Selected Topics in Psychology
Neuropsychology
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Art and the Brain

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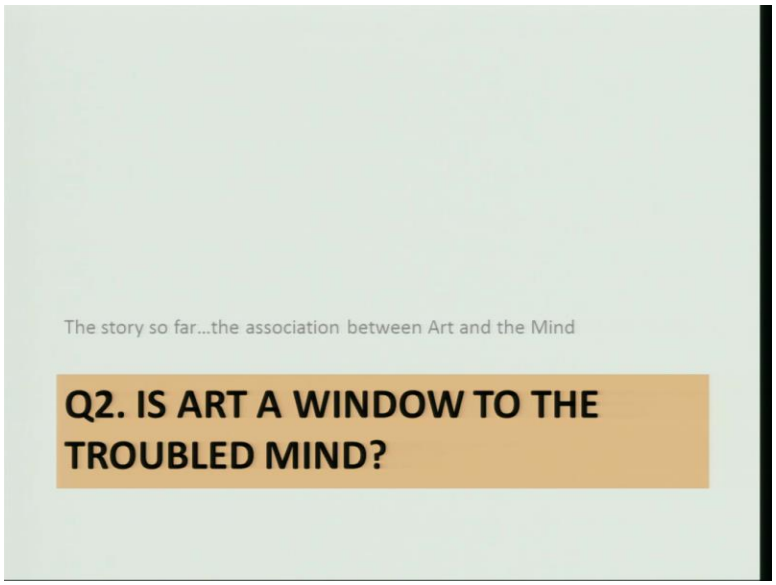

Now, question number 2; I am going to give you of certain examples, is art a window to the troubled mind?

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For a long time we have used art as window to try and understand, whether people are having difficulty.

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We people have used art to imagine things, read something you have to imagine.

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And sometimes your response is to what you see, might evoke or might give somebody an idea of what you are suffering.

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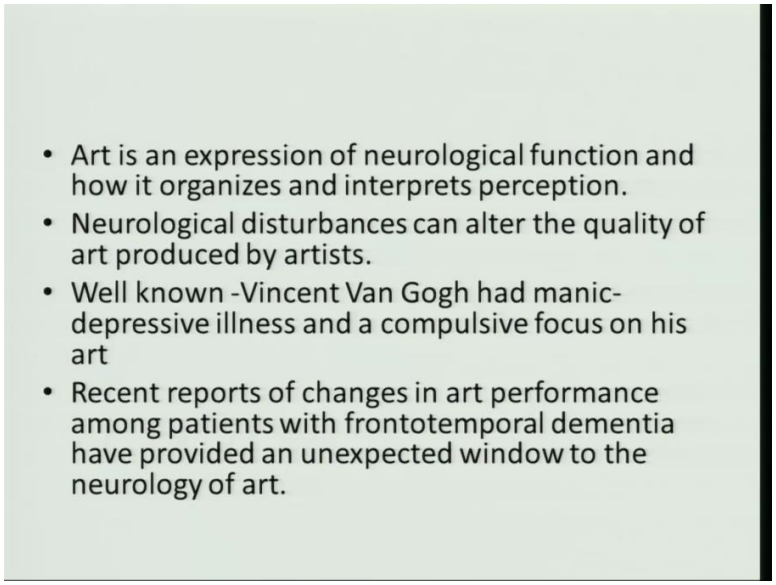

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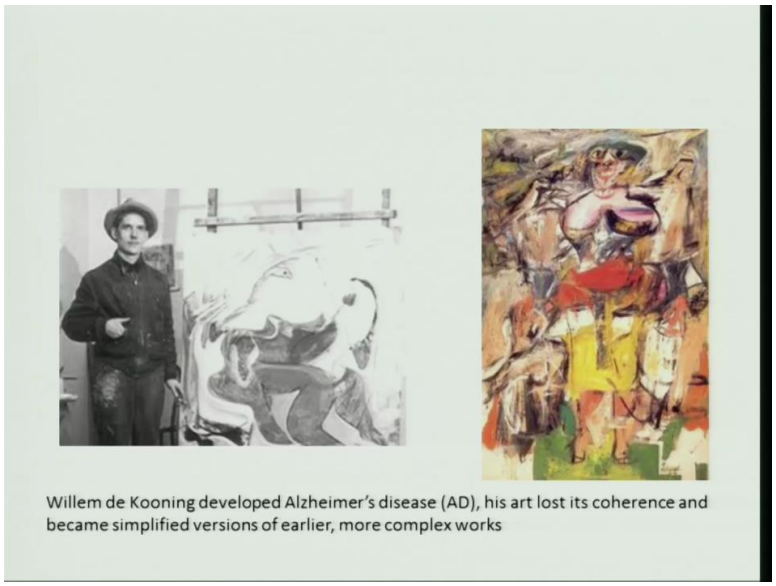

Let me just go to, this is an art is called Willem de Kooning, have heard of Willem de Kooning. He was abstract painter; Willem de Kooning developed Alzheimer's disease. And he first started by doing this kind of painting, I thought I had a better painting. He initially would draw like this and as he develop Alzheimer's painting. His painting lost its coherence and became less complicated.

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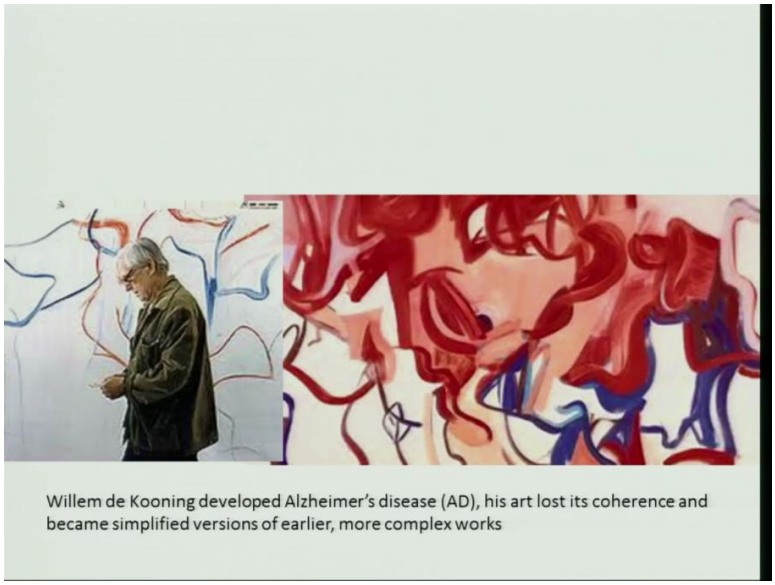

And towards older life as you see, this painting becomes less and less and less coherent.

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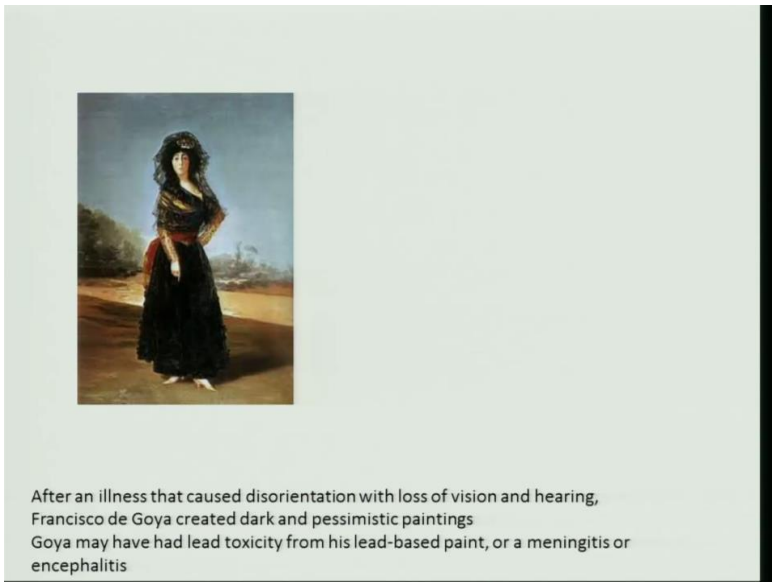

Goya Francisco, Goya started off painting like this and as he grew older he started getting loss of vision, loss of hearing. And he probably developed mental illness, because of lead toxicity which probably came lead paints white paints that they used and he started doing this which was more darker and darker and darker and darker.

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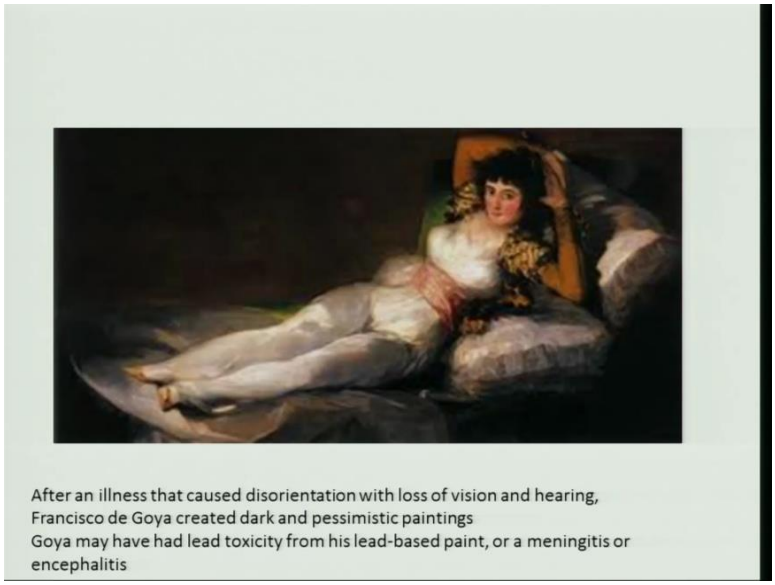

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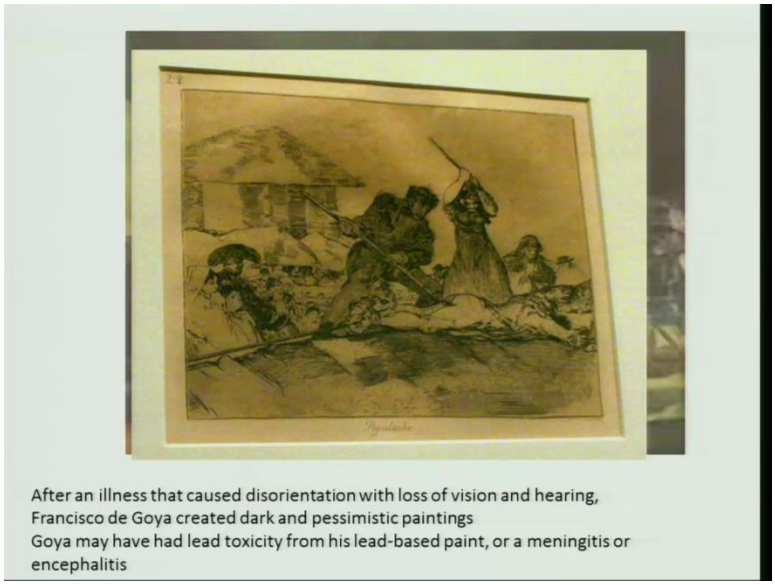

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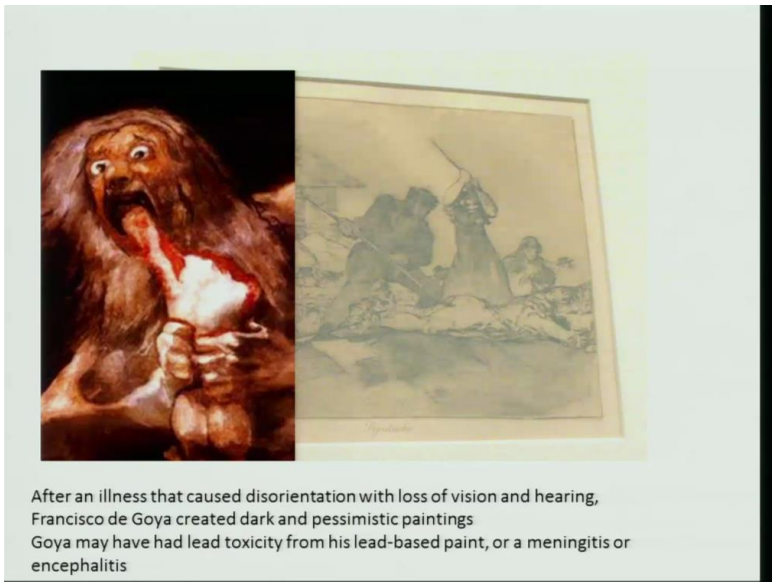

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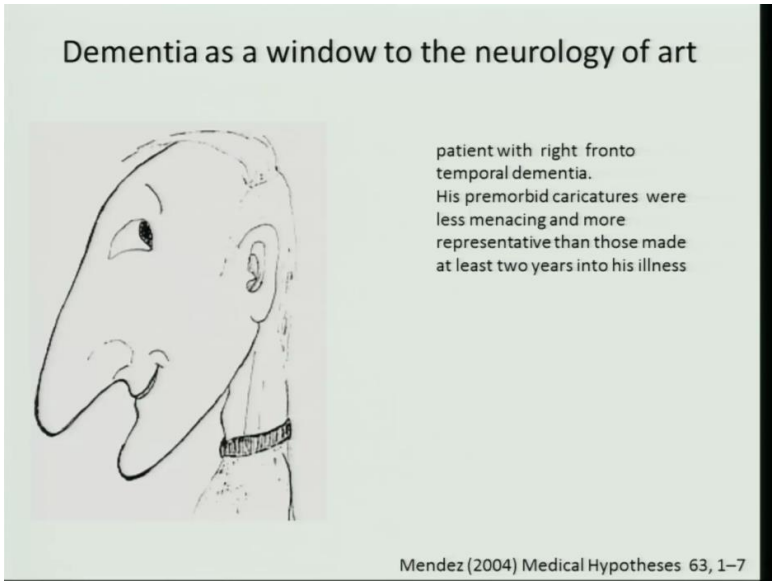

This is a patient with a particular kind of dementia and he started off when his dementia was undetected by painting this. And the doctor who was seeing him got him to paint this throughout his illness until he died.

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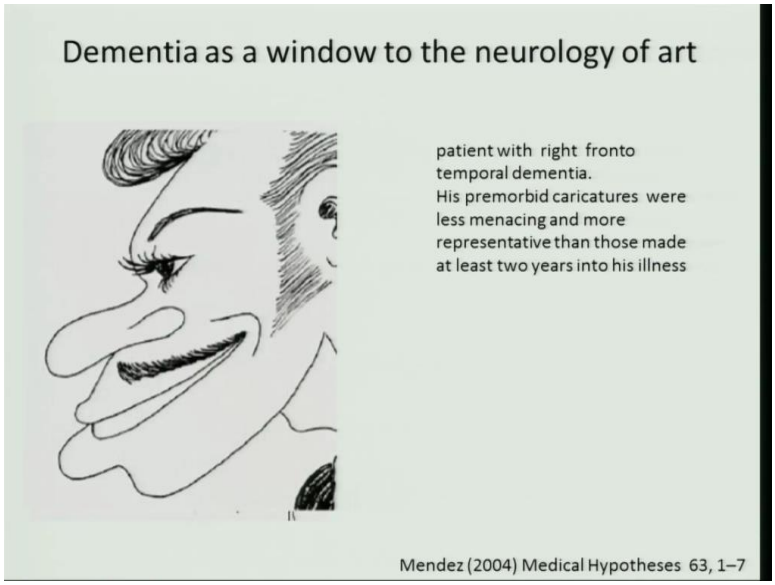

And this is his original cartoons which became more and more menacing as his illness progressed.

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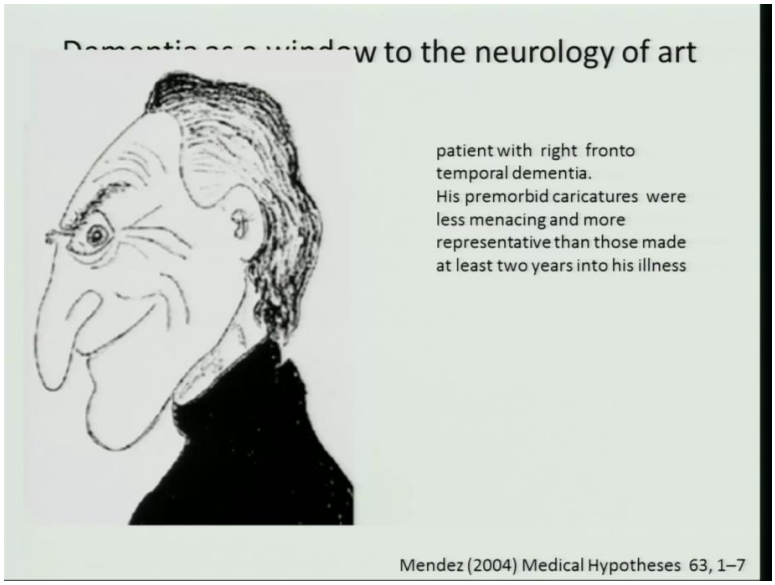

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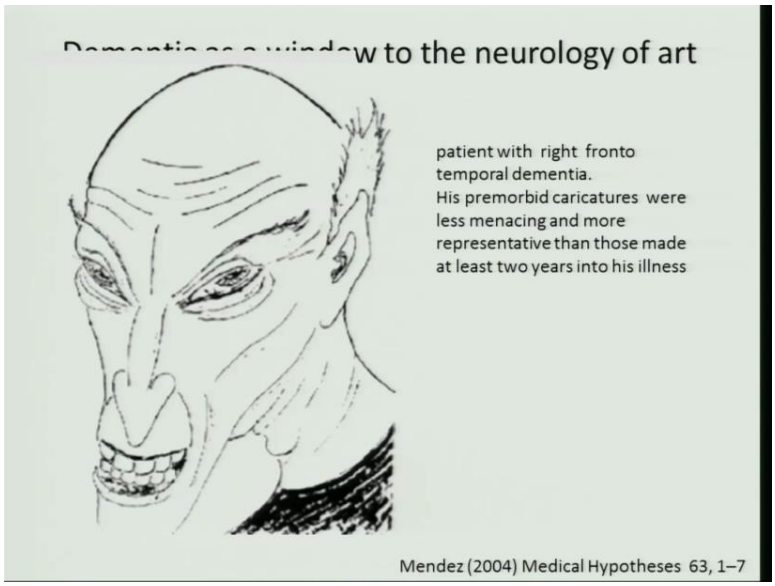

These were his caricatures of self.

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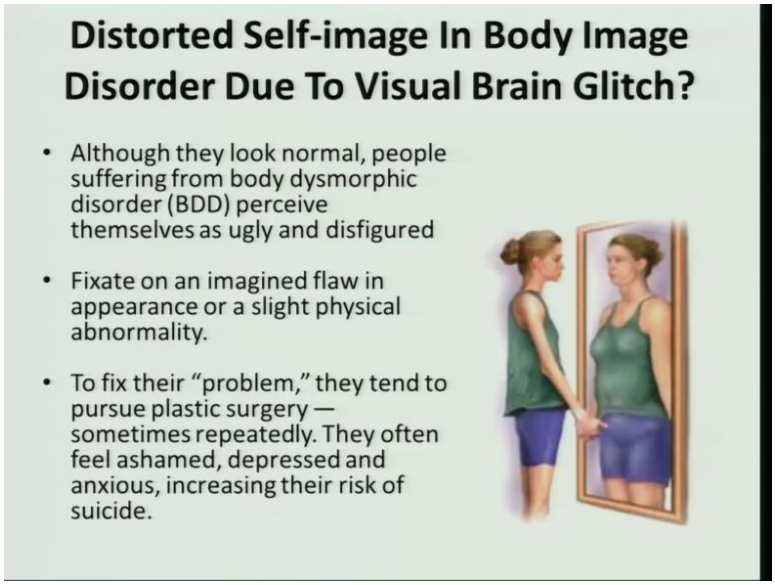

Similarly, we aware that people who have body image disturbance and I am not go into the new science, but they perceive their body differently.

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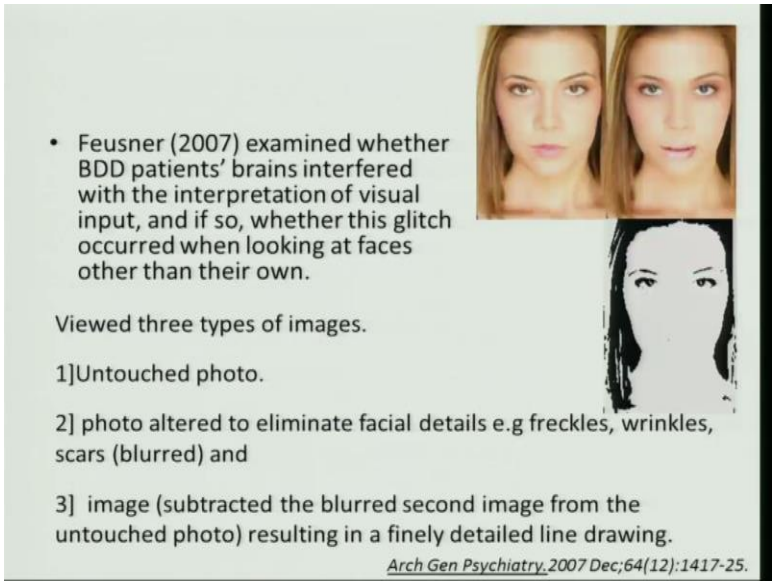

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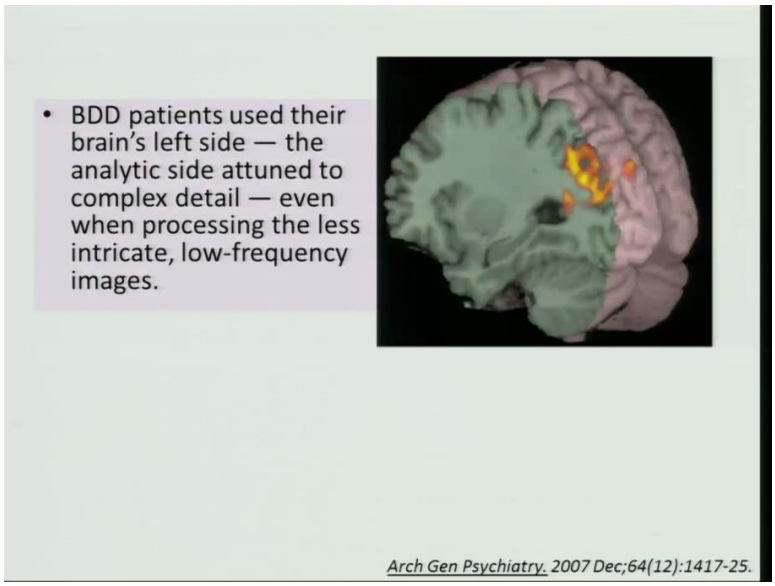

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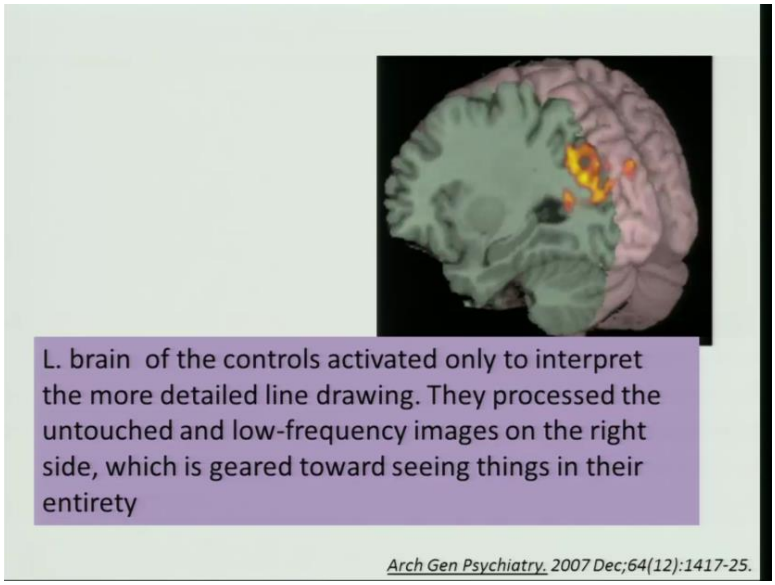

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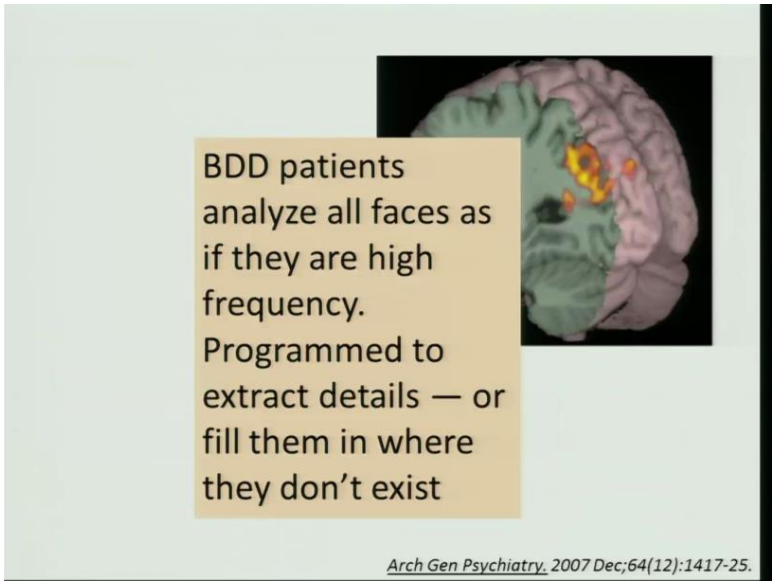

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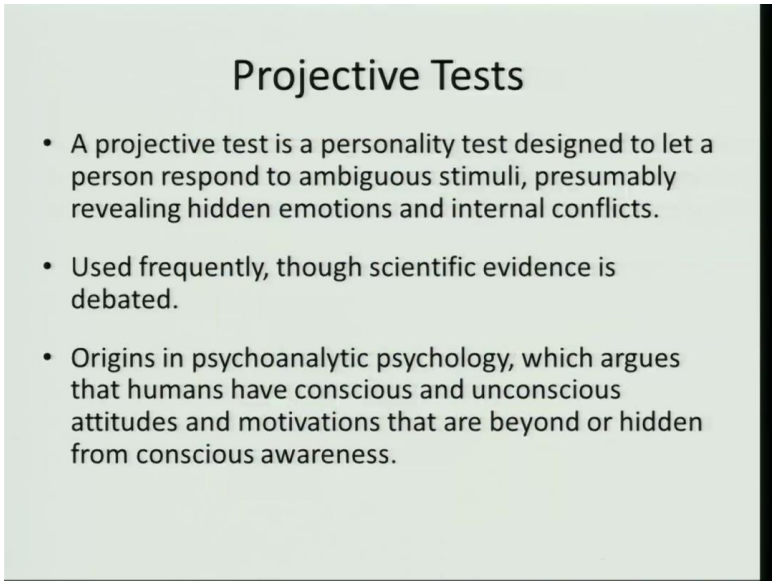

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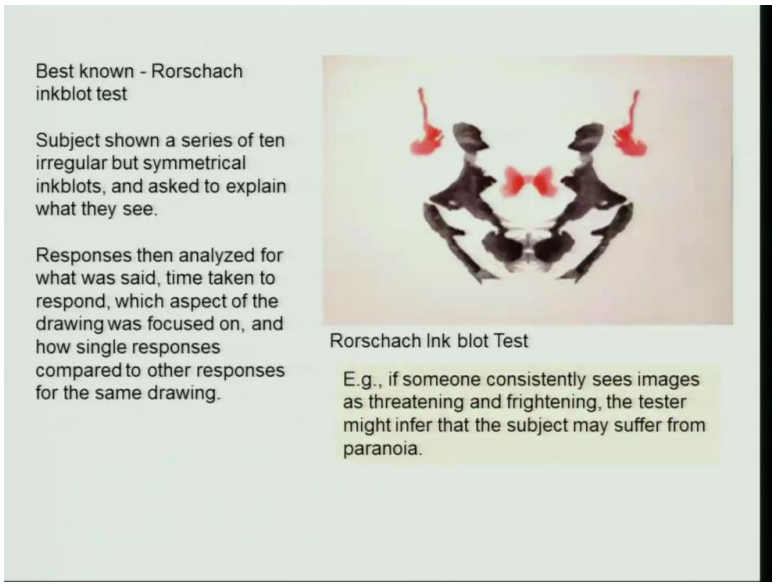

Let this person of course, you know and who kept throughout his career thinking of his body as more different more different any went ahead whole lot of surgery done. I am not go into go into the science of this because you know, but know basically so, some other things that people have done psychologists have done; have used artistic representations to try an gaze you know difficulties and 1 of this is this whole, this tests is called. Projective tests which are still use frequently by psychologists and there are things like the Rorschach inkblot test.

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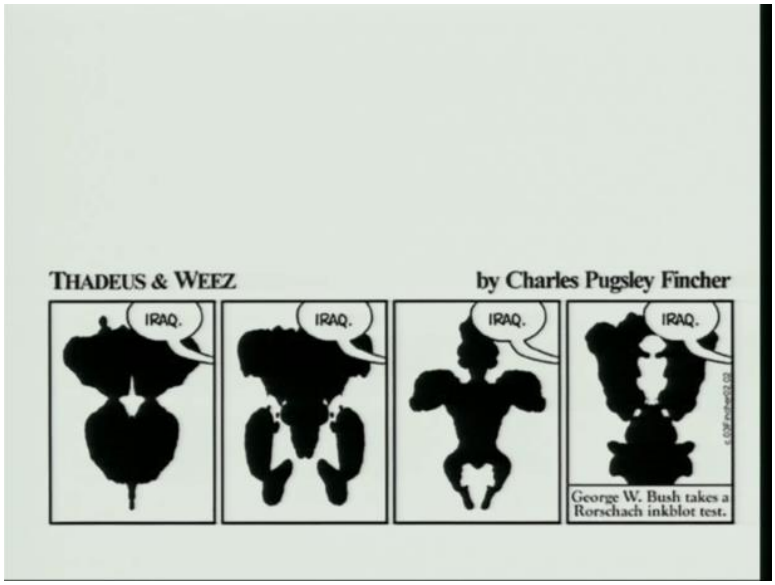

Of course, this is the satirical thing of the Rorschach input blok test, about how George bush took a Rorschach ink blok test. And what is called a thematic apperception test, basically you show people pictures and you try and see how they interpret these pictures. Then you use things for children called draw person test, you know and by getting the kids to draw you make assumptions about how their mental health status is, and this is again called Rosenzweing picture frustration test.

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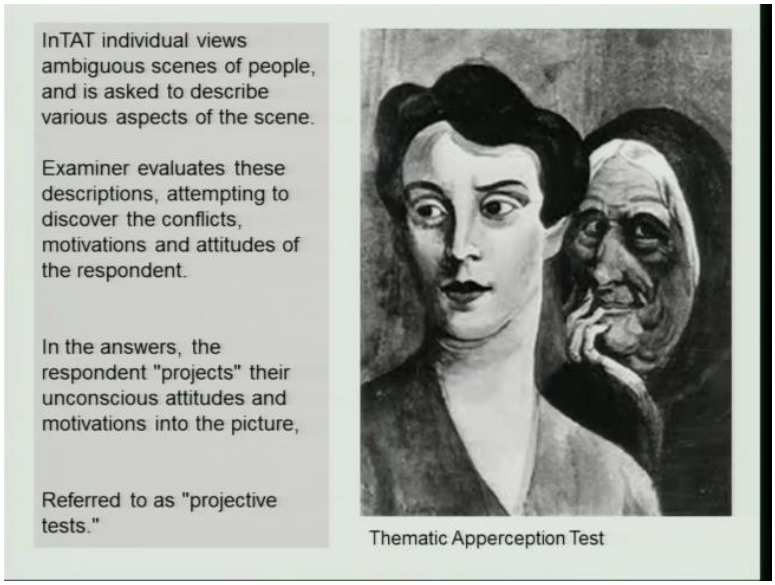

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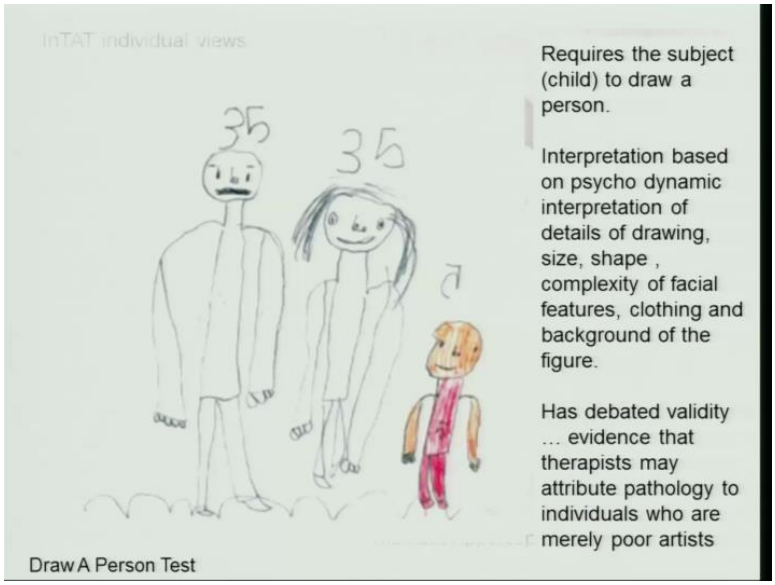

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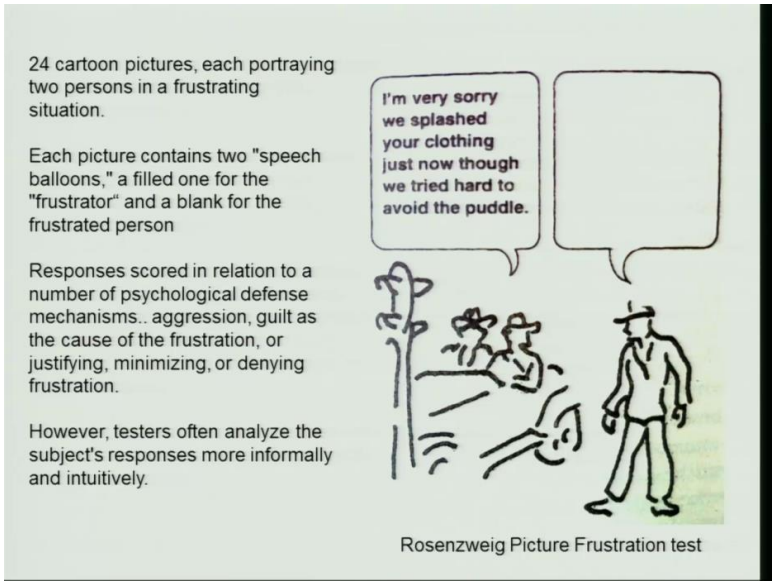

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So, basically the point of I am trying to make is that, you can use some of this and has these of have been used to get an understanding of a mental state.

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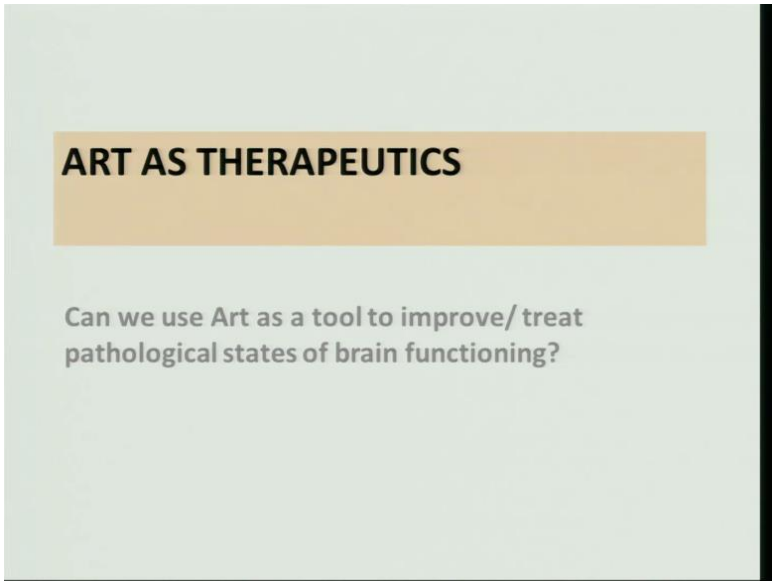

The last section that I would like to end by is Art is Therapeutics. Can we use art as a tool to improve or treat Pathological states of brain functioning?

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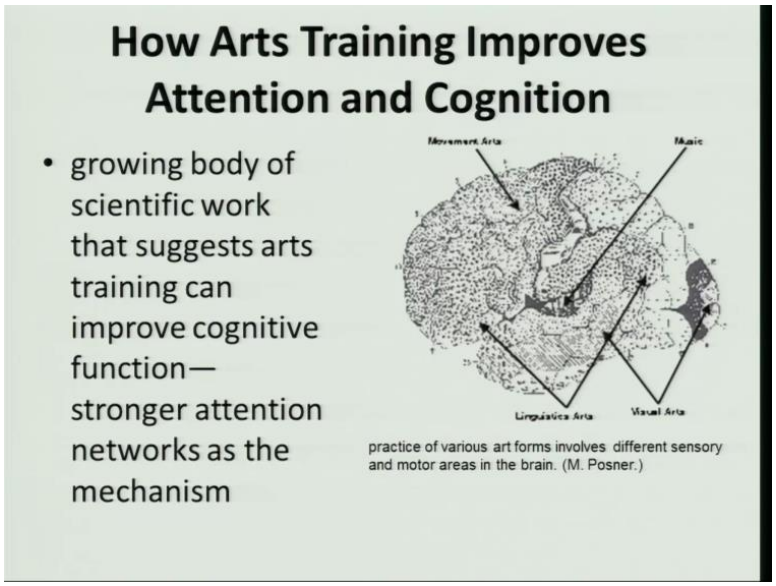

Now, as growing body of scientific work that suggests that, Art Training can improve cognitive functioning. Now, basically practice a various art forms involves different areas of the brain and ah there has been some work.

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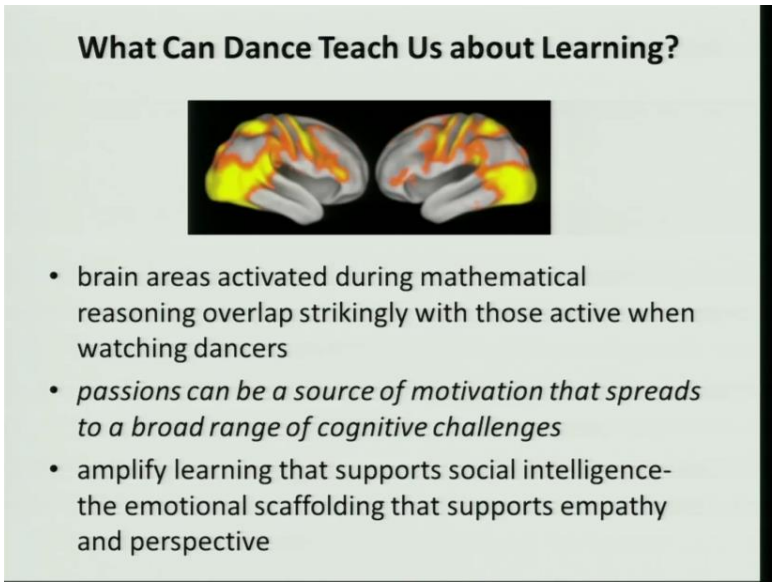

Which showed that, if you give people, you show people pictures of people dancing or a video of people dancing? The brain areas which are activated during this particular thing of seeing people dancing or same brain areas which are activated during Mathematical reasoning, because they overlap strikingly with the areas, which occur when you are watching people dancing. So, often what happens in the arts and a lot of my artist friends do that, they want to justify teaching arts saying. You what teaching arts will give people a chance to become illustrate us here.

Now, there are much better chance is becoming illustrate us in T.V studio or doing this and I can get very upset this them, because I will tell them that you know why people should be taught, why children should be taught arts because it makes them better Mathematicians. Why people should be taught dance or music because they will be able to solve problems better, because exercising 1 part of the brain, exercise is another part of the brain which is used for totally different activities.

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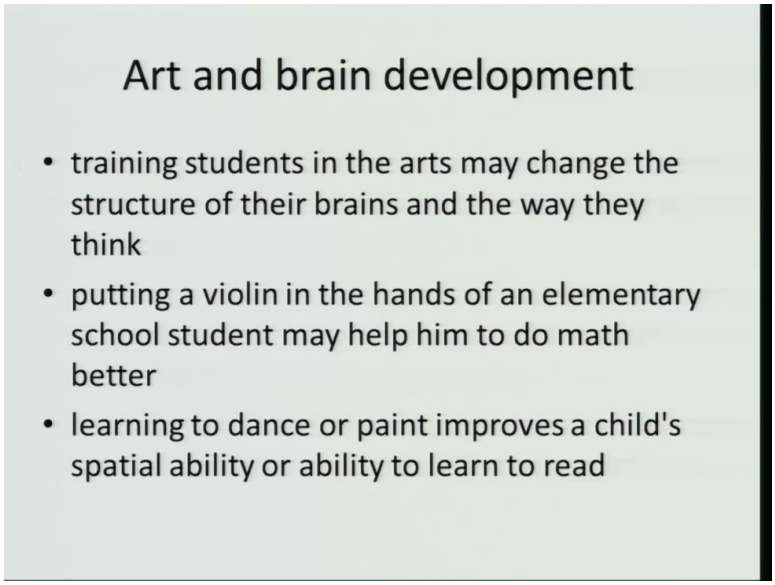

So, training students in arts may change the structure of their brains and they way they think. And then there is enough evidence for that, putting a violin in the hands of a child may help him to do math better and there is emerging evidence for that, learning to dance or paint improves a child's special ability to learn or to read. There have been studies which have shown that you know teaching children music, can actually improve their reading skills.

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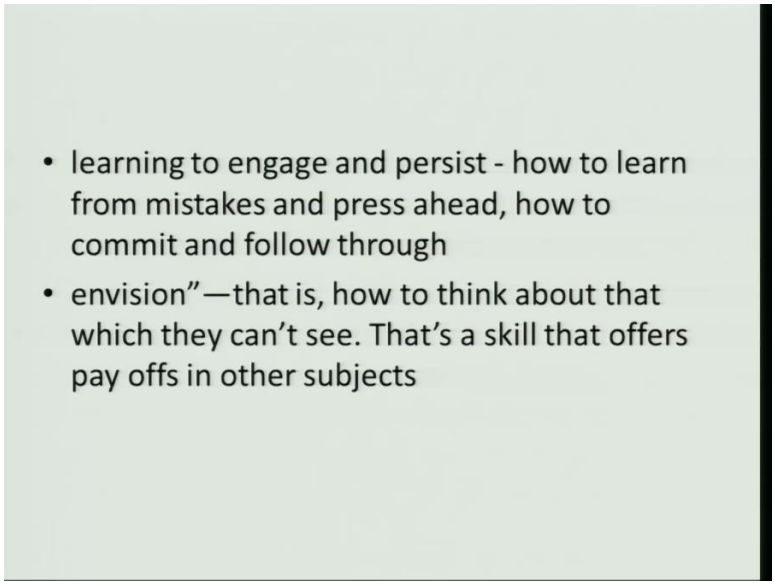

Learning to engage and persist which 1 has to do with art should take a lump of clay and you are trying to do something it collapses and they have to do it again and again and again teaches children persist in skills, which know amount of game playing does.

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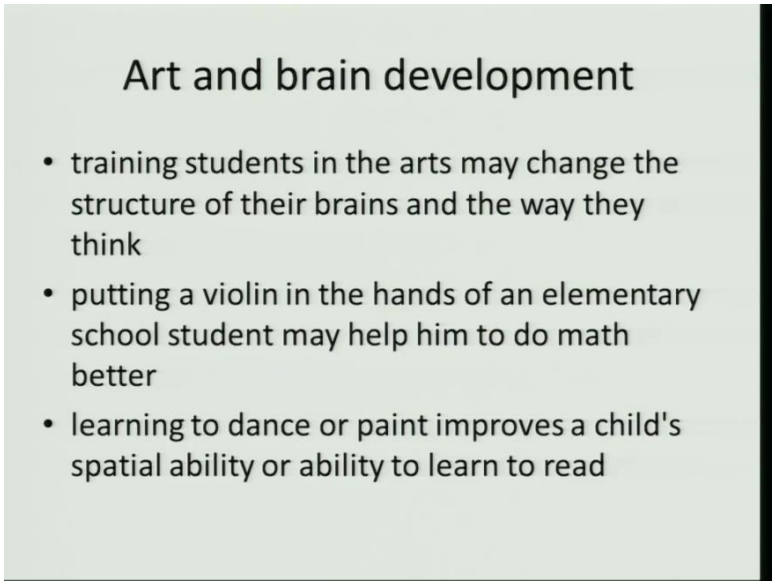

So, music has been helped has been used to help injure 2 to 3 injured brain especially, in people who have depression. Music has been helped in has been used to help people with as I am must mentioned, don't go into these this is the very busy slide.

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But a group of people with dementia were taken to an art museum, and these are people who could not remember, what they had eaten that day. When they were asked what did you see and the 1 old gentleman made a very good point, is of Picasso and he could not name the painter. Although he knew a lot about painting, he forgot all about that, he said this fellow has learnt to paint in a different way. You know, which means; that watching the painting made him use 1 part of this brain. That he wasn't using any interpreted the painting with the parts of his brain that were still working. You known so, painting or watching paintings help this group of people recruit areas of brain which they were not normally using. You know, the parts of brain which were getting demented prevent it preventing them from using, you know working properly in their everyday lives. But getting them to recruit other areas of brain seem to help them.

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Mindful Art Therapy, you know, it is about mind fullness, when you take a brush, as I explained earlier. You have to be mindful and this is very useful for children who can't remindful, you children who have attention defect hyperactivity disorder etcetera. You train them to do this and side by side what they do learn the brain learns to sustain attention which is very necessary for this case

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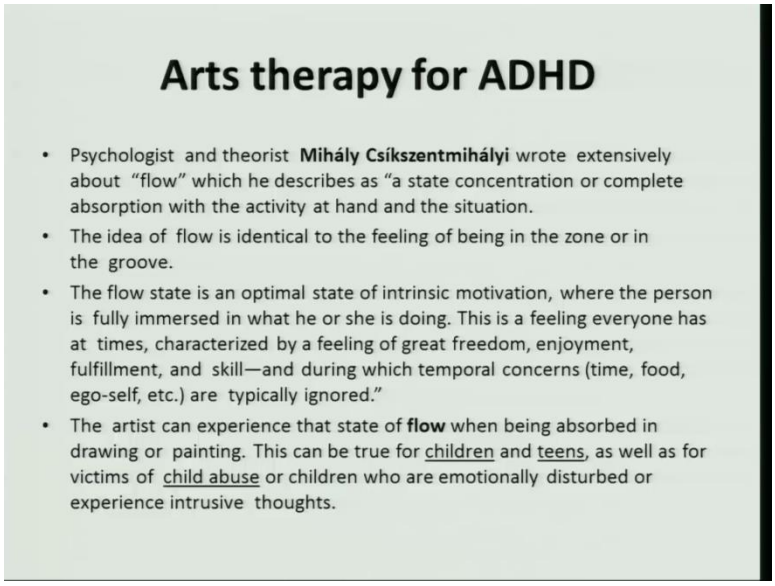

So, which brings me to arts therapy for a whole series of people with brain and mind disorders, I am not going to go into details.

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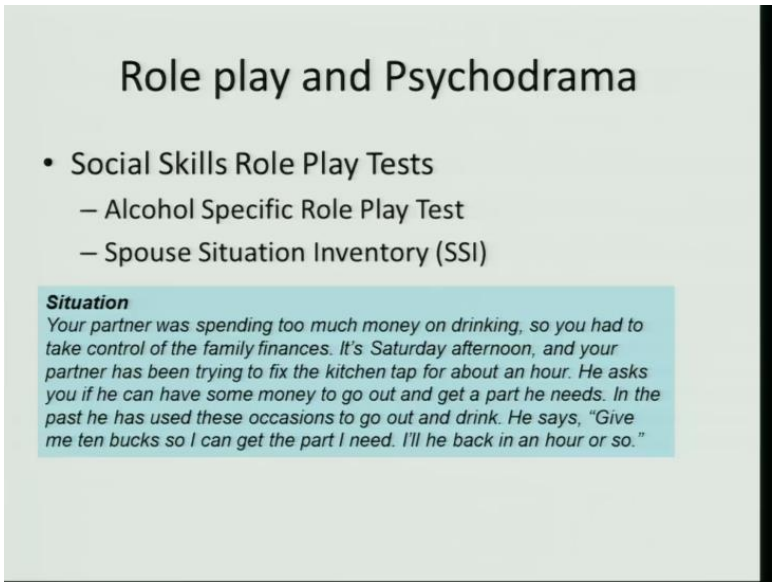

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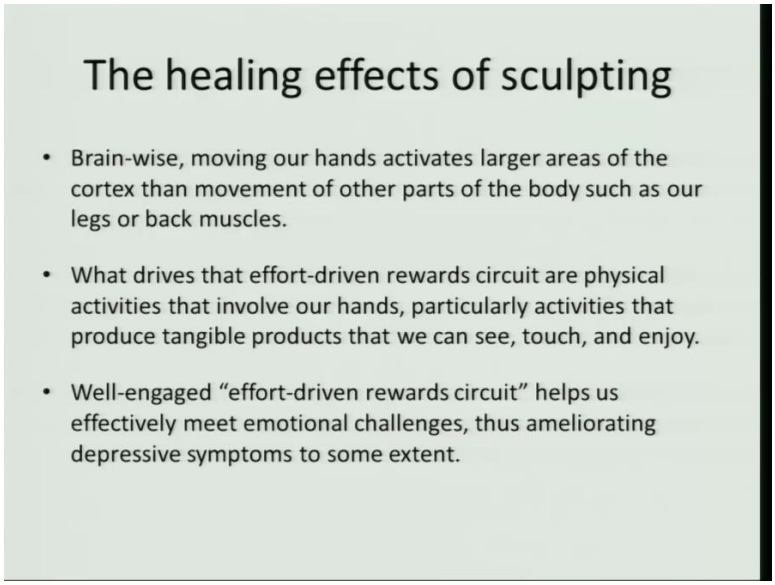

But there are various art interventions for example, role play and psychodrama you know and ah sculpting. Sculpting has healing effects because in the human brain the hand has greater representation in the brain, then see the leg or other parts of the body. So, when you use your hands to do things, you actually massage much larger areas of the brain side by side which are used then for other things.

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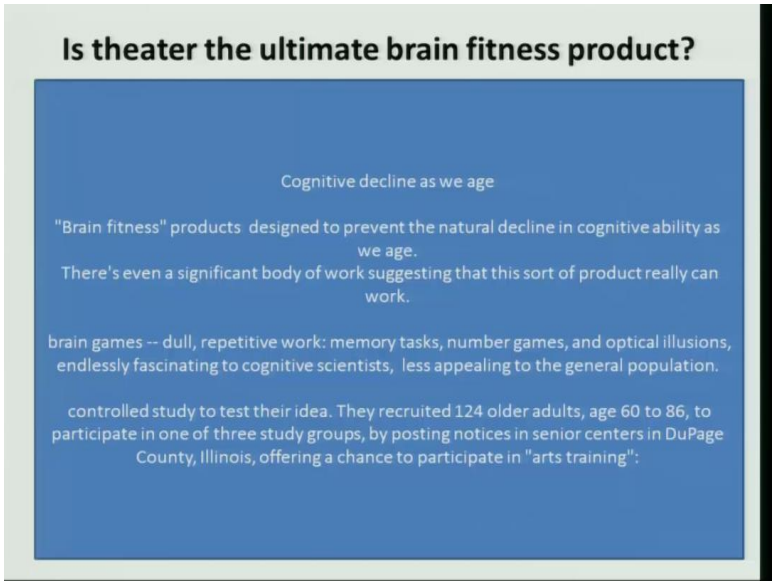

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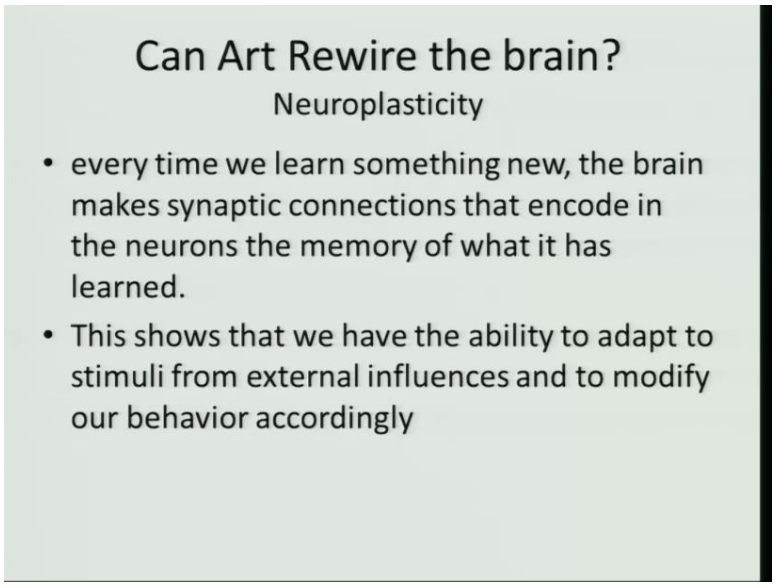

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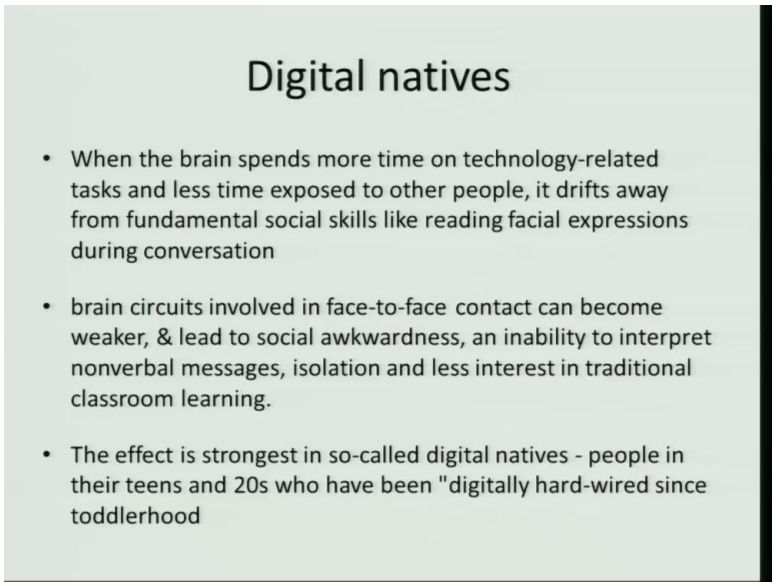

Some people are said the theater is the ultimate fitness product, brain fitness product. What I would like to leave you with this thought that art can be used to rewire the brain and this is called Neuroplasticity. And it is very important in this group of people, who are digital natives and the sum of probably digital natives yourselves. Who are the digital natives, who grow up with

technology from childhood, who grow up with Face book from childhood. You know, these are the people, where whose brain spends more and more time on technology related task and less time exposed to other people.

So, it drifts away from the fundamental social skills and meeting other people, responding to other people and often you will find that in today's their an age. There is a lot of violence that happens among young people because they have not realizes how much or how little it takes to hurt the other person. And this is classic if you look at this bulletin boards and thing people where always flaming each other, you know I am shocked and surprised by the amount of violence and hatred and ritual and acid. There is in this online conversation, but you can get away that. If you did that to another human being, you would have to face that person hurt, on the internet you don't have you to you just get flame back. So, that makes you flame back.

So, the next time you meet another human being, which may be 2 years later. You have no qualms sticking and poking through; you have no qualms about taking a rod and poking it through some bodies' private parts. So, in a way this whole digitalization that is occurring and taking away from our social skills they actually makes people more and more violent and difficult. The effect is apparently strongest in the people where digital natives people in the 10s and 20 who have been digitally hard wired since toddler hood.

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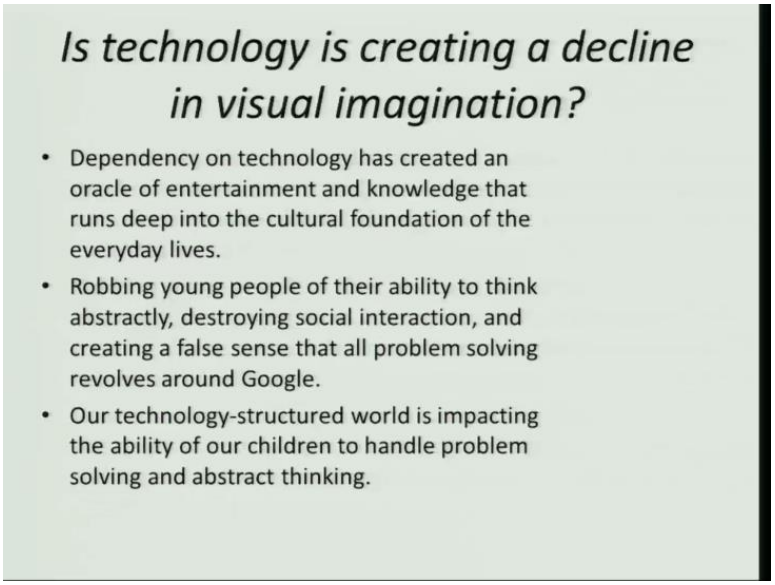

I would like to focus on the fact technology, while it gives us great gifts is also creating a time decline in visual imagination. Is also creating decline problem solving, everything is on the internet, I can google everything. So, I really don't have to do too much of thinking because somebody has done it before. If I have to do an assignment is already done, you know so it is make life imaginable useful for it is made life less human; and in that sense, you know art makes you more human.

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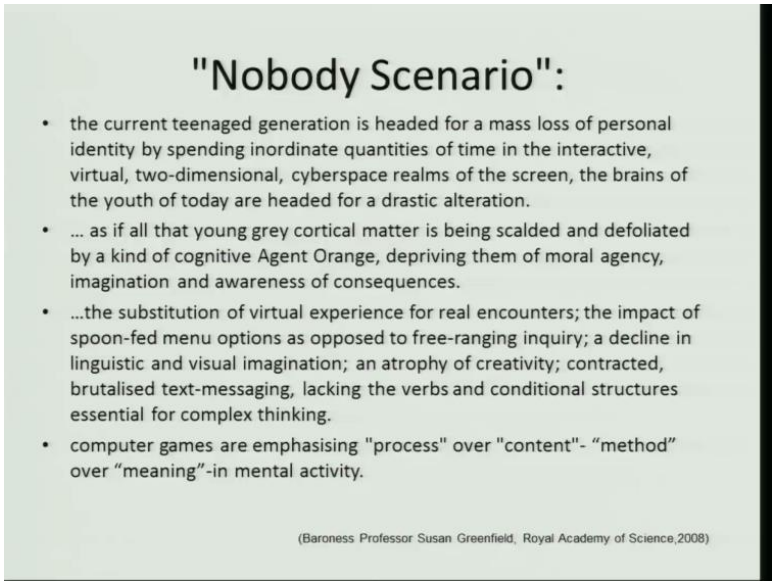

I would like to read out what professor Susan Greenfield who was the head of the royal academy said in her speech. She said the current teenaged generations headed for mass loss of personal identity by spending inordinate quantities of the time in the interactive virtual 2 dimensional, cyberspace. It as if all the young grey cognitive matter is being scalded and defoliated by a kind of cognitive agent orange, depriving them of moral agency, imagination awareness of consequences. Which is what I am talking about, the substitution of virtual experience for real life encounters; the impact of spoon-fed menu options as opposed to free-ranging inquiry; you know a decline in linguistic and visual imagination, you a brow an atrophy of creativity contracted brutalized text messaging lacking the verbs and conditional structures essential for complex thinking.

Computer games are emphasizing "process" over "content method" over "meaning in mental activity. And this is worrying, because I explain consequence that we are seeing in a few short years is brutalizing, but we don't want to lose the internet, we don't want to lose face book. So, how do we balance the gifts of both and in that context, you know and in the context what we as Neuro scientist of learnt about art. You know, art education, utilization of art and the word is conciliance of using science to investigate art and using art to inform science. I think is away the way forward that we need to examine. For to long this has been see, as you know different rooms and nobody from this room will come to that room and nobody from that room will go into that room. And we now, understand as for as the human brain is concerned art is science, science is science is the art.

So, if you are see that butterfly are the word bring 75 years then they don't have the that

You also see ah find the flower be beautifully listen to me 2 things like 1 is there

New row foot print of what the butterfly is in out then

ok

the other thing is like they don't have that much big brain in volume do we have so.

It is not the question of big brain, I mean, such a brought big brain women are smaller brain than man do, but it is now accepted as of 2 weeks back they are more efficient brains. Because all the then non-essential part have been trimmed and it is about trimming in the human brain, but that

is the different question. The question that you asked is are the butterfly processes you know part of our processes and the answer is yes, you know so, the last 2 days have been a sorting that nature is a very stingy processor of things evolution use the same processes and as over and over again, it does not make new processors. So, the same genes which are used for color perception have been retained through you know the higher so, called the higher evolved animals.

But I don't said that, the power bird not the butterfly actually makes art for art sake, for enjoyment. They do it for a particular purpose; they do it for purpose of looking for nutrition, finding nutrition or ensuring genetic survival. We are the only species, you know which actually creates a work what is say I come watch it, I can nothing out of it other than the fact that you wow beautiful. Now, it is equal I gave a little bit of cash but, most of art was created the case of last course but not created to to sell at you know, auction.

They were made somebody just want to represent you know Mahameed's wooly mahameed's running. You know the people who made choloub run us maded, because they were enamor by beauty of women; you know or vice versa, but so, in that sense art is slightly different because most of art is in the staked evolution sense is non function. What you do with that, you can't eat it; I don't know whether I answered your question it was a non-technical answer more emotional answer.

No, when come to children ok so this year, we should let It be a picture overed, then if you ask me to draw again the same thing, they come up with very a what is say they own professionality

Absolutely

Which is I mean, which explains the as we say, the abstract level of so, then would you say that is that the way that information stored on?

No, what I was saying was children process the information differently from adults and that is because, these seat in parts. Where as we learn to put everything together and make a 3 dimensional representation, because they using these things and having used it for a very long time, we have refined the process. It is very simple, if a child is asked to take a ball the child has to decide, when I am standing here and then as to kick the ball you know 3 time that of 4 the child is going to fall, is going to miss the ball and but then here she will manage to do it after

having put all these things together. You don't you have to think twice. Because the same process was your doing, but in your brain then got by doing it so many times they got it is become an algorithm, way you don't have to go through the to all the component processes.

Thus the actor perception for what depends upon the prier norly from person to person?

Absolutely; lets you know some other slice that I have showing should; that if you are aware of the value of that your perception of that object changes, which is why some people are able to self ship for whatever amount of money. And I mean it both in the figurative when the real sense quite imaginatory

No; I can say development your imagination doesn't have, I said there are stages so, there are stages where they was pertain play doesn't happen in, if you take a 1 year old, take 2, 1 year olds and put them together they will never play with each other. This 1 will go playing he is her 1 and half years old we play with his or her toys that 1 will play with his or her toys. You know so, almost the other 1 didn't exist when you become 2 or 3; you start saying give me yours, then we are 4 or 5 you actually engage together to do preturn play, let us play house whatever.

So, it goes to stages and these stages are dependent on brain maturity and some schemes can't do that, because they been done much. Were for example, what is tickets can never play with another ah child, they would rather play with their mechanical toy and they will do it very well they will ah you are give them a lago said they will do all kinds of things, much better than the other kids but percent to percent imagination not there.

Sir; I make a 2 questions cool down will passed a you got

yeah

Sir; I have 2 questions to you 1 may asked ah them together or 1 by 1;

Which are ways you want?

Firstly thus in new words science thinker consciousness at something that this above in beyond the pain and secondly how does a mind distinguished between good bad and like this scenario.

you have very difficult questions; let me tackle you first 1; you are second 1, first how does the mind distinguished in good and bad? The mind doesn't distinguish between good and bad the mind is taught good and bad by environmental circumstances, but having been taught that we have error detect us which tell us is this direction of 1 to go in. You know, if I step like this will I manage to cross the wire or wont I manage to cross the wire, you know if I pickup this thing will you get upset with me or won't you get upset with me. And we have processes in the brain which do that, we have processors in the brain which act as breaks, which is 1 part of the brain which grows later.

So, younger person does not have the capacity to restrict himself yourself. A small child will go and pick it up without thinking that should I ask, shouldn't? I ask an adervocent is more likely to do something impulsively without thinking of the consequences. Then an adult is because an adulicint lacks that part of the brain, I mean in full maturity which other breaks of the brain which has hang on wait, think and then do. So, there are processors for that, but ask to whether something is good, essential that the value judgments these are things she won't beings and learnt over time. You know for example, is killing people good or bad you know is a difficult question because we are all talking killing is bad, but then will be the first 1 to say hang xyz.

And that is good because it you know, you are acting on behalf of the larger most. In such a way these are straightly difficult question and these are shaped by our social circumstances ship or education. If you are in the south of the USA hanging is good, but if you are in New York State, you would go out on per it saying hanging is bad. So, I don't know with thus at answer your second question, what the first 1 was?

Thus Neuroscience think consciousness is required, this is a whole talk by itself is actually 20 talks by ah itself. Now, by that I understand you to mean that consciousness has to exist before anything else exists, which means a sense of self has to exist before anything else exists. And I think therefore, right I am therefore. I think now, this actually comes from a much earlier understanding which is soul mind body dicatamy, that the mind is some out different from the brain, is in it; What we are more and more realizing is the mind is actually created because of cross talk of different neurons in the brain. And yet if I say this I will be guilty of over simplification reduxuadapxidum, because I can't be just that, however 1 should kill the brain when brain activity stops there is no mind.

So, the truth lies somewhere in between, I am afraid, I am not competed to answer that question. Because as new scientist which we visually don't know, but more and more the evidence points to the fact that toward between the circuits, the positive and the negative doing circuits somewhere the mind is constructed. But the mind is also constructed at what we have learned or the what many generations have learnt in put together the these world cultural mean is etcetera. So, difficult question to answer.

From can is that if we generalize in something be built which everybody thinks looks next.

What you think?

No.

Yeah; I tend to agree that you have there are something is that you will react to human brains will always react to missing information, like a should this dapper things. You will always look at something else, but is that it also has a major cultural component to it, that there are certain things you would like because you been talk to like it, you been talk to value it. Like star music So, again the answer lies some other in between and ah as a neuro scientist I would learnt you now, to stay in the equator never stay even the north pole and the South pole you know.

Sir;

Yeah.

Is writing outer subjects so, when we are imaging any conditions in the epimarancal so there will be manage to put 1 condition. And so, sir when we are trying to image if the inclusive zero will be so how clues are really ah to making that particular condition because multiple conditions never be tick in a time will be a which is 1 of the in a…

Which is that problem you know you can't really have very complex phenomenon and say that you know we are responding to this, which is why I was at his whole thing of the neuro cinema to showing people cinema up you know what people are reacting. You know, at the reacting to the music or they reacting to the editing excreta, but it is slightly easier when you are playing once natural music and you showing response did. I and yet you can never be sangwin that this is the exact reaction to this.

So, often you really talk about this scientists we say this perhaps may be related to this may be associated with that. Right now, there are no causal explanations what is there are associative or associated observations. This is associated with this 9 times after 10 this is the association brain activity that is associated with this thing to this particular thing. So, I cannot make a suggestion sir; I was a asking that so, you must so I have ah observed many experiments in those experiments are how consistent sir at these. So, if you take 10 subjects at a time you see 20 random samples at a time and plea music sir giving those conditions. How clues are those subjects so showing similar activities similar knowable activities of when there is image.

Because see what you do you create conditions where 1 group of people are given up particular condition another group of people had not given a particular condition are given a up a plasyboo condition. So, somebody if given same music another person is given some short of white noise. You don't create a condition where reasons states in the you know lies there and dreams somebody has to be listing so, you create as comparable condition is possible you can always knock whole is in my experimental condition, but you will have to create better and better conditions remember that these the some of the datas that I presented.

I think which I have been done for the first it is a brave new world. You know the last thing that I told you guys was that at in science have to talk to each other. Otherwise this is not going to happen and now art and sciences started talking to each other or languages so different, but you know some where you have to start. And I have totally deal with you that that the conditions that you create to study these have to be refine more and more and more.

Sir; how poor way does believe sir has to be

What do you mean?

Sir; any believes are how is believe is going to influence any… if you are taking any condition that music

How deep.

By believe only you mean you are talking a faith

Sir believe any short of believe sir a believe that even we are made to believe that ah are music can sir this is the believe sir. How can believe that believe part is going to influence it, does it does no I showed you evidence which says that you node something is shown to be valuable your response changes. And if something shown to be non valuable your response change. Now, if you gone to get in believe faith religion etcetera these are complicate subjects. You know and not the react is are the are valid subjects for enquiry for this is are so complicated because they so, many multiple elements their we no longer way just stage of 3 simple enquiry here. This question needs to be us I don't think we still have the tools to answer to other.

Thank you, Sir.

You should think of you know how to ask this questions; you are so you should ask these questions you will have to create the conditions but you are you are absolutely right you saying some here with these art and science like talking to each other coming together, what I feel I good be we have mostly looking at the science of arts rather than the order of science. And is it not the science of art is actually taking away the artistic side of arts has he said that is the something that can generally appeal to everyone. So, you are trying to create more professional kind of things in that and…

Why is that not artistic?

Because it is basically more say professional oriented or materialistic kind of thing. So, you are not just creating art for these sake of arts you have doing at because you want to sell it to larger audience. And it can through the media and all it can also be use not only for selling your for money but also for you know propaganda and many other and art for art's sake doesn't sell its self form money?

Not necessarily it could sell but that is not my primary intention.

I it is your primary intention and today when somebody creates a painting, you don't created to hide it in the room, if you people do?

Some people do.

Some people do most people who do science do it just for the joy of learning, see I get little concern when 1 makes these whole the distinction. Again, you creating 2 rooms that the artist does it pure love in happiness and the scientist have got what is the word you used them materialistic bent and they want to find bricks and motor. You know, that is the very the very cold water and the dialogue that we are trying to create. You know that is the that is the he colder way have of thinking you know what we should actually we thinking is that can we help each other understand each other. There is no shame in saying that looks like a say, how can I be in a better way, how can creative in a better way.

If I have they way of learning how to be happier and it is come through scientific knowledge would you throw it away, saying that it is a materialistic way of getting happier? You know these is a philosophical discursion that your having but it is this whole between North pole art and South pole science, which I don't think is helpful any longer today. We need to come as I said to the equator where you know there was the there was is writer called Edmend Wilson I don't know the guys are widen. He creative this word called concelineance, where 1 discipline merges with the other discipline and becomes stronger for it. Both became stronger for it and that a something that as to happen.

Maybe I will just put my push different way, we are trying to understand art through the mirror of science is it to improve word or to increase its marketability. It is to improve your understanding it doesn't a need to lead do something it needs to lead to knowledge, why cant to you just need to knowledge ah to lead to increase knowledge.

Sir with your permission can I add something.

Sure sure please.

Sir; knowing the sir molecular constitute of anything doesn't take away subjected experience of anything, sir if we know ah the molecular constitute of sugar no way no were takes away sugar is when you are having. So, this are very similar I think sir these gape the gape at is art and science and in India. I the students our students are groomed in a way which we have their sense of ante science is created in them and their always ah groomed in a way which we come out in a tag science at science to materialistic. Sir and I would just add that if we know a mechanism of anything, no way takes of it is a subjective experience of anything and the art and subjective

experience and right now what way explain sir, it is speaks out a mechanism how the subjective experience of working in a human body.

Sir; that no we takes of how it should be what is the bitter experience of art and this is nothing do with beginning art are beginning dismiss of poetry. How would you react to that? I mean recently that's the total different dimension again I am not oppose to trying to understand the process, I am just update worried about for example, that you pension new row cinema. Now, why is that you actually new row cinema or for that euro marketing why do you want to understand all that what is the ultimate used that it is gone be put to so I am basically worried about that.

Yeah; that see that is depends on how you use a particular invention you know; now you can use dynamite for various things. You don't necessarily have to put it into vast coat you know bust you know kill people. You can use it for other things; you can use space travel for particular thing. You can use it to shaver rackets on your enemy. So, why something is used and the potential for harm for anything is something peculiar to human beings, that human beings will find harmful uses for anything. You know, so per that does not necessarily mean that 1 should stay in a cave and not venture out and see the world and create things and find. You know new knowledge.

So, that is argument is not it, then 1 should not have more knowledge because it can always be used 2 to 2 destroy, you not happy with that, you can have at not's 1, not more than that yeah sir in those brain images.

Right

How do we interpret that image that is more and more activity an 1 reason and that reason is what that reason is a dedicated reason of a brain?

No.

It is not a localized data they right.

It is localized but, it's they are no dedicated reasons in the brain, but there are reasons which we know sub serve cretin functions, but the brain keeps talking to each other and another the areas

of the brain keep talking to each other. So, now we know this these are, earlier studies looked at with this FMRI they looked at areas where they were increased activity, increased utilization of oxygen in the brain. So, you assume the there is increase activity because more oxygen is being burned. But now what we are the areas at we moving into obviously none of those things are here is you now looking at circuit's areas that fire together work together. You know and that is very interesting but in a infancy. So, people are now looking at circuits

for example this resting state potential right showed you picture edit elaborate, but people areas which rest together or probably taking to each other gossiping with each other. And areas which get activated together there are also circuits. So, we are now able to see with circuit skate activated when your certain things is are done. And that doesn't mean that circuit it is dedicated to that.

No that is not dedicated as I said the brain is very I mean the you know nature is very stingy, it does not have different circuit for different things, use the same thing for different papacies. You know these whole that was this whole earlier thing where you felt this part is for these, that part is for that, you should do mapping of the bumps on your skull. No, now it is for more complicated than that and for more economical than that.