**Level 2**

**Room 1 - chess**

Welcome to house number 2. Same rules apply as before with the death and the doors.

So, have a look at the picture of the little chess board opposite. There are two tiles on the picture marked A and B. If you think A is darker than B, go through the right door. If you don’t think it is darker, go through the left door.

**Room 1 - chess death**

Oh dear.

I’ve set up the same picture again with a blind you can pull down. Go and convince yourself of your wrongness and then come back and see me.

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While the truth can sometimes be many shades of grey, in this case it wasn’t. The two tiles are exactly the same shade. Keeping with the chess theme, I am now going to hack you to death with this horse.

**Room 1 – chess ok 1**

Ah good.

The two tiles were the same shade of grey – Go and check out pully-down blind over there and be convinced. Come back when you’re done.

So the tiles ARE the same shade of grey - but they do not LOOK like they are. Why? It is all about context. Our perception of reality is not made directly from the light hitting our eyes. Instead we have a model of reality in our brains and we gather all sorts of observations and try and adjust the model to make it fit those observations. When we see that picture we cannot help but interpret it as a 3D chess board with a shadow cast across it. The shadow makes the B tile much darker than it would be, but in our model, this is just a shadow and we ignore it – when asked about the brightness of a tile, we think about a physical chessboard from our model – and not the tile in the picture itself.

**Room1 – chess ok 2**

As similar phenomenon occurred when I bought a dress recently. . . for a friend and someone took a photo of it – What colour is the dress?

Some people think it is blue and black. Many others think it is white and gold. Which one you see is all about what kind of model you construct in your heads about how the dress is lit. Because the photos is taken close up, we have very few clues about the lighting other than that it is brightly lit. Those that assume it is outdoors, may assume it to be a bluish light and interpret the dress as white and gold – those that assume artificial light will interpret it (correctly) as blue and black.

To be hones the dress was a bit of a waste of money anyway is it didn’t even fit me….him…HER!

**Room2 - HatBat**

Bat Bat Bat…

**Room 2 - Hat Bat Dead**

Hi, Welcome to the hat emporium,. Come in, have a look around. No pressure. See if anything catches your eye.

[Pause and looks down at hat]

You know I think I have just the hat for you….just here next to me..the one with the baseball bat attached. I think the colouring will set off your eye color and the baseball bat will literally smash your head to pieces.

**Room 3 – McGurk**

Bat (fat), Bat (fat), Bat (fat)

**Room 3 – McGurk – dead**

This was a tricky one. The Sound was saying Bat. But the images were from me saying Fat. Go over and have a look at the two TVs on the wall. They are each playing a different video – but the same audio always plays. Come back here when you are ready for your death.

Sometimes you hear with your eyes. I am now going to perform some fairly extensive plastic surgery to swap around your eyes, nose ears and mouth. You will become a real life Picasso painting – though you will not be around to appreciated it.

Now I know you are thinking – but plastic surgery isn’t normally fatal. Well it will be when I do it.

**Corridoor long toilet**

(none)

**Toilet**

Humming to myself

Look up and slam door.

**Room 3 – McGurk – OK**

Well done. The sound was indeed saying “Bat”. Though the images were from me saying “Fat”. Most people perceive this as me saying “Fat”. Go to the dual screen over there to convince yourself this is the case – Try closing your eyes to hear it without the video distracting you.

As before, our perception of reality is the model we build in our heads which is influenced by all the evidence we can gather. In this case, for many people, the visual observations outweigh the audio ones and our model has me saying “Fat” so this is what we think we have heard.

**Room 4 – Faces**

Is there a face in this image?

Yes/No

**Room 4 – Faces – Yes**

No these are boxes.

As is this (points ot a coffin)

**Room 4 – Faces – No**

Correct - there are no faces here. They are just boxes.

However, the little guy down at the bottom triggers the “face” recognition systems in our brain. Why?

As discussed before we have a model of the world that is constantly adjusting itself according to new evidence and observations. We might expect it to always converge on the most likely model for the given evidence – but actually we have all sorts of biases built in to this model.

Our ancestors lived in dangerous times in social groups. The ability to spot a half hidden face quickly (especially a threatening one) would have had given a clear survival advantage. The quickest way to do this is to ASSUME that anything face-like is a face – even if it turns out, on closer examination, not to be.

In a more general sense we tend to see patterns and assume someone must be behind them even when the events are actually random– again it is better to see a pattern (so perhaps we can influence it next time) – than fail to spot a pattern which is really there. This bias is at the root of most superstitions.

Pictures (the boxes, the dogs arse, face on the moon)

**Last room**

While our senses can be usually be trusted, we cannot trust them unquestioningly. We don’t perceive the world directly through our senses, instead we have a model of the world which is constantly being updated by evidence from our senses. When asked about the truth of a situation can only really consult the model, rather than our senses directly.

This works fine for most every day things – but we must still be very aware of biases ingrained from our evolutionary heritage such as our tendency to see patterns which aren’t there.

Also, this model does not necessarily provide a good guide when in extreme circumstances. E.g. at scales of the very small like atoms or very large like galaxies or if travelling close to the speed of light or when dealing with the behaviour of very complex systems such as the climate or the large populations.

For this we need other tools.

As a reward for getting through the second stage I am, again, going to show you some magic.

Here are 6 playing cards. Choose one and focus on it. Remember what card this is.

Now look into my eyes…..focus on the card you chose and visualise it.

I will remove your card.

Your senses do not lie – but the model in your head sometimes gets it wrong. Come on lets go to the next level.