

Age Before Beauty

Malcolm Gladwell

[On February 21st, Malcolm Gladwell gave a talk about the phenomenon of prodigies and late bloomers in art. The event was part of the New Yorker Nights, a series hosted by the Columbia University Arts Initiative and The New Yorker.]¹

Transcribed by John Lennox

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Age Before Beauty

Malcolm Gladwell

Thank you very much. It's very nice to see so many faces. I'm very delighted to have been invited to Columbia. I should say, though, you know it occurred to me as I was coming here, though, that there's something profoundly strange about the fact that there are so many of you here—it's a little weird. Many of you I assume are students, and you're required to go to large rooms and listen to people talk and here you are on your own time, for fun, coming to a large room to hear someone talk. It reminds me of...I went to school with a guy who was from a little town in Eastern Ontario called Beachburg, which was this...way off in the middle of nowhere, and as a result, we called this guy Beechburg. And I once went to visit Beachburg in Beachburg, and Beachburg is a town, it's like...ah maybe three hundred people. It's little houses on big lots around a lake. And when I went to Beachburg and visited with Beachburg, he said, "You should come with me, we're going to go to our summer place." And it turns out everyone in Beachburg had a summer place which was five miles away, and it was a group of little houses on big lots around a lake. And I realized there was something peculiar about the modern world in which our, you know, work and pleasure have come to kind of coexist in this bizarre way. Anyway, that's my explanation for why you would come to a room to hear someone talk after spending your days coming to rooms hearing someone talk.

Anyway, I didn't give a title for this evening because...or I can't remember if I did. Because if I did it was a lie, because I had no idea until quite recently, perhaps earlier this afternoon, what I was going to talk about. And I toyed, I thought about, I had the idea that I

would give you a choice. I have a psychologist who I'm [...] one of my favorites, is a guy named Sylvan Tompkins and I once was listening to a tape (he's long dead) of him, of a lecture he gave. And he began the lecture, he got up and he said, If you check in your program you'll see that I'm supposed to be talking about, you know, transference, narcissism, and the Oedipal complex, but I want to give you a choice. I could either talk about that, or I could unlock the secrets of the human face. And in the background all you hear are, "Face! Face! Face!" So I thought I would either give the Tompkins lecture on transference, narcissism, and the Oedipal complex, or I would unlock the secrets of Fleetwood Mac.

All right, Fleetwood Mac it is. Fleetwood Mac was, ah...do think I'm...? I'm deadly serious. Fleetwood Mac was founded by a guy named Peter Green, and Peter Green, if you're a guitar nut—I don't know how many of you are—is one of the legendary guitarists of all time. He's up there with Eric Clapton, Stevie Ray Vaughn. Peter Green puts together a band: he finds a guy named Bob Brunning, who's going to play bass, and he finds a guy named Mick Fleetwood, who's going to play drums, and he finds a guy named Jeremy Spencer, who's going to play slide guitar. And they start playing in clubs around London and it quickly turns out that Bob Brunning isn't working out, so they kick him out of the band and they bring in a guy named John McVie. And they start touring again, and they go to America, they go to San Francisco, and they hang around with the Grateful Dead, and they're really sort of having fun, and they sign up a guy named Danny Kirwan. And they have a hit in Europe with an instrumental called, "Albatross," which is a kind of reggae-themed thing. Mick Fleetwood plays the tom toms with these big mallets. Then Peter Green starts taking lots and lots of LSD, and he meets up with this group of Germans. And for reasons no one can understand he vanishes with the Germans. So John McVie has just married a woman named Christine Perfect, and they say, Christine, why don't you come and join the band. So she joins the band. And then the group gets together with all their wives, and they buy a big estate called [Benafolds] in New Hampshire, New England. And they just smoke lots and lots of hash for a couple of years.

Then Jeremy Spencer, weirdly, their original slide guitarist, meets up with this Christian cult, and he vanishes, disappears. So they replace him with Peter Green, who comes back briefly from his German LSD cult, and then he leaves, and they bring in an American named Bob Welch. And they fire Danny Kirwan, who's having an affair with Mick Fleetwood's wife. Believe me, this is all critical. Just follow this for a second.

So then they hire these two guys named Dave Walker and Bob Weston, and then, after about a year or so, they fire them. Mostly because, I think, if I have this right, I think Bob Weston has an affair with Mick Fleetwood's wife as well. Then they decide to move to Los Angeles, and Mick Fleetwood goes to a supermarket in L.A., and he runs into this old friend who says, "You should come out to my recording studio in Van Nuys." So he goes out to the recording studio, and he sees this really, really hot woman singing in the recording studio next to them. And he says, Well, who is that? And they say, oh, it's this woman named Stevie Nicks. She's there with her boyfriend, Lindsey Buckingham. And they had just put out a record which no one had bought. It was an incredibly unsuccessful record, and they were like, broke. And Mick Fleetwood thinks she's really cute, and a month passes, and Bob Welch quits Fleetwood Mac, and so he calls up his friend, Mick Fleetwood does, and he says, "You know those two people in the recording studio. I want to meet them. I think they'd be good for our band."

And so they all meet. Stevie Nicks is working at nineteen twenties-themed restaurant in Hollywood, and she has to wear a flapper outfit. And they all meet at this Mexican restaurant called El Carmen, which I think it's still there, and they get really, really wasted on margarites, and they decide that they should all form a band with Lindsey Buckingham and Stevie Nicks. And they meet a week later in the basement of the ICM building on Beverly Boulevard, and they start to play all this music, and it's like, "Wow!" All of a sudden they can hear it. And about six months later they put out a record called *Fleetwood Mac*, which sells four or five million copies and is a huge international bestseller. And then a year later they put out a record called *Rumors*, which sells nineteen million copies, and is at the time was considered one of the greatest rock

and roll albums of all time, and also, at that time, it was the bestselling rock and roll album of all time.

That story that I told you about Fleetwood Mac is a story that we've all heard, you know anyone who's ever watched *Behind the Music* on VH1 has heard that story a thousand times. This is how bands start: group of scruffy teenagers get together, somebody does too much drugs, gets kicked out of the band, they bring in a new band, the drummer flips out, they get rid of the drummer, you know, and somehow they tour around, they play all these kind of, these little, decrepit bars here and there, and somehow they get a lucky break, and you know, boom! I can give you a million examples, but let's think of another contemporary band to Fleetwood Mac, The Eagles. It's the story of the Eagles. Eagles are a band that's playing back up for Linda Ronstadt, and they need a drummer, so Glenn Frey calls this guy named Don Henley who he know from the Troubadour in L.A., and then they try one producer, and they get rid of that producer, and they bring in this guy named Don Felder, and they fire this guy named Bernie Leadon, and they bring in this guy named Joe Walsh, and they tinker with all these combinations. And they get it right, and they play all these dingy bars, and then, boom, they're The Eagles. One of the biggest selling bands of all time.

But, on closer examination, the story of Fleetwood Mac is not at all like the story of The Eagles. In fact, they couldn't be more different. If you listen to an early Eagles album, most of you in this room are far too young to have done this—I would caution you against listening to The Eagles without adult supervision—if you listen to one of the early albums like, one of the early songs, like Desperado, you hear the Eagles sound. Right from the beginning there is something distinctive about that band, and it's present from the very first moment the band is formed. The musical concept that defines The Eagles is there from the beginning and carries through all of their music. Now they evolve: they go from being a country rock band into being much more of a rock and roll band, but it's still unmistakably the Eagles sound that's present there in the beginning.

If you listen to Fleetwood Mac, from the beginning, though, you don't get that. The very beginning, Fleetwood Mac is basically a blues band, they're blues purists. They are white English guys playing what they think are those authentic American black blues, right? Then they turn into a kind of party band for a while, and for a while this guy Jeremy Spencer, he used to do Elvis Presley imitations, and he used to hang condoms filled with milk from the buttons on his guitar for reasons I've never really understood. They used to do rock and roll parodies for a while, then they come up with this, "Albatross," that I mentioned. It's an instrumental, which is a kind of Caribbean reggae kind of song. And then for a while people would talk about Fleetwood Mac as being a progressive band. Then there was a period where they were really renowned in England as a band that played really, really loudly. That was their....Then Bob Welch, who was the first American to join the band, joins the band, and they become a kind of country, California sound kind of country, country rock band. Then they move to California and they put out an album called *Heroes are Hard to Find*, which really is the California sound, that was very, very big in the nineteen seventies. So what you have is a band that, if you listen to the early Fleetwood Mac you hear nothing at all like the late Fleetwood Mac. There is no common musical element that runs through the development of that music. They're all over the place, right? They're here, there, boom, boom, boom, and they end up way over here with this sort of California sound. They made things up as they went along. They didn't have a clear concept that guided them through from their earliest stages.

The Eagles, furthermore, had a big hit immediately. Their first record is a gold record. Their third record was a greatest hits album, which is a sign of just how much chutzpah they had. But that record is, to this day, the greatest selling record of all time. Their fourth record is considered their finest achievement, it's *Hotel California*, right? Their creative peak. Well their fourth record comes out in 1976, four years after their first record. They go from zero to sixty, in other words, in four records. They hit their absolute apotheosis.

Fleetwood Mac is formed in 1967. All of those years of experimenting with different styles and different members, and bringing people and firing people, mean that their

breakthrough album, *Fleetwood Mac*, was their fifteenth album. And their greatest achievement, *Rumors*, is their sixteenth album. So by the time that band becomes, you know, international superstars, the band's original members are literally onto their third marriage. They have kids in high school. Their hair is grey. They have IRAs. I mean they're not...nothing like The Eagles. The Eagles are multimillionaires by the time they're twenty-two years old. Right? The Fleetwood Mac story, in other words, sounds like the quintessential story of rock and roll, but it's not, because their isn't one quintessential rock and roll story. It seems like if you think about The Eagles and Fleetwood Mac that there's at least two.

Now, I tell you this long, slightly ridiculous story about Fleetwood Mac for a reason. And that is, there's a really wonderful book that's come out by a guy named Galenson, David Galenson, who's an economist at the University of Chicago. And he takes this question of, how ought we to think about...he doesn't use the example of The Eagles and Fleetwood Mac, that's me...but how we ought to think about prodigies and late-bloomers very seriously. He examines this question by looking at the art world. And what he decides to do in the mid-nineties, he sits down, he decides he wants to do some analysis of great artists. And the way—he's an economist—the way he decides to analyse great artists is to look at the value of their paintings. How much money do their paintings reach at auction? There's a big record called the [Guide Mayer] which is this big Swiss volume, which records precisely what's paid for every painting at all the major auction houses of the year, and he basically goes through this thing, combs through it and does these very, very complicated regression analyses based on the size of the painting and when it was painted and how much was paid for it, et cetera. And using this whole kind of thing, he analyses the value of the paintings of famous artists. And he comes up with this really interesting conclusion, which is that, if you do that kind of analysis, looking at the value of paintings of famous artists over the course of their career, what happens is they divide quite neatly into two groups. There's a group of artists that do their greatest work very, very early in their career, and then their value declines, and there's a group of artists who do their very best

work at the very end of their career, right? The very end of life. In other words there isn't a kind of single profile of what it means to be a successful artist; there's two.

Now the classic example he gives of this is Picasso and Cezanne. What he does is age/price analysis for Cezanne. What he finds out is that Cezanne produces his highest valued paintings at the age of sixty-seven. And the value of a painting done by Cezanne at sixty-seven is something like fifteen times greater than the value of a painting done by Cezanne in his twenties. So if we graph the value of Cezanne's work, it looks like this. If this is his age, and this is money, it looks like this, right? Then he looks at Picasso, and he says, wait, Picasso's totally different. With Picasso, his highest valued paintings are done in his mid-twenties. The value of a painting done by Picasso at the age of twenty-six is something like four times the value of a painting done by Picasso in his sixties. His age/price profile is exactly the opposite of Cezanne's. It looks like this. So now we've got two groups; we've got the Picasso group and the Cezanne group. And then he says, okay, maybe there's something misleading about auction values. Let's look at other indices of how we value artists. So he looks at...when we look at the major art textbooks, in France and America, what are the paintings that are most often reproduced? In other words, what are the paintings that art critics feel are the most important representations of a particular artist's career? What he discovers is, if you look at all of the paintings that are reproduced of Picasso's in art textbooks, almost overwhelmingly, they are paintings done in his twenties and early thirties. And only a small fraction of the paintings that we ever reproduce in our textbooks are of things that Picasso did past the age of about forty-five. With Cezanne it's the opposite. Six percent of the illustrations are of paintings done in his twenties, and half are of art done past the age of fifty.

Now these two guys are kind of the perfect illustrations of this phenomenon of the late-bloomer and the prodigy. But, Galenson argues, you could divide an awful lot of famous artists into these two groups. So he says, look, Pissarro peaks at forty-five, Degas at forty-six, Kandinsky at fifty-two, Georgia O'Keefe at forty-eight. Munch, on the other hand, does his best work at thirty-four, Derain at twenty-four, Braque at twenty-eight, Juan Gris at twenty-eight, and de

Chirico at twenty-six. He says look, there's real differences in the shape of the careers of these artists. It is not the case that there is such a thing as an artistic prime, right? There's two primes. There's a group that peak early, and a group that peak late.

Now why is this? What's the difference between these two groups? And here's where Galenson's argument starts to get interesting. He says, look, if you examine the way these people create new ideas, the way they create art, you see some profound differences in their approach, in the way their mind works, the way that creativity shapes their art. He says that late-bloomers are what he calls experimental artists. These are people who are motivated by aesthetic considerations. Their goals are kind of very, very imprecise. They don't plan anything in advance, they work sort of by trial and error. They do endless iterations of the same idea. They're constantly redoing and redoing and redoing in this kind of poking around and trying to find something, work toward some kind of distant, imprecise, and badly understood goal. They're searching, in other words, for what it is they want to create, and that searching can very often take an entire lifetime.

Prodigies, on the other hand, tend to be much more motivated by the desire, according to Galenson, to communicate ideas. They're conceptual in the way that they think. They can state their goals very precisely before they start a work of art. The act of painting for them is all about the act of transferring something, some well-realized idea, from one surface to another. The work of experimentalists like Cezanne often kind of complicates and deepens our understanding of something, but conceptualists, people like Picasso, tend to simplify the field that they're a part of. They work very quickly and systematically.

There are some really wonderful quotes that Galenson finds that illustrate the difference between these two styles. Here's the art critic, Roger Fry, talking about Cezanne: "For him, as I understand his work, the ultimate synthesis of a design was never revealed in a flash. Rather, he approached it with infinite precautions, stalking it, as it were, now from one point of view, now from another. For him the synthesis was an asymptote towards which he was forever approaching without ever quite reaching it. It was a reality incapable of complete realization."

That's very much the way that experimental artists are working, they're kind of groping towards something they can't quite define. Now here, by contrast, is another art historian talking about Picasso: "There was not one Picasso, but ten, twenty, always different, unpredictably changing. And in this he was the opposite of a Cezanne, whose work followed that logical, reasonable course to fruition." Cezanne famously said, "I seek in painting." What did Picasso say? He said, "I don't seek, I find."

So Galenson says, look, there's two clearly different, and in many ways opposite, ways of thinking, of using creativity that's expressed in these two people. And he goes through and he starts saying, look, we can in fact divide much of the art world on this. And he looks, for example, at the abstract expressionists and points out, you know, you've got a group of older abstract expressionists like Rothko and de Kooning and Jackson Pollock—they're all guys who peak in their fifties and in some cases in their sixties. It's a long time to work out their method. And then you've got this younger group, you know, Stella, Lichtenstein, Rauschenberg, Jasper Johns, Andy Warhol, who peak, on the contrary, in their twenties, and who have a radically different way of explaining their art, and of doing art and of thinking about art, and that look at the older generation of abstract expressionists and think of them as being kind of anti-intellectual, as being kind of mere painters, not kind of thinkers who are possessed of an idea and a concept of how to do art, but guys who are kind of mucking around with paint. When Stella, is it Frank Stella? (Thanks for that. I also think, am I confusing him with some Mafiosi from Chicago in the twenties?) Frank Stella has a retrospective at MOMA at the age of thirty-three. And the great art critic Harold Rosenberg is incensed—how could you possibly have a retrospective when you're a kid, right? A child in the art world! Well, Rosenberg said that because he was used to, he grew up in the experimental tradition of abstract expressionists, in a tradition said that you reached your greatest form as an artist after a lifetime of searching for some kind of artistic form. But here was someone that belonged to a profoundly different tradition, a tradition that allowed someone to do great work, right? to express their greatest

creativity really, really early on in life, and that was something he couldn't accept. [Like] it's a classic clash between these two kinds of thinking.

Now Galenson then says, okay, we can also play this game with writers, right? So now he starts to go through the canon of famous writers and says, all right, what's Mark Twain? Well Mark Twain is someone, a novelist, who works very much like Cezanne. He sort of...if you look at the way in which he wrote novels, he worked very, kind of fitfully and accidentally and disjointedly, and he would start things and stop things and he would try out certain things and he produces his greatest work at the age of fifty. Right? On the other hand, take someone like Melville. Melville produces his greatest work at the age of thirty-two and it's this beautifully-realized gem that kind of falls into the American canon, right? *Moby Dick*. Or F. Scott Fitzgerald is someone who produces his best work in his twenties. Same thing: doesn't work at all in the way that Twain works in those kind of stops and starts, and you know he's working in, he's producing something that's sort of clean and conceptual and easy to understand and explain. He's much more like Picasso.

Or you can see it more clearly in film. I think the best example in film is the difference between Orson Welles and Alfred Hitchcock. These are both giants of cinema. But Orson Welles does *Citizen Kane*, considered one of the greatest movies of all time, at the age of twenty-six. He's a kid, right? And after he does that he's done, basically. He does a couple of other things, but he's never as good as that, right? How old is Hitchcock when he produces his masterwork, which is, arguably, *Vertigo*? He's fifty-nine. He produces that masterwork after a lifetime of trying various styles and working within that thriller genre of steadily and slowly and carefully and painstakingly increasing his, improving his technical skills, his understanding of the medium, his ability to express his ideas, until what would be considered, I think, by almost any description the end of his career, he finally produces his masterwork, *Vertigo*. Hitchcock is the exact opposite of Orson Welles.

So Galenson, if he was looking at Fleetwood Mac and The Eagles, would never make the mistake of thinking they were both examples of the same phenomenon, right? The Eagles are

Picasso. And Fleetwood Mac is Cezanne. I realize that is the first time in history that those two sentences have been said.

Now, what should we make of this, right? I've just given you this guy's theories about how we can organize creativity. Since I read this book I've been trying these theories out on friends of mine and I get one of two responses. One response is, That's really cool. And the other response is, That is such ridiculous nonsense. I in fact wrote up since this [...] I can tell you that I wrote up a form of this argument as an article for the *New Yorker* and submitted it to my editor, Henry Finder, who just rejected it—the first article that I've ever had rejected at the *New Yorker*—saying, “You buy this Galenson stuff? What are you, crazy?”

People have strong reactions to this stuff, and I think, understandably, right? I mean, any time sophisticated people are confronted with any kind of binary system which tries to divide the world up into very kind of neat, clean categories, we object to it. We say, well, I'm not so quite sure that so and so belongs in this category. Fine. Let's just put that aside, though. And I want to invite you to play with this idea for a moment. Because despite the fact that, sure he may be over-reaching, and sure we can't really put everyone into two categories, I think there's something very interesting and important to be learned about the way our minds work by entertaining this notion that there are two very different styles of creativity, the Picasso and the Cezanne, the Fleetwood Mac and the Eagles.

For example, there is a notion, a part of our kind of conventional wisdom, is that we do our best work, our best creative work, when we're young. Right? And that notion is based on the idea...you often hear people say, you know, if you haven't done your great novel by forty, it's not going to happen. If you haven't written your great theorem by twenty-five, you might as well forget it, right? We have this notion in the back of our head that truly great creative acts are really the kind of province of the young. And behind that is an idea that creativity is a kind of reservoir that we draw down over the course of our life, and we have greatest access, we have the greatest creative resources when we're in our twenties, and after that it's kind of...we slowly and steadily run out of steam.

Well Galenson takes a look at that idea and says, that's nonsense. Where does that come from? It doesn't make any sense. It doesn't accord with what we understand about the creative products of very, very gifted people. So he takes, for example, one of the big theories along these lines is if you're a poet, a lyric poet, you basically do your best work when you're young. Right? One sort of has that notion. He says that is completely and utterly ridiculous. Here are the top ten most anthologized poems in the American canon. Now, we're the number of times something is anthologized as a kind of rough proxy for how good critics think the poem is, okay? Here are the top ten: Eliot's "Prufrock," Lowell's "Skunk Hour," Frost's "Stopping by the Wood on a Snowy Evening," Williams's "Red Wheelbarrow," Pound's "The River Merchant's Wife," Plath's "Daddy," Pound's "In the Station of the Metro," Frost's "Mending Wall," Stevens's "The Snowman," and Williams's "The Dance." Those poems were composed at the ages of twenty-three, forty-one, forty-eight, forty, thirty, thirty, twenty-eight, thirty-eight, forty-two, and fifty-nine, respectively. There is simply no evidence for the notion that poetry, the best poets, is done by people who are young. Look at that list. Some poetry is done by people in their twenties. Some poetry, some great, indisputably great poetry, is done by people in their forties and fifties, right? It just depends on the kind of poet the person is.

So I think one really valuable thing that Galenson's idea does is rescue us from the kind of biological determinacy that sometime grips us, that says that, once we pass a certain age, we're done. The other really interesting thing, I think, that Galenson does is it helps us to understand organizations, about the way in which organizations think. So, for example, think about Apple and Dell. Both Apple and Dell are examples of highly innovative, creative organizations, right? I think everybody would agree with that. But they really couldn't be more different, right? Well, Galenson helps us to understand the way in which they're different. What is Apple? Apple is a company that over the course of their life have come up with a series of really brilliant conceptual breakthroughs that changed the way we experienced technology. Starting with the Macintosh, which does the personal computer, and then the Newton, which

really starts the whole PDA thing, and now, most famously, with the iPod, right? Those are conceptual innovations. Apple is Picasso.

What's Dell? Dell is Cezanne. Dell doesn't come up with bold new ideas that instantly transform the way we use technology. No, they take someone else's idea, and they perfect it. They make it cheaper, they make it better, they make it more reliably, they sell it to you really, really easily, you can call them up and you can say, "I want this, this, this," and it's on your doorstep tomorrow morning, right? It's a very different kind of innovation. Just as important, right? But something that takes a lot longer to master. They represent this other style of innovation.

Or consider the question of...why is it that only Japanese automobile manufacturers have managed to produce hybrid engines? A question that a lot of people have asked in recent years. Why didn't Ford, GM, and Chrysler produce a hybrid? Well one answer is to say, well the problem is that the big three auto makers just aren't very innovative. They're not creative, right? They can't come up with this stuff. Well, if you think about that, that's not true. They're in fact profoundly innovative. In fact, over the last twenty-five years, there have been a series of absolutely brilliant ideas that have come out of Detroit that have made them billions and billions of dollars. In the nineteen sixties they came out with the idea of the muscle car. In the nineteen eighties they invented the minivan. In the nineteen nineties they really perfect the SUV. Those three ideas made the big three auto makers, among them, tens of billions of dollars, right? Untold amounts of money. Kept the whole enterprise afloat. And these are legitimate ideas, they fundamentally transformed the way that we relate to automobiles, the way we think about what it means to drive a car, right? But they're conceptual ideas. Think about it. They're Picasso-like ideas.

Well, what's the hybrid engine? It's not a conceptual breakthrough at all—the idea of having a hybrid, and engine made up of an electric motor and a gasoline motor, has been around for a hundred years. The first hybrid engine was nineteen-ten, by Ferdinand Porsche, right? There's nothing breakthrough or innovative about that idea. What makes that engine work today

is a lot of incredibly difficult, painstaking engineering. Because the hybrid engine is a problem, which is you've got two engines that have to behave like one. And you can't have an engine... [and when] you're driving a hybrid engine it goes back and forth between the electric motor and the gas motor, right? The big trouble is, can you make that engine so that the transition from one motor to the other is seamless? You can't have an engine that has all kinds of jolts and jumps and stops and starts—it has to *feel* smooth. Well, working out that feeling of smoothness is incredibly difficult. It takes years and years and years of incredibly painstaking, patient, careful engineering.

So why have the Japanese been able to master that and the Americans haven't? Well, because the Japanese define their creativity very differently from us. They're not looking for the big breakthrough idea, they're not Picasso—they're Cezanne. They think of what it means to be creative as to sit down and work out a problem very carefully and slowly and cautiously and painstakingly through trial and error over many, many, many, many, many, many years, right? And if you look at the kinds of things that Japanese auto makers have done, over the last twenty-five years, all the things that they've mastered in cars, they've made cars cheap and safe and reliable and they've mastered all kinds of engineering difficulties—those are all the kinds of things that you can do if you define yourself in Cezanne terms. We're going to tackle the big, amorphous, difficult problems that we don't really know where we're going to end up when we start. Right? The difference between the Japanese auto makers and the American auto makers is over a difference in creative style. And what we are seeing right now in one way, with all the troubles that Ford and General Motors are having, is a crisis of that creative style, the inability of people who have depended, over the course of their career, on coming up with the next big idea, the inability to come up with another big idea, right? They're out of ideas. And if you're in the Picasso business and you run out of ideas, you're done, just like Orson Welles was done at twenty-six and Melville was done at thirty-two.

Now, is it better to be Cezanne or Picasso if you're a car company, or if you're in the car business? Well, from our perspective, they're equally good. We want both. We want to have the

people around who come up with the big ideas, who invent the iPod, but we also want to have the people around who take that big idea and make it simpler and cheaper and more reliable and deliver it to our doorstep the next day, right? Both of these creative styles are absolutely central for any kind of field. You want Orson Welles, but you also want Hitchcock. You want the fruits of both those kinds of thinking.

Now, the reason I bring that up is I think that, one of the things that troubles me about the world we're in right now is I think we have come to favour Picasso over Cezanne. For one reason or another we have erected barriers to this kind of patient, painstaking, trial and error model of innovation, and have chosen to embrace instead the Picasso model. Right? I started with the story of Fleetwood Mac and The Eagles, and that's a very apt story because if you talk to people in the music business today they will tell you that Fleetwood Mac could never happen today. And the reason that Fleetwood Mac could never happen today is that nobody would wait fifteen albums for a band to hit. These days, if your first album doesn't do well, you're done. In fact, these days if your...I was talking to some guy in the music business the other day who told me that he was working with a band...their second single didn't hit, and that was it. Boom, they're gone, right? Now, people don't have the patience anymore to wait around for ten years to see whether a band works out. They're going to pull the trigger the minute they don't see evidence of an instant success.

Now, I think that kind of trend is happening in many different fields. I think that when a novelist comes along and comes out with their first novel, if this novel isn't good we think, well they're not a good novelist, right? That's using a Picasso frame, right? When a movie opens and a movie doesn't do well on the first weekend we say it's not going to be a successful movie, right? That's using a Picasso frame. Right? Cezanne's first painting wasn't any good either. We think when we define a good student as someone who does well in high school, which is the way the American system works, right? That's using a Picasso frame. Where is it written that you have to master the art of learning and doing well on tests by the age of seventeen or you're not going to ever master it? Well that's a particular kind of mindset that derives from a particular

approach to the notion of creative work. If we take a step back and we say, well, not everyone's like that—some of us do our best work when we're in our sixties—then we wouldn't be so quick to write off the first novelist who fails or the movie that doesn't do well on its opening weekend or the student who just hasn't happened to have gotten it together by the age of seventeen.

We think when we place so much emphasis on early results in any kind of creative product that what we're being is more rigorous and more accountable, right? More disciplined. We're not. All we're simply doing is creating a system that is biased in favour of Picasso and biased against Cezanne. So that's the first difference between Picasso and Cezanne, the question of time: one idea takes longer to develop. There's a second difference, though, which I think is in many ways more important. And that is in the kinds of explanations that these different creative styles give for what they're doing. And I think this is a sufficiently important point that I want to detour from Galenson for a moment and talk about the work of Charles Tilly who is, of course, here at Columbia University, one of Columbia's great minds. And I say that because I have a friend of mine who I grew up with who is one of the smartest people I've ever met and he's now a professor at Harvard, and he tells me that Charles Tilly is one of the smartest people that he's ever met. So now we have a smart person on top of a smart person. So that's like smart guy, you know, smart people squared. Well, the only way to do better than that is if I was discussing Charles Tilly's smartest, favourite writer, which would be smart people cubed, which would be just about... anyway, the point is Tilly's really good. And if you have a chance to take a class with Tilly, you should do that now.

But anyway, he wrote this book, it hasn't come out yet, I just read it, and it's coming out very soon, and it's called *Why?* And it's a very small book, and he simply asks the question, he wants to understand the reasons we give to explain certain kind of phenomenon. And so he says, look, there's basically four kinds of reasons. The first kind of reason, he says, are conventions: "That's just the way it is." Right? You see two dogs fighting and you say, you shrug and you say, "Dogs fight." The second kind of convention, of explanation, are what he calls stories, right? And these are cause and effect narratives, personal cause and effect narratives. Those two dogs

are fighting because last week Sugar ran into, you know, Boxer at the dog place on Columbia and Boxer was like being a real jerk and Sugar hates him ever since. Right? That's a story. Then he says there's codes, and those are rules, laws, reasons, when we use as a reason for something, a formal law, a formula. So if we see two dogs fighting and they're part of a dog fighting ring, then we can say, well the reason they're fighting is because they have been compelled to do so by the laws of the game they're involved in, right? The last explanations are what he calls technical explanations and those are the kind of highest level, and they are where someone tells a story but it's an expert's story. So we say the reason we say those two dogs are fighting is because, you know, Boxer is a dominant dog who has this kind of genetic makeup, and the other one is a submissive dog for the following reasons. So we use expertise to explain, to give a reason for what's happening.

A good example of...tell me what was the name of the guy that Cheney shot? Was it Worthington? Or Huntington? Harrington? I can't hear you. Anyway, let's assume it's Harrington? I've forgotten. Whittington? No. Harry, let's call him Harry. That story is a great example of what I'm talking about, because that dude gets out of the hospital and what does he say? He says, "Oh, accidents happen." That's a convention, right? That's his reason: this is just an accident. Cheney at the press conference says, he was my friend, this has broken my heart and we have gone hunting for years. That's a story, right? That's his way of making sense of it, like it's a personal narrative, right? The police, when they investigate that, are interested in reconstructing what happened, and figuring out how far away was he from the dude in order to cause that kind of...right? Well that's a technical explanation. Let's reconstruct it and understand from an expert's perspective what happened. And then there are all the kind of, you know, liberal bloggers who are tremendously interested in the question of, did they call the cops when they should have called the cops? Why did they wait twelve hours? Well they're interested in codes. Was the law broken? Right? If we look at this from a legal perspective, did Cheney screw up? In which case, we're interested in that because we're out to get Cheney. Well, all of those explanations have something to do with your relationship to the incident, right? If you're Harry,

whatever his name is, if you're his family, you have to have a story. Any other explanation is an insult. It's cold and dismissive. If Cheney says, invokes a convention—accidents happen—if he says, if he uses a code—I did not break the law—right? or a technical explanation—well I was thirty-five feet away and I swung up and I just happened to hit him with my buck shot—none of that makes you feel happy as the aggrieved party, right? You want someone to say, we have a relationship, we care, right?

Now, if you're a Republican stalwart living in...I don't know where Republican stalwarts live, somewhere outside the island of Manhattan, what do you want? You want a convention. You're like, what are these people making a big deal about this? It's a hunting accident. I go hunting every weekend. I shoot one of my best friends every six months. What's the big deal, right? For you, any other explanation is meaningless and irrelevant. If you're, on the other hand, one of these liberal bloggers, who are really upset at Cheney and want to get him, all of the other explanations are totally beside the point, right? The convention or the story or the technical explanation, look, they are all ways of dodging the central issue here, which is that this guy thinks he's above the law, right? For you, because of your relationship, antagonistic relationship to Cheney, the only reason that matters is the code. So what Tilly argues really wonderfully in this book is that, depending on our relationship to what's going on, we need, we require, we demand certain kinds of explanations, of reasons, right? And we have to match the reason to the situation we're in, and if we don't match the reason to the situation there are all kinds of consequences.

Now I think that this is really interesting in the context of Picasso and Cezanne because it goes to the second of the big differences between those two people. If the first is the amount of time they take to reach their peak, the second is that they have very different relationships to reasons why. The Picasso people can tell you precisely what they're doing before they're doing it. They have theories. They have explanations, right? I am setting out as an artist to do x, y, and z. They have the ability to explain before they act. Here's a wonderful quote from Galenson. He's talking about the younger generation of abstract expressionists:

These younger artists plan their work carefully in advance. Frank Stella explained, “The painting never changes once I’ve started to work on it. I work things out beforehand in sketches.” Roy Lichtenstein prepared for his paintings by making drawings from original cartoons then projecting the drawings on a canvas and tracing those projected images to create the outlines for the figure in his painting. Although Lichtenstein’s cartoon paintings are very different from Stella’s, in 1969 Lichtenstein specifically compared the central concern of his work to Stella’s: “I think that is what’s interesting people these days, that before you start painting a painting, you know exactly what it’s going to look like.”

And Galenson makes the point that a lot of these guys who were part of the kind of Picasso camp, conceptualists, would have their assistants actually do the painting. Warhol had his assistants do all that kind of stuff. Why did he do that? Not because he was lazy. But for someone who thinks that way, who can describe precisely what they’re going to do before they do it, who has a carefully worked out theory, the idea is everything, right? And the actual production of the painting is just that—it’s production, it can be outsourced. There’s no necessary connection for the artist.

Now, experimental painters, on the other hand, aren’t theory driven at all. They can’t explain to you what they’re doing—they don’t know what they’re doing. They do it as they do it, and it all works out as they kind of experiment through trial and error as they go along. And if you think about the conceptual painters as giving technical explanations, as being able to provide technical explanations for how they proceed as artists, the experimentalists can’t do that at all. All they can do is conventions, right? If you ask Cezanne, why do you paint the way you paint? What would he do? He would shrug and say, you know I paint what I see, I paint what I feel, right? That’s as good as he can get. He can’t deliver that degree of specificity in his explanation for why he behaves the way he behaves.

Now, in the world of art this doesn’t matter that much, right? We don’t really care about the explanations artists give for their work. We care about the work, right? But I think that when

you move outside the world of art, and you move into much more kind of common sense, not common sense, much more...betrayed my biases there for a moment...when you move outside the world of art, the rules change somewhat, and those explanations really do matter. I think this is another way in which we've stacked the deck in favor of the kind of Picasso style and against the Cezanne style.

Let me give you an example from the pharmaceutical world. Historically, when you looked for a new drug, what you had is you have a huge compound, you have a huge library of chemicals, a hundred thousand chemicals, and then you have a little, you develop a laboratory model of a disease, you put some cancer cells in a dish. And you run all hundred thousand chemicals past the, try them out on the cancer cells, right, and you see, do any of these chemicals kill the cancer cells? And if they do, you go, "Great, I got a drug." It's a fishing expedition. And if you try and ask somebody in that situation to give an explanation for what they're doing they'll give you a convention. They'll say, "Well, what we do at our drug company is we get a lot of very smart people together and we let them basically go and look for drugs." Right? That's a conventional explanation, right? They can't be any more specific than that because they don't know what's going to work. They're going to test it out in the real world and see. We're going to use, we're just going to observe, and if we find something, great, we'll roll with it.

Well, there's another way of looking for drugs. In the nineteen eighties scientists became convinced that they had unlocked the secret of a kind of leukemia called Chronic...I never know how to pronounce this...Myelogenous Leukemia. CML, it's called. CML's caused when one of your cells goes bad and it produces a protein called BCRABL, and BCRABL causes your white blood cells to run amok. They understood this, they realized this is precisely how this cancer develops. So there's a guy named Brian Druker and he called around to, guy who knew what to do, called around a bunch of pharmaceutical companies, and he says, do you have any compounds that specifically stop BCRABL? And he got a call back from Novartis, and they said, we have got something. It's called STI172. And so Druker took STI172 and he got together with Novartis and they spent a couple of years perfecting it in the lab and they took it out and did a

safety trial on a group of people with CML, and they discovered when they finished the trial that ninety-eight percent of them had no more cancer after the trial was over. They gave it to the FDA and the FDA whisked it through in two and a half months, the shortest time ever in the history of FDA approval. And that drug today is called Gleevec and it's the most famous of all the cancer drugs. And it's a genuine example of an extraordinary invention, right?

Gleevec is an example of what's called targeted drug design. And it's very, very different from that earlier model that I talked about, right? Now before we start we don't just go on fishing expeditions, we describe precisely what we're going to be doing when we look for this new drug. We've got a model of the disease, we're going to look for this particular thing that shuts down that particular thing, and we're going to find, you know, it's all very precise. It is a technical explanation of how we're going to proceed in the course of looking for this drug.

Now, in the world of business, unlike the world of art, the difference between these two models, between being able to give a conventional explanation for what you're doing, and being able to give a technical explanation, really, really matters. Right? It's hugely significant. The person who can stand up in front of a roomful of investors, if this was a venture capital conference, right? and I'm trying to sell you on my new drug company, my little biotech company based in the West Village, if I came up here and I said, I would like you to give me—by the way, new drugs cost about five hundred million dollars to come to market—so if I got up here and said, I would like to get five hundred million dollars for my drug company. And what my drug company is, is it's a group of really smart people, and we're going to go looking for drugs, right? Then somebody else comes up here and says, I have a little drug company down in the West Village, and it's a group of people and we are proceeding against BCRABL, and we have a compound that we think precisely targets this rogue protein, and we believe we can shut down Chronic Myelogenous Leukemia like that. Right? Who are you going to fund?

Well, you're going to fund the person that's got the technical explanation, right? With that much money at stake, you're absolutely biased in favour of the person who can give you a greater degree of certainty about how all those millions of dollars are going to be used. Right?

There's a case where the explanation really, really matters. When there's all that kind of resources at stake. In that kind of situation, as stakes rise, in the real world, Picasso gets much more of an advantage over Cezanne. Technical explanations get much more of an advantage over conventional explanations.

Now is that a good thing? Well, sometimes it is. But the truth, if you talk to people in the drug world, is that you can't always provide a technical explanation for what you're doing. We don't understand the body well enough to know that. The body is mysterious. We don't know everything as well as Chronic Leukemia. CML is actually an anomalous situation. In most cases, what we're doing when we come up with a new drug that really works is we were just kind of rooting around and we ran across something by accident. Tylenol, someone was telling me recently, we still do not understand completely how Tylenol works. You didn't have an explanation first and you found Tylenol. Somebody was rooting around with a bunch of chemicals, found something that seemed to work really well, and now, years later, we still don't know why. If you require someone to know why before you start looking for a drug you will never come up with Tylenol.

Someone was telling me about another good story this is Lipitor, one of the world's most important and bestselling drugs. Lipitor was found initially by a group of Japanese scientists who were looking for a new kind of antibiotic. Lipitor is a drug that lowers cholesterol. They thought, well, bacteria feeds on cholesterol, if we lower cholesterol then maybe we'll defeat, you know, infection. Well, turns out it doesn't really work. But along the line, they're like, but wait a minute, this thing really lowers cholesterol. And they thought, Oh, maybe we should use that against heart disease. Duh. And you end up with Lipitor, one of the greatest selling drugs of all time.

There again you don't have an explanation going in, right? What you had was a convention. We got some smart guys in Japan, we got a lab, they're doing some great work, right? And we'll go with whatever they find. If you insist on an explanation beforehand, you will lose the opportunity for that kind of serendipitous discovery, which is so much a part of the

creative process. Or I think that you can extend beyond that to all kinds of creative fields. I think it's very important for us to understand there's nothing wrong with conventional explanations. It's much easier for us to favor the person who comes in with a story all worked out beforehand because it sounds like they're more serious. It sounds like they're more rigorous. But in many cases they're not. They are simply telling us a convincing story, and we have to be able to trust people who come in with a conventional explanation.

I guess what I'm arguing for in the end is some kind of balance between these two modes of creativity. I think we have to create a place at the table for Picasso, but also for Cezanne. It's awfully tempting to demand certainty in everything that we do, and in all the reasons people give for their actions, and it's awfully tempting to favor the people who peak quickly, and not over the people who take a long, long time to reach their creative peak. And I think the world is making it harder and harder for us to remember the role of the Cezannes. But I think we should keep in mind whenever we have these impulses, and feel pushed towards the carefully worked out stories and pushed towards those who peak really soon, we should keep in mind the story of Fleetwood Mac. They started out and they made fourteen albums which nobody listened to and nobody bought, and which were, quite frankly, terrible, before they created two of the greatest albums in rock and roll history.