight.

Now, the Wright brothers' story about where they

went from here was not straightforward at all.

Getting from their reading about what others were doing to the launch of

their first successful flight took about six years.

That's short, in terms of the history of

human invention and the time that people had been dreaming about flying.

But six years is vastly more time that it

takes to have an insight about how we might change our perspectives.

What is going on during all that time?

And more generally, what happens between generating an insight,

and producing an invention?

What happens is that we go back and forth

between ordinary thinking and creative thinking.

For example, we might spend some time using

our perspectives and adding to our perspectives to guide our thinking and acting.

We do the straightforward thing.

Then, for some reason,

we might be cued and so we spend some time changing our perspectives,

or building a new perspective.

Then, we try to use that new perspective to think and act some more.

That is, we go back to ordinary thinking,

but with a new perspective than the one we had initially.

At that point, we might get cued again and develop

further insights and use that perspective to continue,

and so on, and so on.

So, in the case of the Wright Brothers,

they had insights about how to control a flying machine,

insights about what the shape of the wings should be,

insights about how to make the wings and the materials to use for it,

insights about how to change the control mechanism

so it was light enough to use with their wing design,

insights about where to test their first machine,

insights about building a tower to help test the wings,

all of that and far more, believe me,

was needed just to get to a trial that failed.

Their reaction to that failure was mostly ordinary thinking.

It failed to generate enough lift,

so they needed to make the whole thing bigger to generate more lift.

They used a slightly different material for the wings.

Well, and that one failed, too.

They gave a talk about what they had done and

the transcript was widely distributed and read.

They built a wind tunnel and they had insights about,

and built inventions to measure the lift and drag of different wing designs.

Then, they built another machine which now had

more lift and it now had more problems with control systems,

and so they had to resolve that.

By 1902, the Wright brothers had produced a glider that

they could control and that could fly about 500 feet,

and they flew it hundreds of times.

All of this work,

they were only halfway there.

And this is the nature of the process of forming inventions.

It takes an awfully long time.

Some insights work, some insights don't work.

The first insights about the controls largely turned out to be right.

The first insight about the wing design were not right at all.

Insight to build a tower to test the machines, not helpful.

The insight to build a wind tunnel,

very helpful, and so it goes.

Our stories and our perspectives both develop,

and insights sends us off to change our perspective,

or build a new perspective,

and our stories stall.

Then our stories race ahead with our new perspective,

while our old perspectives are pretty much on hold.

Inventions can take years because our perspectives are incomplete.

We simply don't know what we don't know.

Our perspectives aren't developed fully at the outset of our stories.

Besides, as we begin telling our stories and advancing our stories,

things can happen in the world that we didn't expect in the beginning.

But to focus on the perspective in particular,

many pages can change along the way.

The parts, the actions,

the goals, the event, the self concept,

all of these can be changed in the course of developing an invention.

As a result, we can end up achieving

a very different goal than the one we had when we first started.

We could also realize that we're in

a very different event than the one we thought we were in.

We can even be a different person in

a different role than we thought we were at the outset.

That is, an invention may end up changing who we think we are,

what we think we're doing,

and where we think we're headed.

As a result, the invention process can be long and can

churn and can be transformative even for our own selves.

Play video starting at :7:13 and follow transcript7:13

Typically, the creative process involves producing insights,

so that we eventually can generate an invention.

It might require many insights to yield one invention.

Some insights may play no role in the invention that it ultimately results.

And we recognize that there are still further challenges

beyond creativity when we consider inventions.

An invention is something realized, something that works.

It is not all the way to a commercial product, though.

When we shift from creativity to innovation,

we presume that we have an invention and now we're asking whether we can generate

a commercially viable product or service that we can

manufacture and sell to meet a customer need in a competitive market.

Thus, just as insights are necessary for inventions,

we think inventions are necessary for innovation.

The creative process by yielding insights and

inventions provides crucial inputs to innovation.

Of course, we are creative in more ways and for more reasons than just innovation.

Sometimes, we're just trying to solve a current problem.

Sometimes, we're just trying to resolve one particular story.

Play video starting at :8:27 and follow transcript8:27

Interventions are usually the main reason we're going through the creative process.

Usually, we're trying to achieve something,

solve something, make something,

and if we alter our perspectives and use

the altered perspective to take our stories in new directions,

we end up with inventions.

We talked about how

the creative process isn't just one insight,

and then it ends there.

How communities can jump out of the bathtub.

But then he asked to

actually do the work involved in collecting

those insights and pursuing them to

the point of reaching an invention or an enlightenment.

Here we really want to talk about all of

the adversity that can occur in this creative process.

There are bumps in the road.

You have to persist.

Yes. You can't give up at the first bump.

You got to keep going.

Maybe we can even learn from those bumps

in the road and profit from adversity,

and view it as an opportunity.

One question that arises is,

why do people persist?

Then how? Why do we put up with all that trouble?

Then what can we do to make it

easier and maybe less adverse

so that we accomplish

creative pursuits rather than fail along the way?

That's the creative journey.

Creativity doesn't just happen in

easy flashes of insight.

In fact, it feels a lot more like

a grind then people appreciate.

Part of that is because the ideas get rejected.

It's not as if I generate

a great idea in the world just goes,

amazing, will take it.

There's so many great examples of this.

I think it really helps to think about

very creative ideas that we know

now to be really important.

They're often rejected. One example

would be Stephen King's first novel.

Carrie, people probably don't

know then it was rejected 30 times.

In fact, Stephen King [inaudible].

He threw it away.

He threw it out. His wife

actually fished it out of the trash.

Thanks to her, we have it.

His career, I mean all that follows.

From that first success.

Given up in that first book, assistance is key.

We get that from everyone.

I mean, Harry Potter is the more contemporary example

that people talk about.

That was, I think at least 20 publishers rejected that.

Jackson is part of it. Part of the problem is that,

creative ideas are initially untested and unproven,

and so you're dealing in the realm of uncertainty,

and so there are a lot of examples of [inaudible].

No one knows if it's a good idea or not.

Creativity is also a journey,

maybe even a grind.

Because creativity doesn't involve just one idea,

it involves potentially multiple ideas

that are generated and integrated over time.

Great story that illustrates this is from Gordon Gould

who explained how he invented the laser.

By his account, it just flashed into his head,

is a moment of insight one Saturday night,

and he just saw the whole picture of

how to build a laser all at once.

But he was quick to point out though,

that that one moment

of insight, even though it was quick,

came about after 20 years of hard work

in two very different fields, physics and optics.

Only by working through the problems in

each of those fields and then combining them,

did he really reach that one moment of

insight that seemingly occurred out of nowhere.

I think it's also telling that

he talked about all of those ideas

is really like separate bricks that

had to be arranged in just the right way.

Sometimes there's a temptation to focus on

the end results of that insight that

occurs easily and out of nowhere.

But in reality, it's the culmination

of many different ideas,

and changes, and perspectives that have to be combined.

Again, creativity is not just one idea, it's many ideas.

Creativity evolves over time and takes

us in directions we couldn't even have

imagined from the starting point.

That could be in the course of

one particular product or invention.

It can also be over the long haul of multiple inventions,

multiple products,

multiple stories joining together into a larger story.

For example, 3M.

the Minnesota Mining and Manufacturing Company,

that's where it got its name, three 3M's.

It started out in 1902 I think as

a mining company that sold

a popular mineral to grinding wheel manufacturers.

From that mineral, then they began selling sand paper,

and then tape,

and then more kinds of tape,

first masking tape and then clear tape.

Now they sell 55,000 different products,

including everything from car care products

to touch screens.

The point is that where you start

maybe pretty far away from where you end up.

As one idea leads to another idea,

leads to another idea, and there you have it.

Take a different example.

David McConnell started Avon in 1886.

He was a door-to-door book salesman,

a job that had already been around,

but he had trouble selling books.

Then he realized he could get

attention of the people he was

visiting at their homes by offering them perfume samples.

Well, soon it was the perfume sample and

not the book that sold and as a result

he founded the California Perfume Company in

New York and eventually turned into Avon.

The point is you don't really know where you're

going to end up based on where you're starting.

Honda for example, came into

the American market with

motorcycles and they tried to build a giant,

big, heavy, powerful motorcycle.

It turns out no one was

particularly interested in those but everybody

loved the tiny scooters they brought and

wanted to buy those from Honda,

that they were planning to only

use for their own employees.

Again, you don't know where it's going to take you,

you have to be open and

flexible to where the journey goes.

Even within a single story,

even within a single project,

creativity can be a journey.

It may take more than one insight,

it may take more than one invention

even to continue with a single story.

I'll give you just one example,

this is a story from Linda Putnam,

who's a wonderful researcher

of conflict resolution and negotiation.

She tells this story about

a school board that was working with

a teachers union to try and figure out a new way forward.

You can think about this as any negotiation context.

But they were trying to figure out how to

manage pay differences across teachers.

The teachers union was asking for

a pay raise and the school board was trying to

unsurprisingly limit the amount of

additional funding that they

needed to provide to teachers.

They had a fairly stiff argument about

that and then what they did is they had an insight.

They realized this wasn't

just teachers asking for more money.

What was really happening was that it

was a collection of teachers who

served as coaches for teams or

otherwise we're coaching clubs

or activities around the school.

What they had noticed was that some of

those teachers were underpaid relative than others.

That shifted the school board's perspective

because they realized it wasn't

changing base salaries for teachers,

it was changing compensation for

after-school activities or club leadership.

That was the first shift.

Further conversation evolved after

that and they then realized that

the real issue was that the difference in pay

for teachers who are coaching a team or leading a club,

was that the men seemed to be

getting paid more than the women.

As a result it was really a matter of

defining what are the investments

that you might make when you're

leading a team or coaching

a club that require more pay versus less pay.

It may take a lot of work to be,

a football coach or a volleyball coach and it may take

less work to be the person in charge of the chess team.

But the logic here is that they

started off with more pay and

then they got to gender disparities in payments,

and then finally they resulted in

a new guideline and policy around what

time commitments and what activities were worthy

of more pay and which ones required maybe less pay.

Even within a single negotiation,

even just talking about a single issue,

there were multiple insights along

the way leading ultimately to

the agreement that resulted from the end of

this teacher union and school board negotiation.

You can imagine that that could happen in any context,

whether you're developing a new product,

whether you're designing a new service,

whether you're negotiating a contract or whatever else.

The first insight might get you a little way,

the second one may help you get even further,

a third one maybe of course,

and the fourth one might get you across the line.

There's a journey, there's a story

even within a given project.

It doesn't have to be one insight and done.

Play video starting at :9:25 and follow transcript9:25

We've seen that creativity

doesn't have a beginning and an ending,

it's really a moving target in lot of ways.

That even if we settle on

a creative idea the world changes,

our perspectives have to change and so

the process just continues to unfold over time.

If we can change our perspective

and in so doing change our goal,

change what we think we're doing,

change who we think we are,

then this could morph into something very different.

That to me implies that we have to get

used to being in the middle of the process,

rather than thinking it's going to

start and end and we'll be done.

The bad news is though,

is we'll see the process isn't always fun,

there are bumps in the road.

We'll turn now to what

those bumps are and how do we deal with them?

Right, and persisting.

Rejection

Creativity means generating ideas.

That's often exciting and fun,

but not every one of those ideas is

universally well-loved and effective.

Well, I've never experienced rejection.

We all have.

With all these interesting things

I see all of these ideas

that are retrospect seem really genius.

It's really fascinating to know

the backstory and see that no matter

how creatively talented you

are or how good your idea is objectively.

Nevertheless, the process can be difficult

and we'll experience rejection inevitably almost.

How do we deal with that and

how do we keep going despite the trouble?

Maybe even profit from the experience.

Use it to fuel our creativity.

Absolutely.

Unfortunately, the creative journey

can involve bumps in the road,

even outright rejection as we saw

in the case of Stephen King and many others.

But that's not to say that rejection

is inevitably a bad thing.

In fact, rejection can actually motivate you

and show you new paths to explore.

I know that we have said that creativity

is more than just something that happens in the arts.

But a great example of creativity coming from

adversity comes from the story of

an impressionist painter named Henri de Toulouse-Lautrec.

You can probably guess from the sound of his name that

he was from a wealthy aristocratic family.

It was interesting because his father was

very athletic, hard-driving, overachiever.

But unfortunately, Henri was actually the product of

several generations of intermarrying within

the family to keep their wealth intact.

But that also led him to have

a genetic problem that stunted his growth

and he ended up not growing to

more than five feet tall throughout his life.

What that did was it made him marginal and his father

rejected him because he couldn't

pursue all of the athletic,

hunting, and all of the other events that

the aristocracy liked to pursue back then.

For Henri, what that meant was he had to

pursue his own path and what he did was he

started to pursue painting as

a serious vocation and

not just something that was a passing hobby,

but something he really devoted himself to.

Also as a result of his rejection from the upper class,

he was inspired to paint on the margins of society.

He spent a lot of time with the working class,

and he was even known for painting prostitutes,

both of whom were considered

absolutely forbidden subjects at the time.

I think this is a great and inspiring example of how

rejection can actually be used to fuel creative thought.

As the story about Lautrec suggests,

rejection can fuel creativity but there's a catch.

It really depends on how you respond to it.

Some people will respond to

rejection by trying extra hard to be liked

and trying really hard to fit in

so as to restore that connection to other people.

But in my research, I found that people

with an independent sense of self,

interpret rejection as a sign

that they're not weird but unique.

I'm not weird, I'm actually different.

That can actually inspire them to explore

more unusual unconventional paths

and so rather than trying hard to

fit in and restore that connection,

they respond with a bit

of independence even rebelliousness.

It could be that they're wrong and I'm right.

I just have a unique point

of view on the world and I'm going to

pursue that point of view

even if it means I'm an outsider,

a misfit, and a reject.

Those things can actually be

strengths when it comes to the creative process.

For that reason, I love

the famous Steve Jobs quote in

which he raises a toast to,

"The crazy ones, the misfits,

the rebels, the troublemakers,

the round pegs and the square holes,

the ones who see things differently," because

those people who exist on the margins

have found a way to use

that experience of rejection

to see the world in a different way

and use it to fuel creativity and to change

their perspectives and

the perspectives of the people around them.

Play video starting at :4:18 and follow transcript4:18

It's not all wine and roses.

Apparently not. But I take comfort in that,

actually knowing all of the great people and great ideas

that were rejected over time.

I think we can all take comfort in that.

Sure. I think the implication then is that we have to

approach it with a mindset that we're

going to get knocked down and the question is,

are we going to get back up again?

The question is how we able to do that?

Also let's find out how to make the most of it.

Flexibility

So one challenge in creative journey is rigidity.

>> So, one main solution has got to be flexibility, [LAUGH] right?

>> [LAUGH] And we have talked about how creativity is a journey,

is it always going to be nice and sweet, and

[CROSSTALK] >> We know the answer to that.

[LAUGH] >> No, right?

In every journey, there are going to be bumps along the way, and

these bumps can slow you down.

They could be detrimental to create a process then what do we do?

>> Well, we want not just new insights, but new inventions and

enlightenment, right?

So it's new solutions, it's new knowledge, it's new products we can bring to market,

and as a result that requires an extended creative process,

a creative journey, right?

>> And you know, the first obstacle in the journey we need to discuss is rigidity.

Rigidity comes from our commitment from our current perspectives.

So in part we are rigid because of our own internal mental processes.

The way we think.

>> Yeah, just like you can't build anything if you don't have any materials.

We've talked about perspectives that way,

you can't think anything if you don't have a perspective.

So we always need a perspective in order to think, and in order to act,

the problem is it might not be [LAUGH] a very good perspective, [LAUGH] right?

And we tend to think we have a good enough perspective,

even if we have an insight or even especially after we've had an insight.

We tend to want to count on it and use it to understand the world and

to guide our actions.

>> So commitment to our perspectives then, it's a big part of rigidity, right?

So the thing is, if creativity for example involves changing perspectives,

then by committing to our old perspective, what we are doing

is actually demonstrating unwillingness to be creative.

And one current way of processing information,

one way of solving problems is not going to work.

You have to have new perspectives, you have to have diverse perspectives,

and that is what creativity is going to be about.

>> So maybe it sounds bad [LAUGH] once we put it this way, right?

That perspective sounds like they are just lock boxes, right?

That hold us in.

But if you think of it as confidence in my understanding of the world,

and being accurate and grasping the core elements of reality.

Maybe now it sounds pretty wonderful.

Who wouldn't want that?

>> Absolutely right.

Once you wrap your mind around that, and

then I think then think world will look wonderful, right?

>> [LAUGH] Right.

But that's the warning, right?

I mean, that's the bumper sticker, right?

Don't believe everything you think, right?

And so it's tempting to be sure of ourselves,

and it's hard to hold out doubt and

humility about the limits of our own understandings.

So we talk about perspectives in this class, we talk about perspectives.

And we use the word perspective precisely to help ourselves remember

not over commit to them and think that we are seeing the world as it truly.

>> Absolutely, and if it was only ourselves, right, individually,

it would be hard enough to keep from rigidly, but it's not.

>> Know the people around us, right?

Give us even more reasons to commit to our current person.

>> Absolutely, and we have heard this, right?

I'm pretty sure someone has told you this and told you this too,

well, I can't do that because that is not what we are supposed to do.

Or this is not how we do things around there, or

this is not how we have never done it this way before.

>> [LAUGH] >> Right?

>> It sounds painfully familiar.

[LAUGH] >> So right,

now you're thinking of someone you know who actually behaves that way,

exactly like this, who's not open to accepting new perspectives,

rooted in their own ways of thinking.

Maybe that person is us.

>> [LAUGH] So we get all this support, right, from other people to stick with

our current perspectives rather than question or change them.

And in addition, right, that's over and above having our own reasons for

committing to our current perspectives.

And so the funny thing is even when we're on a creative journey,

the temptation to commit to our perspectives is still there, right?

It's easier to keep traveling down the same known pathways than

venture into unknown pathways.

And having changed our perspective once,

doesn't make us somehow super open to changing our perspective again.

>> No, it's so true, because what happens is once we had the insight

to proceed with it, we are back to being committed to our initial perspective.

And that means you're back to square one being rigid again.

>> It's comforting, right?

I mean really.

>> No, that is what it is, right?

It gives a sense of safety.

What's interesting is when we look at creative journey, the very nature of it,

it nudges us towards rigidity rather than being more flexible,

think about this, right?

Play video starting at :5:49 and follow transcript5:49

Within the creative process.

There's a lot of frustration, there's a lot of uncertainty.

There's a lot of ambiguity.

You tend to feel lost.

You tend to feel frustrated.

What do you do?

Do you take more risk?

>> [LAUGH] >> No, right?

You fall back on the known part.

You want to go back to something that is familiar.

That is comforting, and that is what rigitity is.

>> Yeah, so one main reason the creative journey is hard then is because we want

to remain sort of constantly open and open to changing our perspectives.

But the desire to make progress on our story,

leads us to want to commit to our perspectives, so we can move forward.

>> Absolutely right.

And then what do we need here?

We need some flexibility, right?

That is what we need.

We need some tools that can help us come out of this rigid

way of thinking, and change our perspectives.

>> So we need some thinking tools to make it easier.

And earlier we talked about queues, right?

So that prompt us to think about changing our perspective.

So during our creative journeys we want to be continually open to some cues, right?

So that's a starting point.

>> And we have also talked about pages.

But the pages are all about how do we make our current perspectives

explicit by talking to various parts or actions, goals,

evens, and subconcepts that were currently in our perspective.

Doing that can help us consider alternatives.

>> Now, in addition to cues and pages we're going to consider

some further tools for helping us change our perspectives.

And we call them thinking tools because their ways of connecting to, and so

thinking about ideas outside our current perspective.

>> Right, and if you get comfortable using the thinking tools it makes it easier

to change our perspectives.

The easier it is to change them the less tempting it will be to remain rigid.

You do being overly committed to our current perspectives.

>> The more flexible will be in our thinking.

>> That is so true.

And then rather than get stuck in our creative journey by being so

rigid, thinking tools will help us being flexible.

Another tool we have for changing

our thinking is re-categorization.

When we re-categorize something,

we're changing the way we're thinking

about it by switching to another type.

Let's see. My dog Romeo.

He's a dog, that's a category.

He's a pet, that's a category.

It might make you think a little bit differently,

if you think of something as a pet,

other things come to mind,

so goldfish or cats or whatever.

I'm not a dog person so I think of him as a paperweight.

Exactly.

Or a decorative wall.

Or something annoying.

That's right.

These are categories. These categories

don't have to be anything terribly fancy.

We're sitting in chairs,

these are dining chairs or arm chairs,

you have a desk chair.

Electric chair.

Electric.

Sorry.

Well, the point is we've probably been making and

selling and designing chairs for a thousands of years,

and we're still coming up with

new ones, some of them dreadful.

All of those are

re-categorizations because they make you think

a little bit differently about

whatever it is we're dealing with.

It's not just a pile of wood and foam, whatever this is.

It's a way of perceptualizing,

changing our interpretation of it

and also what we think is related,

what we think counts or doesn't

count as that kind of a thing.

That's what re-categorizations are going to do,

they're going to allow us to change

our interpretation of some aspect of our perspective.

Re-categorization changes how we

think about something because

categories offer just one

of many possible interpretations.

We can think of categories as maybe stereotypes or

caricatures or models, something like that.

As a result, when we switch categories

different aspects and connections become prominent.

Let's take an example, maybe a computer.

When it's being manufactured,

people probably think about it as an electronic device.

But when we're buying it,

we probably think about it as a product.

Then when we're using it, a computer,

we probably think about it as a source of entertainment,

or a tool for getting work done.

Each category; an electronic device, a product,

entertainment tool, highlights

different properties and features of computers.

Each different category leads

us to consider different items.

Entertainment as a category might make

us think of games, videos, music.

Whereas when we think about tools that

might make us think about phones,

copiers, offices, or maybe hammers or drills.

For years, thinking about computers as

electronic devices meant that people

didn't pay that much attention to what they looked like.

Once they were pretty common though and

people started buying them

and having around their homes,

the fact that they were a product that consumers would

buy started to bring attention to

the external design of computers.

Namely, instead of being boring and ugly,

the least we could do is to add some color,

maybe some interesting shapes,

or to take a more recent example,

computer routers only started

recently looking like something you'd actually

want to put out on a table rather

than something you wanted to hide behind your desk.

To get ourselves to think differently about

some aspect of a problem or some element of a story,

it's useful to consider re-categorizing it.

There are four main ways we can

help ourselves re-categorize something.

We can zoom in, we can zoom out,

we can consider the opposite,

we can also switch pages.

Let's start with zooming in.

If we're going to zoom in,

then you might think about, I don't know,

it's not just a chair but it's

a desk chair or a rocking chair.

Or it's not just a dog,

it's a Basset Hound,

or a Shih Tzu, Bichon Poodle Mix,

or whatever it might be.

Let's take paper towel,

so imagine we zoom in.

What do you get if we zoom in on a paper towel?

It's extra absorbent,

multi-colored, soft, all kinds of features.

Choose your own size, extra large.

I guess that's how the process works.

We're noticing features about this object

that may not have been apparent before we zoomed in.

Exactly. When we think

about what zooming in does to change your perspective,

it's making you confront every detail of

that item and think about

how that might be or how it might play out.

Zooming in is one way to change

your perspective by flipping to

a narrower category that might then have

properties or elements that you

hadn't considered because you've overlooked them.

I prefer dried leaves, that's just me.

Then the opposite, so the opposite

of zooming in is zooming out.

It's not just a chair, it's a piece of furniture.

It's not a dog, it's a pet or

an animal, something like that.

It's not a paper towel,

it's a paper good,

it's something I buy at the grocery store.

It's a roll of film maybe or something

, I don't if it's too creative.

The idea of zooming out is, it's a product I buy,

it's something I use once.

It's a category that's more abstract but

contains the item that we're talking about.

Any kind of paper products

would be broader than thinking about

it narrowly as a paper towel.

Exactly, and that might lead you to new ideas.

I might notice connections

between other things in that category that

I could then combine and

use to generate something more creative.

Exactly, that's exactly right.

Maybe I don't think of paper towels in a certain way,

but I think disposable goods.

Maybe they come in convenience packs, I don't know.

But paper towels, no,

maybe they could, or something like that.

You can think of paper products that have

colors and so like

multi-colored Kleenex and paper towels could

have colors as well so then I'm combining those.

Exactly. By zooming out,

we can maybe see connections or possibilities that

we can't when we're just thinking about the item itself.

Zooming out. Another step is we can flip,

we can consider the opposite.

I try to do that just to be difficult.

Play video starting at :6:27 and follow transcript6:27

What's the opposite of a paper towel?

I don't know. Not a paper towel but a cloth towel.

Instead of being absorbent, it's waterproof.

Exactly, or instead of being white it's

black, you mentioned colors.

It moves to get you to think of the alternatives.

Instead of being rolled around in a circle,

it's rolled around in a square maybe,

it might be easier to store.

That's right. Or laid out flat, absolutely, sure.

It gives you different possibilities

and we often get them from counterfactuals.

What if or if only.

Considering the opposite leads us in new directions.

Exactly. That's a way to change our perspective.

Then lastly, we can switch the page that we have in mind.

If I'm thinking about a paper towel,

am I thinking about a paper towel?

What role am I in?

What's my self-concept or what event am I in?

If I hold onto paper towel and then

think what's the event that I'm in,

am I at a birthday party?

Am I at home?

Am I at my office? Where am I?

Or my self-concept, am I a mechanic? Or am I a cook?

Am I looking for something to hit

my violin and I try to hit your head with a paper towel?

It leads you in new directions.

It absolutely does.

I think that idea then is all of

these are flips of a category. Am I getting narrower?

Am I zooming out?

Am I switching to the opposite?

Or am I thinking about

the same category but through the lens

of some other element of my perspective?

Different roles, different goals,

different points of view.

All of that leads us to different interpretations,

and therefore it's a possibility

for changing our perspectives.

Play video starting at :8:11 and follow transcript8:11

Re-categorization is a tool for thinking

differently about some aspect of pages.

We can stumble into re-categorizations,

but we can also deliberately consider

the different pages and

consider alternative categorizations,

and in doing so trigger insights that

can lead to inventions or enlightenments.

Analogy

0:15

As we've learned, creativity is a process of

changing perspectives and building new perspectives.

We've discussed why we have no choice but to

make perspective to interpret the world.

We've discussed the functional aspects of

a perspective, the parts, actions,

goals, event and self concept or PAGES,

which is the model that we've gone through.

Now we can ask a crucial question,

how do we think beyond

our perspectives to generate creative products?

How do we change some of our current PAGES such that we

can generate insights, inventions and enlightenments?

Well, first and foremost,

you got to be willing to go exploring.

Right.

I think that's the overarching message

when you're willing to be creative is you have

to back off your current story and be

willing to explore a different perspective,

and without knowing if you're going to come up

with anything and where it's going to take your story.

Right. But exploring is difficult when

you basically have no map

and no understanding of where you are.

Right.

Where you've been or where you're going?

You're starting with a blank slate.

How do you get around that?

Well, actually that's the thing.

You don't want to start with a blank slate.

I mean, I think that's a counterintuitive element

here is you don't want to be

throwing darts into the void.

Okay.

You want to start up by saying,

what is my current perspective?

Can I actually turn my attention to

articulating and making explicit my current parts,

actions, goals, events of concept?

Because if I can do that,

then I know what it is I'm supposed to be changing.

We talked about the idea it,

it's inevitable that we have perspectives.

Yeah.

We just have to understand what that is

before we can proceed to

change it in some systematic way.

Yeah. Often we assume it,

we were not necessarily very aware of it.

By simply making ourselves

more aware of our current perspective,

then we've opened it up for flexible thinking.

Is there one easy way to do that?

Yeah. It's funny.

When we looked at the research,

it seemed as if a lot of people talk as if,

either there's one thing you do when you're creative,

you make distant associations.

Yeah.

Then there's another group of people that says,

"Yeah, there's one way to do it.

You have to combine things that

you've never combined before."

Then there's another group of

people that says," Where there

eight billion ways to be creative.

You put socks on your head,

and then you rattle teeth or whatever.

Wear a pink thinking hat or whatever.

Exactly. I mean, there are books of

countless techniques to make you creative.

But if you peel back all of that,

it looks as if there are

four main cognitive mechanisms

or tools for thinking that

we can use to change our perspective.

To mention a few, one is association.

Clearly, we sometimes make associations.

Yeah.

Draw in associations we've made in the past,

and we've also combine.

We form combinations of things,

and merge or blend things together.

We also make analogies or

metaphors and then we recategorize.

We shift something from one category to another.

Those four cognitive tools

that covers most of

the term for how we change our perspective.

Well, that's helpful.

Yeah. Let's go through them. Let's start with analogy.

Analogy is a special form of similarity.

The most obvious form of similarity

is when one item is just like another.

Maybe this bicycle is just like that bicycle.

Now, a bicycle is not like an elephant,

that's a case of dissimilarity.

But a line of bicycles has

a similarity to a line of elephants.

The pattern is consistent,

and that's what an analogy is.

Pattern similarity rather than similarity on the surface.

At this high level, thinking about

analogy as a similarity of patterns,

we find that some people talk about it as

metaphor rather than an analogy, that's fine.

Good metaphors and good analogies are both good,

because they identify a similarity in patterns.

One can be thought of as being like another

because of some underlying consistency.

For example, ignorance is a wall,

is a metaphor that indicates that like a wall,

ignorance can be a barrier to progress.

That analogies and metaphors are dissimilar

on the surface makes them hard to spot.

For example, a bank account

doesn't seem much like a bathtub.

But just as water flows into

a bathtub accumulates and then drains,

so too can money flow into a bank account,

accumulate and then drain.

If the bathtub drain is wide open,

then a small flow of water from

the faucet won't keep the tub filled,

and so it is with bank accounts.

If withdrawals are greater than deposits,

the account balance drops too.

Keep pushing on that analogy,

and you will form an enlightenment.

Looking for patterns of stocks and

flows is a general way to think about any system,

be it a supply chain,

a cell in our bodies,

or the planet's climate.

Analogies are useful because

they provide us a useful way of

thinking about something that we

might not otherwise have noticed.

To experience the effect of

analogy on the creative process,

we can think about a specific problem.

For example, let's imagine that we work

at a company that sells paper towels.

First, let's start with our current perspective.

What would the pages include in this situation?

Without getting into too much detail,

and just to be illustrative,

the parts might include the paper towels themselves,

a cardboard tube to wrap them around,

and a plastic wrapping to serve as packaging.

The actions might include using

more or less paper in each role,

putting more or fewer roles together in one package,

setting at a price that is higher or lower,

putting particular words and

images on the packaging, things like that.

The goals might include selling more paper towels,

increasing profit margins on

each sale, increasing market share.

The events might include making the paper towels,

consumers buying the paper towels,

consumers using the paper towels.

The self concepts might include

being a maker of paper towels,

and being a user of paper towels.

Once we've generated some thoughts for the pages,

then a useful process is

to consider different aspects

from each of the pages in turn,

now one for the parts later,

one of our goals and so on.

We don't want to get stuck thinking about

just one aspect from our perspective.

Considering different aspects gives us

different starting points for

recalling information that might be useful.

This is why breaking down our thinking on a problem

using pages is a good starting point for creativity.

Then for each aspect

we can think about possible analogies.

For example, take the paper towel

itself. What is it like?

Well, it's a little bit like

toilet paper and that it's paper that

comes in a roll and is

perforated to be torn off sheet by sheet.

It's also a little bit like a tissue and that it's

paper that you use once.

Could paper towels come in boxes like tissues

so that you could grab one at

a time without tearing it off?

I don't know. That's a simple little analogy

that indicates a simple possible invention.

Maybe it's out there somewhere already.

Surely there are many other analogies to be found,

and thinking about the different aspects

of pages could help us find them.

Analogies make patterns salient.

It's not obvious that a bank account is like a bathtub.

It may not even be obvious that

a paper towel is like a tissue.

Once that's how we're thinking about it though,

other interpretations can fade to the background.

That is analogies can lead us

to take a different perspective.

For example, what kinds of solutions

might you offer to reduce crime in cities?

In a recent study, Lera Boroditsky,

and Paul Thibodeau demonstrated that we get

quite different sets of solutions to a problem,

depending on which analogies we

use to describe urban crime.

If urban crime is described as a virus,

then the solutions are predominantly

shaped around social reforms,

such as changing laws.

However, if crime is

described as a monster in our community,

then the solutions focus on

dealing with the individuals involved.

Taking a different perspective

generally leads us to take our stories

in different directions and to look

for different kinds of resolutions.

Analogies by providing shifts in perspective

can therefore change which creative products we generate.

More generally, how do we find analogies?

Well, there are two main ways we know

about for finding good analogies.

The first is to think more abstractly about our stories,

rather than thinking about,

say, a bank account in terms of some specific bank,

and money, and fees, and everything else.

We can think of it more abstractly as a place

to store something until we need it again later.

Or we can think of a bank account

as a product offered by a company,

many people actually running bank view it in this way,

and that leads to thinking about

what other products their customers might want,

that banks could be like

supermarkets with many products so

that there can be one stop shopping

for consumers financial needs.

To find analogies then,

one main approach is to abstract

away from the surface elements of your particular story.

Those tend to limit you from finding analogies.

Instead, you want to think about

the underlying patterns and

where else those patterns might occur.

For example, designers, architects,

engineers and others are learning to ask whether nature

has already generated a good solution to their problem.

How do we layout solar panels

to gather the most energy from the sun?

Well, I don't know how to sunflowers do it?

How can buildings shrug off rain and dirt?

I don't know how the leaves do it? So on.

The second way to help find analogies,

is to talk about your story

with different kinds of people.

After all the creative process

is about shifting perspectives,

there's no need for you to do all the work

yourself or to have all the knowledge yourself.

It turns out that when we

talk to people about our stories,

we're often pulled away from

the minute details that can consume our own thinking.

It helps us to be a bit more abstract.

In addition, by talking to different kinds of people,

we're going to think differently

about our story because of how

we think to communicate to a different person,

and further, they will have to come back to us with

different knowledge than we

have because they're different than we are.

All told then, talking about

our stories to different kinds of people,

is a second way to improve

our chances at generating an analogy,

that we can use to change

our perspective or to build a new perspective.

Play video starting at :11:1 and follow transcript11:01

Analogy is one of the tools we have are

thinking beyond our current perspective,

we can help ourselves find

analogies as part of the creative process,

and so help ourselves take our stories in

new directions and form new products.

Recategorization

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a little bit differently about

whatever it is we're dealing with.

It's not just a pile of wood and foam, whatever this is.

It's a way of perceptualizing,

changing our interpretation of it

and also what we think is related,

what we think counts or doesn't

count as that kind of a thing.

That's what re-categorizations are going to do,

they're going to allow us to change

our interpretation of some aspect of our perspective.

Re-categorization changes how we

think about something because

categories offer just one

of many possible interpretations.

We can think of categories as maybe stereotypes or

caricatures or models, something like that.

As a result, when we switch categories

different aspects and connections become prominent.

Let's take an example, maybe a computer.

When it's being manufactured,

people probably think about it as an electronic device.

But when we're buying it,

we probably think about it as a product.

Then when we're using it, a computer,

we probably think about it as a source of entertainment,

or a tool for getting work done.

Each category; an electronic device, a product,

entertainment tool, highlights

different properties and features of computers.

Each different category leads

us to consider different items.

Entertainment as a category might make

us think of games, videos, music.

Whereas when we think about tools that

might make us think about phones,

copiers, offices, or maybe hammers or drills.

For years, thinking about computers as

electronic devices meant that people

didn't pay that much attention to what they looked like.

Once they were pretty common though and

people started buying them

and having around their homes,

the fact that they were a product that consumers would

buy started to bring attention to

the external design of computers.

Namely, instead of being boring and ugly,

the least we could do is to add some color,

maybe some interesting shapes,

or to take a more recent example,

computer routers only started

recently looking like something you'd actually

want to put out on a table rather

than something you wanted to hide behind your desk.

To get ourselves to think differently about

some aspect of a problem or some element of a story,

it's useful to consider re-categorizing it.

There are four main ways we can

help ourselves re-categorize something.

We can zoom in, we can zoom out,

we can consider the opposite,

we can also switch pages.

Let's start with zooming in.

If we're going to zoom in,

then you might think about, I don't know,

it's not just a chair but it's

a desk chair or a rocking chair.

Or it's not just a dog,

it's a Basset Hound,

or a Shih Tzu, Bichon Poodle Mix,

or whatever it might be.

Let's take paper towel,

so imagine we zoom in.

What do you get if we zoom in on a paper towel?

It's extra absorbent,

multi-colored, soft, all kinds of features.

Choose your own size, extra large.

I guess that's how the process works.

We're noticing features about this object

that may not have been apparent before we zoomed in.

Exactly. When we think

about what zooming in does to change your perspective,

it's making you confront every detail of

that item and think about

how that might be or how it might play out.

Zooming in is one way to change

your perspective by flipping to

a narrower category that might then have

properties or elements that you

hadn't considered because you've overlooked them.

I prefer dried leaves, that's just me.

Then the opposite, so the opposite

of zooming in is zooming out.

It's not just a chair, it's a piece of furniture.

It's not a dog, it's a pet or

an animal, something like that.

It's not a paper towel,

it's a paper good,

it's something I buy at the grocery store.

It's a roll of film maybe or something

, I don't if it's too creative.

The idea of zooming out is, it's a product I buy,

it's something I use once.

It's a category that's more abstract but

contains the item that we're talking about.

Any kind of paper products

would be broader than thinking about

it narrowly as a paper towel.

Exactly, and that might lead you to new ideas.

I might notice connections

between other things in that category that

I could then combine and

use to generate something more creative.

Exactly, that's exactly right.

Maybe I don't think of paper towels in a certain way,

but I think disposable goods.

Maybe they come in convenience packs, I don't know.

But paper towels, no,

maybe they could, or something like that.

You can think of paper products that have

colors and so like

multi-colored Kleenex and paper towels could

have colors as well so then I'm combining those.

Exactly. By zooming out,

we can maybe see connections or possibilities that

we can't when we're just thinking about the item itself.

Zooming out. Another step is we can flip,

we can consider the opposite.

I try to do that just to be difficult.

Play video starting at :6:27 and follow transcript6:27

What's the opposite of a paper towel?

I don't know. Not a paper towel but a cloth towel.

Instead of being absorbent, it's waterproof.

Exactly, or instead of being white it's

black, you mentioned colors.

It moves to get you to think of the alternatives.

Instead of being rolled around in a circle,

it's rolled around in a square maybe,

it might be easier to store.

That's right. Or laid out flat, absolutely, sure.

It gives you different possibilities

and we often get them from counterfactuals.

What if or if only.

Considering the opposite leads us in new directions.

Exactly. That's a way to change our perspective.

Then lastly, we can switch the page that we have in mind.

If I'm thinking about a paper towel,

am I thinking about a paper towel?

What role am I in?

What's my self-concept or what event am I in?

If I hold onto paper towel and then

think what's the event that I'm in,

am I at a birthday party?

Am I at home?

Am I at my office? Where am I?

Or my self-concept, am I a mechanic? Or am I a cook?

Am I looking for something to hit

my violin and I try to hit your head with a paper towel?

It leads you in new directions.

It absolutely does.

I think that idea then is all of

these are flips of a category. Am I getting narrower?

Am I zooming out?

Am I switching to the opposite?

Or am I thinking about

the same category but through the lens

of some other element of my perspective?

Different roles, different goals,

different points of view.

All of that leads us to different interpretations,

and therefore it's a possibility

for changing our perspectives.

Play video starting at :8:11 and follow transcript8:11

Re-categorization is a tool for thinking

differently about some aspect of pages.

We can stumble into re-categorizations,

but we can also deliberately consider

the different pages and

consider alternative categorizations,

and in doing so trigger insights that

can lead to inventions or enlightenments.

Combination

A third way to recall new information that might

be relevant to the problem is to form combinations.

The escalator is actually one of

my favorite examples of this.

Elevators were long in use and

apparently were commercially widespread by about 1850s.

You started to see tall towers being built because you

had elevators by the 1850s.

Is there a combination that

resulted in the elevator becoming the escalator?

Yeah. That was the insight.

It was an elevator for stairs.

That was the combination that led to that invention.

Rather than elevating a platform,

you can combine the staircase with

the technology that we're using to lift the elevator?

Yeah, and you've got an escalator.

But that was 50 years later in about 1900.

It's still present in the world.

Elevator, escalator, they

sound a little bit alike. What's the difference?

Well, stairs is

a German word and they chose the Latin form,

scala, so escalator, elevator.

More German and Italian people could

collaborate, is that what you're telling us?

Right. Form a combination in order to generate

an idea that then turned

into an invention, an escalator.

The role of a combination is to bring

information into the perspective

that can then interact with what's

already there to produce

something that's different and

so change the course of the story.

How about incubators?

Yeah, that's an interesting story

in which combinations actually

played a huge role in moving creativity forward.

The real problem there was that in developing countries,

there was a problem with infant mortality.

But just sending a $40,000 incubator over

there only works for a while

until it breaks. Then what do you do?

There is no sophisticated inventory of

parts that you can use to repair

this complex piece of machinery.

The sophisticated repair person

with all that training to do it.

What do you do? Do not have incubators?

Well, that's probably not a good idea.

What did they actually end up doing?

The story that I heard was

about realizing, wait a minute,

there are a bunch of mechanical things that

do seem to work

and get repaired around here, namely cars.

We can keep the basket part of the incubator,

but how can we have

a warming function that

runs off of the machinery of the car.

You have this car part incubator combination,

and you make these Frankenstein monsters hybrid machine.

But they working, and not only are the parts available,

but there are plenty of experts that

can repair those cars.

I think it was a headlight for the warmth and

then the fan to blow it all around.

The battery power to keep it running.

The car battery.

There you are.

Now you've got an incubator, and we have

a lot more healthy babies.

There are three different types of combinations.

A combination is more than just

bringing two ideas to mind at the same time.

For example, to use a simple example from Ed Wisnsky,

one of the scholars who worked extensively at

combinations truck soap could

mean soap for washing trucks.

This is a kind of combination in which there is

some scenario that links the two concepts together.

Truck soaps might then be contrasted

with dish soap or hand soap.

Truck soap could also mean

soap that is shaped like a truck.

This kind of combination takes a property from

one item and maps it onto the other item.

Trucks open this sense might be contrasted with say,

shell soap, soap shaped like a shell or zebra soap.

Finally, there are blends that integrate

aspects of both items in complex ways,

like the car part incubators.

How did we find combinations?

Unfortunately, unlike everything

else we're discussing in this module,

where we have drawn on scientific research to

guide our analysis and make recommendations to you,

there's actually no scientific research on how

to generate or identify promising combinations.

There are a great many suggestions in

the popular press about generating combinations,

but we have really

no certainty about how effective they really are.

For example, there are many recommendations to use

random words or a picture generators

or to flip through dictionaries.

We're pretty skeptical though,

the efficiency of that approach.

Another common idea is to make

a table with different kinds of things for the rows and

columns and then maybe say

leading products and types of

consumers or types of technologies.

Then you just look at the intersections in

the table and see if they're empty

cells that sound promising.

It's at least systematic.

But the best evidence we have

is to consider seeming opposites.

Maybe affordable luxury or

rugged luxury, something like that.

There's some evidence that

these kinds of combinations of oppositions

tend to be particularly fruitful

for generating creative ideas.

There is some evidence that considering oppositions

generally tends to foster creative idea generation.

We spoke about opposites already

when we thought about re categorization.

Considering seeming opposites and then

trying to blend them together could

be a useful approach

to generating interesting combinations.

There is so much evidence

that combinations are a way to generate

new interpretations that we can't

just ignore it as a tool for creativity,

just because the research literature has yet to give us

a clear pattern on how to generate good combination,

shouldn't stop us from thinking

about it as a possible tool.

Play video starting at :6:11 and follow transcript6:11

Combination is often discussed as a route to creativity,

but it's not really well understood.

Still, considering how oppositions

can combine to yield new blends,

is clearly an avenue for changing

our perspectives or building new ones.

ASSOCIATION

[MUSIC]

The fourth and final way in which we recall information that

might be useful to reinterpret our problem.

Is by finding associated information that for whatever reason,

is not already part of what we're thinking about.

>> And this one association is pretty different,

from the other three we talked about.

So analogy, recategorization, combination,

those are things we can sort of set about to do deliberately.

>> Right. >> I mean there are limits on how we

access and and retrieve that information, but we can try to think of analogies.

It's harder to try and think of associations.

>> Yeah. >> It doesn't work that way.

>> And the harder we try, the harder it gets, right?

>> [LAUGH] Well because you're often then focus on the one that's currently in mind,

which suppresses all the other ones, that you might have had.

So, that's the gap, right?

>> This happens to me I'm terrible with names, but

when I run into someone I don't know well, right?

I don't quite know their name, but I jumped to one example, and

I call you Frank instead of Jeff and then that's on my mind.

I can't think of anything else.

>> Right don't think about right there.

>> Deliberate I am.

>> [LAUGH] So what can you do?

I mean, I think the idea is you have to put your mind on autopilot a little

bit, right?

You have to stop thinking quite so deliberately, and

let sort of your mind wander.

So, some people talk about taking a walk, right?

Some people talk about going jogging, some people stroll in the park,

some people do the dishes, right?

>> Right. >> Because it's just sort of mindless

activity, or the great idea that happens in the bathtub, or

whatever while you're just zoning out.

>> Or whatever.

>> Or [LAUGH] So- >> I like to surf the Internet all day,

at work and that's how I free up, space to make these unusual associations.

>> Sure I mean, the point is, what is it that doesn't take your full mind?

>> Right. >> And

give yourself an opportunity to sort of occupy yourself enough, that you

can wander down random associations, and see where that might lead you.

It's not usually an efficient process, but if you do get a problem in your head, or

a story in mind, and you think about that a lot, then you go and wash the dishes.

Or then you go and and take the walk, those set of ideas can then generate

sort of nearby associations, that you might not have thought of deliberately.

But that are related, and therefore might bubble into consciousness,

and that gives you a chance to possibly change your perspective.

[MUSIC]

Play video starting at :2:53 and follow transcript2:53

>> Association is a very different kind of tool for thinking.

When we're using our perspective to think deliberately about extending our story,

we're not in a position to change our perspectives.

In fact we actually shut down straight associations, the kinds of unusual

associations were looking for, just to keep persisting with our stories.

But, doing so is a way to bring information to mind.

However unusual, that could lead us to change our perspective, or

build a new perspective.

>> So, taking that idea of association together with the earlier

discussion of analogy, combination, and recategorization.

Now we have a set of tools, right?

That we can use, to change our perspectives.

And if we put that together with pages, parts, actions, goals,

events, self concept, that maps out of perspective,

now we have a way to go about this in a more systematic fashion.

We have a a starting point for the creative process.

>> Right, and in which we started off by talking about, is really daunting because,

we have no map, we have no sense of where we are, why are we doing-

>> Exploring,

who knows where we're going to go, and this gives us a little bit of a of a road

map, right or a process that we could follow, right?

First, break down your current perspective into pages,

and then try some of these tools, right?

Pick up apart, try a recombination, and

a re categorization, or pick up an event and consider an analogy.

>> Right. >> And so now we have a way,

to generate many ideas, and and to hopefully keep us from getting stuck,

by just applying one mechanism and not trying a different one.

>> Right.

>> And it also allows you I think, to avoid some of the pitfalls because if

exploring is uncomfortable if it feels like I just want to get back to my story.

Then having something more systematic can keep us from falling for

two of the big traps, right?

Which is as soon as I have one idea, that's what I'm done, I'm going back to my

story, or, because it felt exciting to generate it, I feel attached to it.

And if I could be excited by generating lots of ideas,

well then any one of them could do.

And I don't have to feel as if I have to follow through on this one idea,

because I loved when I came up with it.

>> Yeah and this framework gives you a real map for

all of the options that you have at your disposal.

For working through the process and generating changes and perspectives and

creative insights and inventions.

>> Yeah so, tools for thinking.

PERSISTANCE

So as we learn that the creative process can be very difficult.

And you know, clearly some people pick themselves back up and keep going and

other people quit.

So I think the real question then becomes why do people persist?

And and also how can we learn to be more persistent in our own work?

>> Yeah, you gotta stick with it.

>> So we focused a bit on the dark side of creativity, right?

>> [LAUGH] >> It's not always easy.

There's objection, loneliness, even,

you know, the chance that you're going to be a misfit.

But it's not all negative, right?

I mean, it could be, the creativity is its own reward.

>> It's often exciting.

>> Yeah.

>> I mean, we have the experience subjectively of cool, what a great idea.

>> And we saw a little bit of that with Archimedes, right,

when you had the insight.

>> [LAUGH] Right. >> But it's not just something that

happened in ancient times, right?

>> Right. >> It's very much a part of the creative

experience.

>> Exactly, you get examples like that all the time.

So, let's see, I think it was, wasn't it a mom, right?

Or no, it was a nurse after working with children for years, what was her name?

Tiffany Crimmins.

Right, figured out that that rather than giving medicine, being this a scary event.

What if I made the spoon to bring the medicine to you or the medicine dropper,

whatever.

In the shape of an animal that was sort of friendly and nice and

it wouldn't be a scary moment.

It would be a cool moment.

>> If you hear her, you know, recount that you could really tell the obvious joy that

that moment of insight brought.

Not just because it relieve the frustration that she had had for so long,

but also because she's helping somebody.

And so that insight really, it was something that was joyful and

generated positive emotions.

But it can even happen in a place as cold as the financial world.

>> [LAUGH] >> There was a story of Daniel Glick who

was trying to invest family members IRA into real estate.

And he realized that there is absolutely no a platform that would be something that

would allow him to do that.

That existing IRAs were just too narrowly focused on one kind of asset.

And so he was very frustrated.

And then he had this aha moment that he can actually create the platform that

allows people to invest their IRAs in a broad array of different kinds of

investments.

And so that led to the creation of broad financial.

But again, you can tell in the way people talk about these experiences,

how exciting, how positive, how joyful that moment is.

And so creativity in a sense can be its own reward.

So it's certainly true that that moment of insight could be accompanied by

feelings of joy and happiness.

At the thought that you finally overcome your frustration and and

reached a creative solution.

But there's another element of the creative process that could in and

of itself be rewarding.

And in my research I've discovered that engaging in the creative

process can actually feel liberating to people.

That allowing people to freely explore across different kinds of ideas and

in different directions is reportedly something that feels liberating to people.

And the really great thing about that is that we've also shown that giving people

the opportunity to be creative because it feels liberating,

allows people to cope with different kinds of psychological burdens.

And it's something that is interesting to me because you often read about it in

advice columns.

If you have a problem, maybe you should go seek a creative outlet, so go,

do something creative and it will somehow benefit you psychologically.

But there was no empirical evidence to actually back that up.

So what we did was an experiment in which we randomly assigned one group of people

to think about a big secret that they were keeping.

And in another condition they thought about just a small minor secret they were

keeping.

And the problem with thinking about a big secret is that psychologists have shown

that it's literally something that feels burdensome, it weighs people down.

And so it's a psychological burden that actually makes, for

example, you overestimate how steep a flight of stairs are.

Or it makes you overestimate how heavy something is.

Because the psychological weight of carrying that secret is

really experienced as a physical and psychological burden.

But the good news is that we're able to show

in a subsequent task that we gave people the opportunity to be creative.

By just simply asking them to generate ideas with the instructions that as they

generate ideas, they should try to think of creative solutions.

And the people who are given the opportunity to be creative reported that

their burdens were actually lifted.

So we gave them tasks, for example,

that psychologists have used to tap into this sense of physical burden.

By for example, estimating how steep a hill is.

And on those tasks,

the people who had the opportunity to be creative were less burdened.

So they were actually able to accurately estimate how steep that hill is or

how heavy that set of books are because that burden had been lifted for them.

So that's just an example of how creativity can again be its own reward.

That engaging in the creative process can lead to feelings that may help you

overcome certain kinds of psychological burdens.

>> So if the creative process is bumpy, it's challenging, it's difficult,

It's frustrating and then you come up with something and people reject it,

why do people persist?

Well, many people enjoy the process itself so

much that it doesn't really feel like work.

Or they love the work so much, it's a passion for them and

a personal commitment.

Not everyone feels that way about the work, I understand.

But if you have the passion for

what it is you do then all the other issues can fade away in the background.

There's a story actually about a mathematician, Gregory Pearlman.

He was a Russian mathematician.

He ended up solving one of the most famous problems in mathematics,

the poincare conjecture.

And indeed he even won a prize, a standing prize of $1 million dollars for

whoever could solve it.

Well, he turned down the prize, he figured I solved it, I was fascinated in doing it.

I don't need the money,

I have the personal satisfaction of the creative journey.

>> So if intrinsic motivation, that really joy and passion for

the work really helps us overcome all these bumps in the road.

I think it helps to think about how do we foster that at work, you know,

in our workplace, how do we look for that kind of joy?

And in conversations I've had, I think it starts even in the interview process.

Where there's a tendency maybe to focus on knowledge, skill and ability, but

you also want to look for joy.

And in fact I had a student one year who took my creativity class.

And was really interested in working for a particular product design firm,

that is very, very good for creativity.

In fact famously so.

But during the interview, he inadvertently asked about his salary.

And they responded very coldly and said, look, you know,

our salaries are competitive.

But if that's all you care about, well you're not going to be a fit here.

>> [LAUGH] >> And

of course you didn't get a call back.

So I think what they got right part of, you know, why they fostered such

a creative environment maybe because they're good at looking for

people who have that joint passion.

And if you ask about your salary within the first five minutes,

chances are you're not going to be that kind of person, right?

>> Absolutely, and we look for this, right?

When we talk to people that we want to hire as well, which is,

do you love what you do?

Because in many areas of work it's not about how

much I can pay you relative to the competition.

It's do you have a real passion for what it is we're engaged in?

And can I find that passion based on talking with you and

hearing your excitement in your work and what you do?

>> And so I guess we're all after Edison who famously said, you know,

like none of it felt like work, I never did a day's work in my life.

He was known for only getting four or five hours of sleep at night,

you know, being sort of obsessively focused on his work two hours a day.

>> [LAUGH] >> But

the other complexities that maybe we're good at selecting on joy, right?

So we bring this person into the company who has inherent joy for the work.

And then we don't let them be creative.

>> [LAUGH] >> So we also have to think about

giving them autonomy or ways of doing that as well.

>> Absolutely.

We love you have a passion for your work and do this, right?

[LAUGH] >> Right.

>> So the issue there is we see companies giving employees time, right?

So either whether it's assigning you to a project that's deep in the heart of your

passion.

Or giving you time to work on something you're passionate about, right?

So, 20% time or 10% time or Fridays or mid days or

whatever the framework is that organizations do.

To give people an opportunity to take a left turn or

right turn and try something different.

[CROSSTALK] >> During the middle of the afternoon,

the scary thing is that it doesn't look like work.

So people are reluctant to do that, but- >> But if you have to work on a project.

So I get sometimes we talked about with associations,

sometimes you need to sort of let your mind go and all of that.

And sometimes you need to blow off steam from a tough meeting.

But there's also I think an element of this

isn't exactly the thing my company wants me to do, but it's related.

And let me explore that and have the joy of finding out if that goes somewhere.

And that can be an opportunity to take that autonomy and that joy and

lead you somewhere that no one else was necessarily looking.

>> Right, so you pick the right people and

then you let them pursue their passion.

[MUSIC]

Play video starting at :9:44 and follow transcript9:44

So part of creative persistence just involves loving your work.

Because if you love your work, you're immersed in it and you can kind of tune

out some of the negative things like rejection that happens inevitably, right?

>> You'll keep going.

But the other side I think we've also seen is that if you care enough about

what happens at the finish line, right?

That the recognition and the value of having done it,

then you'll also put up with a fair amount along the way.

Even if you don't love all those steps along the way.

>> So there's more than one tool that you can use to pull yourself through and

persist.

>> And persist.

# Module 4: **Supporting Creativity**

## Overview

We want to be more creative ourselves, and we also want to support the creativity of others. In this module, we examine how to help encourage creativity in our teams and organizations. We explore how the cultures we set can support creativity through supporting members’ motivation to be creative and providing opportunities to be creative. We examine how core tasks around providing feedback, setting rewards, and managing resources and setting constraints can encourage rather than discourage creativity. We also review the role of context, and how the spaces in which we work signal creativity is welcome or unwelcome. Through our actions and leadership, we can foster openness, autonomy, and playful experimentation, and thereby support creativity in our teams and organizations.

# Motivation, Rewards, and Creativity

Notes

[Discuss](https://www.coursera.org/learn/creativity-toolkit-1/discussions/weeks/4)

In this section, we'll talk about rewards and reward systems.

How can you as a manager and as a leader create reward system,

supportive of creativity.

Why and how can different types of rewards and reward systems impact creativity?

How can we use rewards to help enhance our colleagues motivation to be creative and

how can rewards, help create a social environment and culture that values

creative ideas that values acceptance of diverse and novel perspectives.

Play video starting at ::40 and follow transcript0:40

When we talk about rewards,

we're talking about setting up structures that shape people's motivations.

It's not about ability or what people know how to do, it's not about opportunity or

what people get a chance to do, it's about motivation and

what people want to do so before we get into the particulars of rewards.

It's helpful to first talk a bit about the motivation to be creative then we can come

back and talk about rewards and reward systems and

how those impact people's motivation for creativity.

If we think about the kind of people who want to be creative,

we often think about people who love what they do and are fascinated by it.

For example, Eric Schmidt, the former CEO of Google talked about it this way,

he said, and I quote, we're looking for someone who wakes up in the morning and

just can't wait to solve some new, interesting and hard problem.

Whether it's in sales, it's in policy, it's in management,

people who delight in that thing.

Play video starting at :1:36 and follow transcript1:36

Now, that's a pretty nice description of what researchers talk about as intrinsic

motivation, intrinsic motivators drive behavior because of internal rewards.

We're talking about being motivated to engage in behaviors because we ourselves

find them to be meaningful or enjoyable, satisfying or important.

Doing these things enhances our own feelings of competence and autonomy.

To go back to Eric Schmidt, that former CEO of Google,

he said, in response to a question about how to attract and retain great employees.

The ones he called the smart creatives, he said, and I quote, there's a secret and

the secret is the best people want to work on what they want to work on and

they want to work on things they care a lot about and

they want to be allowed to be successful.

If you could build a culture which empowers them to do that,

you'll retain them, if you micromanage them.

If you don't give them the resources they need in this competitive world of labor,

they'll go somewhere else.

Play video starting at :2:35 and follow transcript2:35

If we think about that in our own lives,

we can find places where we have that intrinsic motivation.

So if you love to cook, then you'll probably end up trying to make

some new dishes and trying new approaches and new possibilities,

you'll do that just for the sake of trying it out.

Learning something new, pursuing an idea for the fun of it,

that's intrinsic motivation.

There's a great variety of sources of intrinsic motivation for

employees in our organizations.

Some people love the work and the task they get to do, they love the work itself,

some of them love their roles, they love the position they get to occupy.

Some love the profession and

the contributions they make through their practice.

In addition, sometimes people find their organization's identity and values to be

a source of intrinsic motivation they believe in what the company is doing.

It matters to them and they want to be a part of it and share in its success.

A further source of intrinsic motivation, are the relationships that

people get to be a part of the opportunity to help or serve a client,

a customer and then user a patient think about what you love about your job.

What are the things you would do, even if they didn't pay you or

if you won the lottery and didn't need a job?

What would you keep doing?

Some of it you wouldn't do it all, of course, but some of it you really might.

What's that part?

Intrinsic motivation matters, because if people want to think about and

work on something, then they'll do that a lot.

They'll work hard, work, smart, they'll make connections and

explore possibilities.

Just to get to keep doing something they like doing and remember a product or

a service is not just one idea it's 1000 ideas or

10,000 ideas, s o you need to be persistent, you need to have commitment.

Intrinsic motivation is usually the passion that drives all that care

that time, that effort.

One of the most widely discussed ways for supporting intrinsic motivation

at work is simply to give people time to do what they want.

You might have heard about this, the 3M company, famous for its innovation gave

employees 15% of their paid hours to pursue personal ideas, Google made it 20%

for employees to work on whatever they thought would most benefit the company.

The idea is to give people autonomy and released from evaluation and

released from the managerial priorities so they can tap into their intrinsic

motivations to do something meaningful for that work.

People have an opportunity to explore for successes while limiting the damages

of possible failures, rewards and rewards systems.

Then have an opportunity to guide behavior by supporting intrinsic motivation and

aligning with the organization,

wants them to do with what people themselves love to do.

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Now, in addition to intrinsic motivation,

there is also what we call extrinsic motivation.

This extrinsic motivation, involves engaging in

the behavior in order to earn external rewards or avoid punishment.

Now, very interesting, years of research has shown that

while intrinsic motivation value, engaging a task,

whether it's generating new ideas or solving creative problems or

coming up with a creative theme or design or a jingle.

For example, you do it because you love it, you do it for

the task itself, that motivation positively impacts creativity.

But extrinsic motivation will engage you in a creative task for

the sake of an external reward, actually reduces creativity.

Now, here's the dilemma, when we are talking about rewards,

we are essentially talking about external rewards and going by the definition,

then any external reward should increase extrinsic motivation.

That is motivation to engage in a behavior to gain that external reward and

what we just talked about it should then reduce creativity.

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So this initial look at understanding of the rewards and

rewards systems suggests that if we give people reward,

they should be less creative and

indeed, I'm sure many of you have heard about this or

have some notion that money kills creativity.

If you give people monetary rewards, it will reduce their creativity so

,what are we supposed to do with this piece of knowledge?

Play video starting at :7:35 and follow transcript7:35

It suggests that we should not give people any rewards or

there are no reward systems that can help creativity.

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But here's the thing, external rewards, kill creativity or

reduce creativity only when they are controlling in nature.

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That is when these rewards tell people that they are engaging

in a creative task for the sake of rewards because such action,

what it does is it makes people think that they are driven

by this external source, they feel less competent.

Play video starting at :8:23 and follow transcript8:23

It reduces their feelings of autonomy and

that in turn reduces that intrinsic motivation.

This self satisfaction to engage in a creative task and

such a reduction in intrinsic motivation leads to lower creativity.

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Now the question is, can we create rewards that is

supporting in nature that do not induce the feeling

of as if they are controlling our behavior or

can there be situations when external rewards can

be perceived as supportive of one's freedom of

one's autonomy and the answer is resounding yes.

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And that is what you have to keep in mind as managers as leaders to

create reward to create reward systems that increased intrinsic

motivation that don't take away one's feeling of autonomy.

The rewards that are supporting in nature,

that increased feeling of autonomy and

competence and such rewards might include,

simply assigning people to the task they love.

Something of their interest, put them on problems they like to solve and

you will see creativity bloom .Similarly,

research has found that simple verbal reinforcement praise of someone's work.

Giving people the feeling that he got their backs will

make them free to think openly accept new diverse

ideas will motivate them to be more creative.

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Social recognition and symbolic rewards are other types of rewards that

have been proven to enhance creativity.

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For example, a good player award or

rewarding people publicly for their creativity and

creative ideas not only encourages people employees to be more creative.

But what it also does, it sets up a culture of creativity

where people see that creativity is value openness to new ideas and

diverse perspectives is a norm and that is good for

creativity and culture of creativity.

In this section, I want to talk to you specifically about monetary rewards.

Now, I know we have talked about how giving people money or

monetary rewards, which is an extrinsic reward,

a controlling reward is bad for creativity.

But honestly think about all these companies, managers and

maybe even you in your job as leaders as managers have offered or

may even have been offered monetary rewards,

which indeed has been found to help motivate people.

So is there a way to offer or set up monetary rewards that

they can help rather hurt creativity and

this is not the caution that only we as managers,

as people who work in these companies or

designed these rewards have struggled with over a period of time.

In fact, over the last 50 years, even the academics,

people who very closely steady workplace issues and

propose solutions that ultimately get adopted by the companies.

These people have tried to understand creativity and

have extensively examined the role of monetary rewards and

how can they be used to enhance creativity.

So what I'm going to talk to you today, it's just not some textbook or

pipe cycle pop psychology knowledge.

What I'm bringing to the table here is backed by about 50

years of solid academic research.

So while analyzing the results of monetary rewards on creative performance,

these researchers have found that indeed monetary

rewards lead to lower intrinsic motivation to perform creative task and

hence results in lower creativity and creative performance.

The interesting part, is that what these

researchers have also found that most of the time

when monetary rewards hurt creativity,

the reward is offered in a very general sense and

lacks specifics the exact parameters based

on which the rewards will be offered.

And indeed it is not an easy feat, creativity

is a fuzzy thing ,so what do managers do more often than not?

The rewards that are supposed to be given for creativity?

For creative performance end up being rewarded for performance.

Now, that seems pretty fine, Right, what is wrong with that?

See, the issue is look at any rewards that are offered within the companies and

organizations.

These awards you will find are often tied to a conventional

rather than rather than creative performance.

What people and employees have come to expect being rewarded for

is conventionality socially well accepted performance for

meeting deadlines for ideas that meet expectations.

Everyday life expectations that are in line with accepted

social norms and let me tell you that is not creativity.

So here is the big takeaway whenever you're offering monetary rewards for

creativity or rewards encouraging creative output, be very specific.

Make your rewards monetary rewards contingent on the creativity of the ideas,

or the solutions that are being produced or generated and honestly,

these ideas or solutions that are being generated as a result of monetary rewards.

The rewards that are contingent on creativity may not produce ideas or

solutions that are very practical in nature or

are very useful in their current form.

But I can promise that such rewards will give you and your team,

your organization some really out of the box ideas, something unusual,

something different than what you have come to expect.

And here is the critical piece, it is always easier to take these highly

creative, unusual out of the box ideas and bring them back in,

make them practically useful, appropriate for the problem at hand.

But, it is nearly impossible to take a very practical, a very relevant idea or

a solution and make it out of a box idea, a totally creative idea.

So you've got to start with these out of the box ideas and solutions,

these creative ideas.

And that is where monetary rewards that are very specific or

being given out specifically for producing creative output can be of immense help.