



'The Illusionists'

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A lab, or maybe an office. A whiteboard on wheels and a long table with 2 chairs. The table is strewn with paper. Another chair in front of a video camera. The video feed projects onto the whiteboard.

Danny Kahneman sits in the interview chair, his face is projected. The voice of an interviewer is heard.

INTERVIEWER

Thank you for your time today. Are you sitting comfortably?

DANNY

Yes. Thank you.

INTERVIEWER

I'd like to ask you some questions.

DANNY

Alright

INTERVIEWER

You and Amos Tversky have worked together unusually closely for many years, is that right?

DANNY

Yes, that's correct.

INTERVIEWER

What went wrong between the two of you?

[pause]

DANNY

Well, firstly we are very different in private than in public.

INTERVIEWER

In what way?

DANNY

When we are with other people, either we finish each other's sentences and tell each other's jokes. Or we are competing. In private, it isn't like this.

INTERVIEWER

How does that make you feel? When you're competing?

DANNY

I suppose I am nervous about being in his shadow. But I'm also afraid of what would happen to me without him.

INTERVIEWER

How did you meet?

*Danny adjusts the camera to view a page on the desk, its reads **HEBREW UNIVERSITY 1969.***

FIRST MEET, 1969

[Danny has invited Amos Tversky as a guest speaker to his lecture]

Amos (lecturing): ... But the best example for understanding "Conservative Bayesianism" is the Ward Edwards's test and the work done by the guys over at University of Michigan. Radical stuff—looking at how people's predictions respond to newly introduced data.

They presented people with two bags filled with poker chips. In one bag, 75 percent of the chips were white and 25 percent were red; in the other bag, 75 red and 25 white. The subjects picked one of the bags at random and, without peeking, were asked to pull chips out of it, one at a time. After each chip extraction they'd give their best guess of the odds that the bag they were holding was filled with mostly red, or mostly white, chips.

Now there is, of course, a correct answer to the question, and it is provided by the Bayes' theorem. The odds are clearly 50:50 at the start —could be mostly red or mostly white. But how the odds shift after each new chip, depends on the base rate (that we know is 75) percent-25 percent majority red or white.

According to Bayes' theorem, The odds that the subject is holding the bag containing mostly red chips rise by three times every time they draw a red chip, and are divided by three every time they draw a white chip. First red chip 3:1 , second red chip 9:1; then a white chip - boom , down to 3:1 again. Simple.

But the job of the subjects pulling out these chips was not to **know** this Bayesian Rule - it was to **guess** the odds, and the psychologists would then compare those guesses to the correct answer and at the end of the day see if people were good intuitive statisticians.

Well it turns out people guessed odds of 75% when the true Bayesian odds were 96%. Not too bad. Meaning, our intuitive statistical minds are conservative, but still in the right direction. Thus coining the phrase: "Conservative Bayesians". So to answer the question- yes. We are good intuitive statisticians.

Danny: Thank you very much. That was fascinating but completely wrong. (pause) I mean it is very interesting, I just don't see it that way.

Amos: It's not about **seeing**, it's about **thinking**.

Danny: I don't know, I never really thought much about thinking. I don't think we think.

Amos: You don't think we think?

Danny: I don't think I trust thinking. I think we react. To the world around us, but our eyes are fooled by our minds, hence "I don't **see** it that way". Take Muller-Lyer...

[he draws the Muller-Lyer optical illusion on the whiteboard]

... even when I know it's an optical illusion, I'm still fooled by it. [Why would you trust our minds?] Just come and sit in on any of my statistics classes, all the students have a hard time internalizing the importance of base rate. WE ARE NOT GOOD STATISTICIANS. I know I'm not, and I don't really think I'm stupider than most people.

Amos: So what do you **think**, I'm sorry... what do you **propose** our minds do?

Danny: We all draw big conclusions from small samples. That's it. *[erases the board]* Other than that it's a really nice experiment but it has no application in real world problems. In real life we don't take out one chip, we have 20 chips thrown at us simultaneously. For example: When we need to decide whether to run that yellow light, or when we need to choose a mortgage, or which loan to take from the bank. There are infinite factors influencing us, or at least.. a lot of them.

So, to your question, I **propose** that this theory works for you and the guys over at Michigan, because you **want** to believe it works. I'm less interested in the psychology of your chip-pulling test subjects, than the psychology of your University of Michigan researchers. They spent all this time and energy, all these chips of different colors, on this completely flawed experiment.

[both turn to the audience]

Danny: I might have overdone it.

Amos: It was fine. I'm still alive.

Danny: But I had you with your back to the wall.

Amos: It was a little bit weird - it was you who invited me to lecture in your class..

Danny: Yeah, you were mad..

Amos: I wasn't mad.

[back in the scene]

Amos: I don't have a problem with theories just because they are theories. This one I have right now, and so do most experts in the field, is that people are rational or at least half decent intuitive statisticians. They make mistakes, sure, but those mistakes are a by-product of emotions, and emotions are random - so we can ignore them.

Danny: Can you?? All of us **assume** a paper written by respected colleagues and published in a revered journal must make sense - otherwise it wouldn't have been published. That's exactly the point. Your experiment is only compelling to someone already completely sold on the idea. And it's only natural! Think about it, the theory that you put your life and career into has to be the right one. (To the students) You see, this is what happens when you become too attached to a theory. You fit the evidence to the theory rather than the theory to the evidence. You stop seeing the things right under your nose.

[to the audience]

Danny: I did over do it. I was too harsh.

דני: פשוט הרעיון שלכל אחד יש זכות לדעה משלו הוא רעיון אמריקאי, של קליפורניה. אני עשיתי מה שעושים בירושלים.

עמוס: זה נכון.

דני: ואתה יודע, אתה היית פסיכולוג, ועשית שם איזה תרגיל מתמטי, שלא היתה בו טיפת פסיכולוגיה

עמוס: בסדר הבנתי הבנתי

דני: אתה יודע למה אני

Danny: I'm saying, it's just that the idea that everyone is entitled to his/hers own opinion is a Californian thing - that's not how we did things in Jerusalem.

Amos: Agreed.

Danny: And. You know, he was a psychologist and he talked about it as if it was a mathematical problem, without an ounce of psychology in it.

(short pause)

Amos: I think I just wasn't used to.. being wrong.

Danny: Ever?

Amos:.. almost never.

Danny: Well there's always a first

Amos: I can't seem to remember a lot of times when I lost an argument.

Danny: Even when Amos was wrong, it was hard to say he was exactly.. Wrong.

Amos: It's not because I'm hard or stubborn.

Danny: He's not.

Amos: I'm always open to new ideas.

Danny: As long as they don't negate his own ideas. Amos turned out to be right SO often, that the working assumption always was that he's right.

Amos: After that day, when I first met Danny, suddenly I had doubts. About everything.

[Danny sits in the interview chair, repositioning the camera to original spot. Amos singles out an audience member and hands them a script]

Amos: *[to the audience member]* Thank you for your time today *[seats audience member opposite Danny]* You have been given a list of questions, please ask them one at a time.

Danny / audience interview 1

INTERVIEWER

What drew you to Amos?

DANNY

He's confident. And he's funny. In his presence, I become funny too.

INTERVIEWER

How does that affect your work?

DANNY

It's...fun. When I write alone, it's tentative, insecure. I feel compelled to add a hundred references and clarifications that I am only a recently reformed idiot. He suspends disbelief, which allows me to suspend my own. That's the engine of the collaboration.

INTERVIEWER

How do you two work together?

DANNY

One of us thinks of something and the other understands it. You ask, who did what? We don't know, not clearly. And that's beautiful, the not knowing... There are geniuses who work on their own—I am not a genius. Neither is Tversky. Together we are exceptional.

INTERVIEWER:

Who is smarter? You or Amos?

DANNY

Amos is.

Amos: *[to the audience member]* Thank you for your time

[Amos restores audience member to seat. Danny moves table, displays a sign that says 1971]

Blind to the Obvious, 1971

[Danny is in the lab. Amos enters, agitated.]

Danny: you're late.

Amos: I was intercepted by a late woman. I'm sure she'd already asked 5 different people if she was in the right building. I'm not sure why she needed me.

Danny: Which building

Amos: Ben Gurion. The name is written above the door, from what I could see it was also on the directions in her hand. She'd intercepted two people before me. She was a one woman tar pit. A walking insult to institutional movement.

Danny (laughs): Well perhaps she had a good reason for that.

Amos: What could possibly be a good reason?

Danny: Well, let's see.. How old was she?

Amos: 45ish

Danny: Okay. How much did she weigh?

Amos: Average. Slightly above. She was quite tall, she looked tired.

Danny: Interesting. Wedding ring?

Amos: Yes.

Danny: Make up?

Amos: No.

Danny: Oh that's very interesting.

Amos: why?

Danny: What was she wearing?

Amos: a.. Dress? Worn but professional. Good shoes.

Danny: So...here's a scenario: last week, she takes her young daughter to the movies. Being the 9-5 hard working mother that she is, she's tired and impatient about waiting in line for snacks. Caught up in a squabble, mother and daughter end up in the wrong screening room, which, as it turns out, is showing a horrific horror movie, a fact which they fail to detect until it's too late as, by chance it stars the same actress as the movie they had intended to see. This experience results in her daughter now suffering from trauma and repeatedly wetting her bed at night. Now this woman has to wash the sheets every morning before work. It's terrible. Wouldn't you double check yourself the next time you're going to an event?

Amos: (laughs) Absurd.

Danny: But possible! A nonzero chance! In any situation, you have to ask what it could be true of. In what circumstance, could a person have a valid reason for behaving in an absurd fashion.

Amos: Right, but that wasn't the end of the story.

Danny: oh?

Amos: She WASN'T in the right place. She had walked straight through Ben Gurion and ended up in the wrong lecture room. It defies comprehension how she could have THAT MANY ENCOUNTERS with the information and still be utterly blind to it.

Danny: Well, she was just preoccupied, upset about something. Couldn't remember if she left the oven on at home.

[Danny goes to the board, ready to work on another project]

Amos: (thinking for a second): Maybe.

[pause]

Huh, that's funny.

Danny: What?

Amos: There's something there.

Danny: Where.

Amos: People do this all the time. This woman is one example– but there's something more fundamental. Your SS officer.

Danny: My what?

Amos: You. As a child, in Paris...

Danny: I don't see how it's relevant.

Amos: How? It is a corollary. And it happened to you.

Danny: I don't remember it properly. You want to use something, use something else.

Amos: It's a good use case. Let's work it through.

Danny: I don't trust my own memory and neither should you.

*

Amos (to the audience): The thing about Danny is that he doubts everything, but most of all his own memory. He can deliver entire semesters of lectures straight from his head without a note. To his students he seems to have memorized entire textbooks, and he isn't shy about asking them to do it, too. And yet when he is asked about some event in his past, he doesn't trust himself. I'd say his defining emotion is doubt.

Danny (to the audience): And it's very useful. Because it makes you look deeper and deeper and deeper.

AMOS (to the audience): Or it's just another line of defense against anyone trying to figure him out. In any case, he keeps everyone at a distance. I don't take it personally.

Amos: You really fail to see how it's relevant?

Danny: Alright, perhaps I don't dispute its relevance, but I...

Amos: ... you must agree there is a real point here. // We perceive visual stimuli clearly, in front of us, and we fail to register it in a meaningful way. My students constantly ask me questions that are plainly written on the syllabus.

Danny: Maybe your students aren't reading the syllabus.

Amos: My students definitely aren't reading the syllabus. But even the good ones....

Danny: Well. They're students! They're idiots sometimes. We were idiots as students.

Amos: I wasn't.

Danny: Come on.

Amos: But precisely what is this 'idiocy'? It IS like the Nazi story. You know what I'm talking about, you always tell that story.

Danny: I don't tell that story! People always want me to tell that story.

Amos: I'm going to tell it.

Danny: I really wish you wouldn't.

Amos (to the audience): Here's the scenario: Danny Kahneman is nine years old,

Danny: Seven.

Amos (to the audience): Danny Kahneman is seven years old, living in Nazi occupied France. Like all Jews, he's required to wear a yellow star on his jacket. One evening, he goes to play at the house of a Christian friend, and he stays too late, missing the Jewish curfew. Very dangerous. Walking home, he encounters a German soldier—one wearing the black uniform that Danny knows to be the most dangerous: an SS officer. He is terrified. Danny quickly turns his jacket inside out so the officer will not see the Jewish star. But the officer looks at him intently, and approaches.

What does the Nazi do next? He picks up Danny—and he hugs him. He puts him down, and speaks to him passionately in German. He opens his wallet and shows Danny a picture: of a little boy. He then gives Danny some money, and sends him on his way. *[to Danny]* What do you make of this?

Danny: My jacket was turned inside out, you said so yourself. He couldn't have seen the Star of David.

Amos: Yes. But he could have asked you questions, searched you physically, SEEN that your jacket was inside out. He was an SS officer! He had one job—find Jews where they should not be. You were a Jew, where you should not be. And he looked right at you, and gave you a hug. It's a perfect example. People don't see the thing that is right under their nose.

Danny: Okay fine, it's a reasonable example.

[pause]

But, that's not why you used it. You just thought of it because it's a good story.

[beat]

Amos: hah.

Danny: It is relevant, but it is also preferable to you somehow, so you chose it to make the point.

Amos: Because it's memorable.

Danny: Yes.

Amos: I wonder: is that how we make many of our judgements? Just, based on whether or not we happen to think of things, like...good stories. Things that are memorable.

Danny: Things that happened to us personally?

Amos: Maybe, yes, or even just things that happened recently.

[beat]

How recently have you seen a horror movie?

Danny: I don't watch horror, I don't understand why that amount of blood is necessary.

Amos: Fine. But you are a parent of young children.

Danny: Sure.

Amos: So! When you created a hypothetical for the human tar pit,

Danny: –that poor late woman–

Amos: –a parenting problem was right there in your mind.

Danny: Yes, it's true. Ok. So the things that leap to mind easily, good stories, recent things, things we directly observe. Those affect recall, our immediate recollection–yes. But do they affect judgment?

Amos: I think so.

[beat.]

Let's take the choice of travel over long distances– that involves judgements.

Danny: Absolutely.

Amos: Variables

Danny: Affordability, comfort, convenience, safety.

Amos: Let's take safety. Before you judge a mode of travel to be the correct one, you'll subtly assess the odds of getting to your destination alive. Catapult: terrible choice, few people would estimate a safe arrival this way.

Danny: Says the paratrooper.

Amos: It's exactly my point!! But wait, don't jump ahead of me.

Danny: Pun intended?

Amos: Absolutely. How about the choice between a car and a plane. How safe is a car?

Danny: Cars are treacherous machines. But most people ride in them every day, judging them to be quite safe.

Amos: Conversely, how many people do you know who are convinced the plane is going to crash every time they contemplate flying?

Danny: I'll admit that's quite common. Myself included.

Amos: really? But you fly back and forth to Israel all the time.

Danny: Yes. I'm in constant terror. Carry on.

Amos: Right. So this follows no logic. Car crashes are notoriously common, and plane crashes are incredibly rare, statistically. Most people know this. But, they remember terrible plane crashes because—

Danny: They're big stories.

Amos: Exactly. And they're good stories.

Danny: Well, they're terrible stories. But, yes, you're right. [pause] And it's not just stories we hear—it's also what we see, or directly experience.

[beat]

When I notice a car crash on the side of the road, I slow down.

Amos: Because it makes you think, "Cars are very dangerous. I could be in a crash myself."

Danny: Yes, I recalculate the odds, in light of this experience. And I miscalculate the risk as higher. But the risk is high whether or not I happen to drive past that wreck.

Amos: I always feel that it is more likely for war to break out right after I read The Jerusalem Times.

Danny: If our sense of the odds can be changed by 15 minutes with a newspaper or a 3 second drive by—it tells you something. About the reliability of the mechanism that judges those odds.

Amos: So. The human mind, our sense of the odds, is distorted by

Danny: the memorable.

Amos: We calculate odds based on information that our minds retrieve most easily.

Danny: Information that's readily available.

[beat]

Amos: Availability. Let's try it out.

[both look to audience]

[Amos moves to a downstage chair facing the audience]

Danny: *[to the audience]* Thank you for your time today.

[beat]

Are you sitting comfortably? Please pay attention. You are about to hear two lists of names.

Here is List One.

Amos *[reading at a rate of one name per 2 seconds]:*

Christopher Chase

Robert Foster

Virginia Woolf

Abraham Levi

Greg Schwartz

Marie Curie

Kelly Butcher

Barack Obama

Beatrice Boggle

Shaniqua Taylor
Chantal Paradise
Alana O'Roarke
William Roseman
Stephen Spielberg
Rose Salazar
Mary Smith
Osama Bin Laden
Beth Bickers
Hugh Grant
Jasmin Akhtar
Michael Jordan
Peter Whale
Jessica Miller
Isaac Newton
Hans Miller
Jennifer Lawrence
Moustafah Ibrahim
Marianne Wyatt Carraway
Michael Jackson
Leah Winkler
Greta Fosset
Margaret Thatcher
Richard Chutney
Bob Cohen
Sarah Modiano
Elton John

Aaron McDougal

Kim Cohen

Jane Hartfall

Danny: That was List One. Now, list two. Please pay attention.

Amos: Hugh Cantebury

Ahmed Ashar

Taylor Swift

Fatima Haarif

Judy Gruber

John Lennon

Andrew Ellis

Tiffany Billet

Jeffrey Timmons

Belinda Swift

Marilyn Monroe

Piere Lacoste

Emily Frew

Hilary Clinton

Peter Thorne

Kareem Jones

Sarah O'Donaghue

Sally Johnson

Karen Sheckman

Tonya Harding

Meghan Markle

William Shakespeare

Julia Roberts

Paul Wilson

Bradly Leech

Edith Carne

Serena Williams

John Thurston

Joe Hogan

Larry Mc Nulty

Harry Wallace

Mariah Carey

Felicity Short

Elliot Overly

Carlos Hernandez

Alexander Miller

Claire Cameron

Winston Churchill

George Clooney

Danny: *[still to the audience]* Of the two lists you just heard, which list has more female names?

List one or list two?

If you think that the first list had more female names, please raise your hand.

If you think the second list had more female names please raise your hand.

[Amos shows Danny the page]

Danny: We're onto something.

[Amos moves to the interview seat. Danny singles out an audience member, and gives them [audience interview script 2](#)]

Danny: *[to the audience member]* Thank you for your time. You have been given a list of questions, please ask them one at a time.

Amos audience interview 2

INTERVIEWER

How did you become a psychologist?

AMOS:

I considered becoming a poet, but I didn't have the aptitude. I was interested in philosophy, but Plato solved too many of the problems. There are too many smart guys and too few problems left. And the problems that *are* left don't have solutions. At least in psychology I could have some real impact.

It is hard though to know how people select a course in life. The big choices we make are practically random. The small choices however are very systematic. That I became a psychologist is probably not very revealing. What *kind* of psychologist I am may reflect deep traits.

INTERVIEWER

What drew you to Danny Kahneman?

AMOS:

Danny has more ideas in ten minutes than most people have in a hundred years. I like interesting things and he is very, very interesting. Normally, I don't like people who overcomplicate things, people who insist on creating problems where there are none. Pessimists for instance. They suffer twice. First, when they dread the thing happening. Second, when it happens. The point is, Danny is complicated, but his complications are very very interesting.

INTERVIEWER

What went wrong between the two of you?

AMOS

Wrong? ...I don't know that anything has gone wrong. It's just difficult to work *together* when we're apart. Before, we would have picked up the phone at the *beginning* of an idea. Now, we know exactly who thought what and when, because it's in a letter and—it creates distance between us. Initially, we never had that.

INTERVIEWER

Who is smarter, you or Danny?

AMOS

Danny.

INTERVIEWER

People see you as the brilliant one and Danny as the careful one, is that true?

AMOS

It's exactly the opposite.

Danny: [to the audience member] Please remain seated.

[Amos moves the camera to over the shoulder table position so the projection displays what they're writing]

DESIGNING THE EXPERIMENT, 1971

[Danny and Amos are in the lab at The Oregon Research Institute.]

Danny: ok, 2 differences between the names on the list: Male / female. And famous / non-famous...

Amos: ...read in random order at a regular pace, so the dominant variable is whether they are easier to call to mind.

Danny: Ok, names. (takes pen and paper.) How many?

Amos: Well, let's say enough for the subject's immediate recall to be overwhelmed.

Danny: the law of sevens...

Amos: ... exactly, participants should get lost but not bored.

Danny: Let's say 20 female, 19 male for list one? And vice versa for List Two.

Amos: What about the famous names? The ratio will need to counter that, so... Out of 20, 5 famous ones? And 6 famous out of the 19?

Danny: No no, the difference needs to be bigger. Like 4 and 8.

Amos: Won't that be too obvious?

Danny: I don't think so, I think we want clear cut results. I think 4 and 8 works.

Amos: Ok. Okay so give me famous female names.

Danny: Politicians? Actresses? Athletes?

Amos: Athletes. Sure. Give me 4 famous female athletes.

[Long Pause]

Amos: Let's start with the politicians.

Danny: Good idea.

Amos: We wouldn't know any **male** athletes either.

Danny: I'm sure I know a couple.

Amos: Who?

Danny: There's... there's ... the..

Amos: what?

Danny: The famous one..

Amos: Give me the object of the sport - where's the ball? Hands? Feet?

Danny: Feet! Come on, he's world famous!

Amos: Football... Oh you mean the guy...

Danny: Yes...

Amos: From Brazil

Danny: Yes! Yes! That's the one. What's his name?

[Pause]

Amos: Let's go back to female names. Actresses, politicians.

Danny: Hattie Wyatt Caraway.

Amos: who?

Danny: Hattie Wyatt Caraway. She was the first woman elected to the US senate.

Amos: Will people know that?

Danny: I know her, and I'm not even American. If I know, everybody knows.

Amos: That is not true. Danny, I keep telling you, the things you know, people don't know.

[Amos returns to compiling list 2]

Danny: Fine. So who do "people" know?

Amos: Marilyn Monroe. She's very well-known. And I think she's an under-appreciated artist.

Danny: ..It's a good thing we came up with this experiment, we're learning valuable things about each other. Ok, Marylin Monroe. Mary Curie- to balance it out. And Golda.

Amos: Of course, Golda! Otherwise who would we be.

Danny: And Virginia Woolf. Next, regular female names:

Mary.. Smith.

Judy gar- Gruber.

Felicity Short.

Paula.. Angle... son.

Mary.. [beat] Mary.. I'm back to Mary

[beat]

Marry-Anne.. Summers.

Amos: You can't use Marry-Anne Summers.

Danny: Why?

Amos: She's the main character from "Gilligan's Island".

Danny: So Marry-Anne... Wyatt Caraway.

Amos: I'll allow it. Let me help you: Kelly... Butcher. Lia Winkler. Kim Cohen. Beatrice Boogle.

Danny: Keep going.

Amos: Sarah.... [beat] It's hard to make people up.

Danny: It IS hard. Why is that?

Amos: Sarah... Mo.. Sarah- What is happening in my mouth right now?

Danny: Why is this so difficult? Wait, but we know a Kim Cohen, don't we?

Amos: Yes, from the Michigan faculty.

Danny: Can we use her?

Amos: Well, not if we're testing this on the Michigan faculty, but otherwise...yes

Danny: Ok. Sarah something..

Amos: Sarah...

[thinks]

these are all very Anglo-centric...

Danny: That's a valid point. Lin jong hua.

Amos: Isn't Lin also a male name?

Danny: Lin is the surname. They do it the other way around.

Amos: Would people know that?

Danny: Depends who we're questioning.

Amos: That's true. Ok! So globally recognizable names? Cross-cultural.

Danny: Wait, so no Israeli names.

Amos: Depends. Give me a name from back home.

Danny: ...

Amos: Who's your first kiss?

Danny: קרן שכטמן.

Amos: Keren is Karen. Shechtman is Shekman. She's in. First grade teacher?

Danny: רוחילה סימן-טוב.

Amos: (laughing) out.

Danny: Yours?

Amos: ..צילה בלומנשטיק. בלומנשטיק. בלומנשטיק.

דני: צילה לא נכנסת.

עמוס: צילה נשארת בחוץ.

דני: צילה ורוחילה עומדות ביחד ברחוב, הן במסיבה משלהן

עמוס: לרוחילה היתה תספורת מאו-ד אופנתית, היא צבעה לשחור ומקדימה היה לה פוני אדום. והיא החליפה צבעים. שחור וצהוב, שחור וכתום.

דני: אי אפשר לתרגם את זה

עמוס: אי אפשר לתרגם צילה. מה היא תהיה? זילה? זילה בלומנשטיק? זה קרוב מדי לגודזילה

DANNY: *[sits opposite and addresses the audience member]* A thing I love about Amos is that everyone has a story about Amos.

To take just one example - the time that Tel Aviv University threw a party for a physicist who had just won some prestigious award,

Amos: It was the Wolf prize.

Danny: Right, and its winners usually go on to win the Nobel. Anyway, most of the leading physicists in the country came to the party, but somehow the prize winner ended up in the corner with Amos.

Amos: I had recently taken an interest in black holes. Everyone knows that black holes are named after their color, because light can't escape from them. But what's less known, is the effect of black holes on their environment—they can tear apart entire stars and planets, subsuming everything in their—

Danny: I'll carry on if you don't mind. So Amos himself had an explosive effect on his environment, specifically the said prize winner. The next morning he called his hosts to ask, "Who was that physicist I was talking to? He never told me his name." Eventually, the hosts figured out that the man meant Amos. They told him that Amos wasn't a physicist but a psychologist. "It's not possible," the physicist said, "he was the smartest of all the physicists.

[Danny brings camera to the interview position]

In short, Amos is the smartest person everyone has ever met. We used to say, you could judge a person's intelligence by how long it took them to figure out that Amos was smarter than they are.

THE KAHNEMAN SCORE / audience interview 3

[Amos in a debrief with his unit commander in the interview seat, he talks to the camera its the mid 1960s. Danny addresses a conference he is in the 1970s]

[Danny hands an interview script to the already seated audience member who plays the unit commander)

Amos: There is a second list of questions. Please read them one at a time.

Interviewer: Please state your name.

Amos: Amos Tversky.

Interviewer: Rank?

Amos: Corporal

Interviewer: Unit?

Amos: Paratroopers division 202

Interview: Can you walk us through the events?

Amos: Moshe has been assigned to clear the barbed wire fence with a bangalore torpedo. From when he pulls the string to activate the fuse he has twenty seconds to run for cover. It is 45 degrees celsius. He pushes the torpedo under the fence, yanks the string, faints, and collapses on top of the explosive. Our commanding officer shouts to leave him.

[Danny pauses the footage / projection with a remote. Amos pauses.]

Danny: [to the audience]

We observe who takes charge, who tries to lead and is rebuffed, how cooperative each soldier is in contributing to the group effort. We observe who seems to be stubborn, submissive, arrogant, patient, hot-tempered, persistent, or a quitter. We see competitive spite. And we see reactions to crisis. . . .

[Danny un-pauses the footage]

Amos: This command seems unnecessary to me. Moshe is 75 meters from the rest of the unit. An average adult can run 100 meters in between 12 and 20 seconds. I am not average. I estimate myself to be above average by a factor of approximately 6%. So even though it has taken 3 seconds for the commander to give the order not to move I still have what I calculate to be a margin of 4 seconds.

[Danny pauses the footage]

Danny: Under the stress of events, it is supposed that each man's true nature is revealed. The problem comes when we test these predictions against the outcomes—how the various candidates actually perform.

[Danny un-pauses the footage]

Amos: 4 seconds. In which I, moving at ideally a 5% faster speed than normal, may reach Moshe, pull him from the device and retreat to the optimal 6 meters distance required for the blast not to kill us both, provided that I am able to cover Moshe's body with my own. The probability of the success of all this I estimate to be 5:1, the only variable being I have never stood next to Moshe and do not know his height. The odds are acceptable however. I run.

[Danny pauses the footage]

Danny: Again and again we find the predictions to be worthless.

In the 1950s the army was in a state of barely controlled chaos. In 1948, David Ben-Gurion had declared Israel open to any Jew who wished to immigrate. Everywhere you turned in the new defense forces, you found people with numbers tattooed on their arms, no-one spoke the same language. No one was encouraged to speak about what he'd experienced in war. Part of the job of being an Israeli Jew was to at least pretend to forget the unforgettable.

[Amos switches seats with the audience member]

Amos: *[to the audience member]* Please make sure you are sitting comfortably.

Danny: It is supposed that each branch of the IDF has its own personality. There is a “fighter pilot” type, an “armored unit” type, an “infantry soldier” type, and so on.

[Amos begins the interview with the audience member whose face is projected]

Amos:

How many friends do you have

Are they all the same types of friendships (close / not close)

[audience member answers, they are unscripted so must answer of their own volition]

Danny: The subtle difficulties that arise when people evaluate other people were described in 1915 by an American psychologist named Edward Thorndike. Thorndike asked U.S. Army commanders to rate their men according to some physical trait (“physique,” for example) and then assess some less tangible quality (“intelligence,” “leadership,” and so forth). He discovered that, for the commander, the feeling created by making the first ranking bled into the second ranking: If they thought a soldier physically impressive, they also found him impressive in other ways. Switch the order of assessment, and the same problem occurred: If a person was first judged to be generally great, he was then judged to be stronger than he actually was.

Amos:

Did you used to arrive at school on time

Did you usually do your homework

Did you sometimes skip school.

[audience member answers]

Danny: Hence, we are unable to view an individual as a compound of separate qualities and to assign a magnitude to each of these, independent of the others. Thus was born what is still called “the halo effect.”

Amos:

Tell us about an unpleasant interaction with a teacher.

Which division would you prefer to be in?

[audience member answers]

Danny: I thought, what if, instead, we teach the army interviewers—young women, mainly—how to put a list of questions to each recruit to minimize this halo effect. I designed a system to

pose very specific questions, designed to determine not how a person thinks of himself but how the person actually behaves.

Amos:

Do you wash the dishes when you are at other people's houses?

Tell us about an argument you had with a friend

If friends wanted to go to one place and you wanted to go to another, what would you do?

[audience member answers]

Danny: We then rank these behaviors on a scale that is effectively immunizing the process to human judgment. *[Amos leaves the interviewer chair, Danny crosses to the audience member and gestures for them to change chairs]*

[to the audience member] Please sit comfortably. *[Danny gives them audience interview script 4]* You have been given a list of questions; please read them one at a time.

Danny therapy / audience 4

INTERVIEWER

What happened when you left Israel for the USA?

DANNY

Amos was assaulted with job offers. But neither Harvard or Stanford were interested in me, and Berkeley thought I was too old. Michigan offered places to us both. But Amos didn't even consider it.

INTERVIEWER

Did his job offers bother you?

DANNY

The spoils of academic success, such as they are....eventually one person gets all of it, or gets a lot of it. There's an unkindness built in. He cannot control this, though I wonder whether he does as much to control it as he should. The point is, there is envy now. It's just disturbing. I *hate* the feeling of envy....

INTERVIEWER

Why don't you stop working together?

DANNY

It would be a disaster to stop. It's like asking people why do they stay married. We would need a strong reason *not* to stay married.

INTERVIEWER

What worries you the most?

DANNY

[beat] Something happens when you are with a woman you love. You know something happened. You know it's not good. But you go on. You are in love, and yet you sense a new force pulling you out of it. Your mind has lit upon the possibility of another narrative. You half hope something comes along to stabilize or re-energize the old one. But in this case, nothing is coming along...

INTERVIEWER

Is there anything he could say or do that would help the situation?

DANNY

...if he could just acknowledge, publicly, what we know to be true in private: that he is not the great genius, with me as the secondary thinker, the one hanging on to his coattails. When people ask us where an idea came from, I wish Amos would say, "Danny. I refined it, but it came from Danny."

INTERVIEWER

Is that the case?

DANNY

Sometimes. I don't know. I wish he would lean back against the praise he receives at my expense, but he doesn't. Nor does he accept that he has to. I wish he would. Just once.... I am maybe saying too much now.

END