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Title: 'Black and White Thinking: the burden of a binary brain in a complex world' by Dr. Kevin Dutton (2020). London, United Kingdom: Transworld, pp. 320. ISBN9781787630635 Paperback €26,06

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This is a valuable book for anyone who wishes to get a better understanding of how the human brain functions in a complex world. This book presents a unique and ground-breaking synthesis of cognitive, evolutionary and persuasion science. It provides important psychological theory and implements it to contemporary society. Dutton introduces the reader to the concept of 'supersuasion', a brand-new theory on social influence. He gives everyday examples and along the way delves deeper into the functioning of the binary brain. The (political) psychological concepts that are examined in the book range from categorization to polarization and from linguistics to framing. By combining everyday situations with psychological research, the reader will gain a better understanding of how certain (political) phenomena have arisen. This book is particularly interesting for anyone interested in the human psyche in a (political) society. Still, I recommend everyone, to take in the knowledge of Dutton and experts in order to comprehend conscious and unconscious human behavior in everyday life.

The 'categorization instinct' states that the lines we draw in our everyday life simply are not accurate. Yet, we draw them to better grasp our complex surroundings. As we live in a complex world, lines help us to better grasp what is going on. However, the world is not as black and white as our brain wishes it to be. In fact, the world is rather grey, though we tend to make it black and white by labeling, categorizing and grouping. With the utility of categories, we attempt to define reality. Not only for ourselves, also for our surroundings. We persuade and influence. Through language, for example, we differentiate and distance ourselves from our environment. Simply put, categories enable us to navigate through the world. The question which Dutton wishes to answer is when categories become discriminatory, less efficient or make our environment even more complex? In 'a heap of trouble' Dutton illustrates, through the COVID-19 pandemic, how categorization complicates our surroundings. Who decides that human lives are worth less than economic stability? Yes, a line needs to be drawn. However, humans are not at all able to determine when black becomes white. Dutton explains his statement through the Sorites paradox that states that no number and any number of grains make a heap. He clarifies this by the 70+ gender indications available on Facebook. We tend to focus on the overarching concepts and thereby lose sight of the minor details. We only see heaps and gender instead of grains and e.g. genderqueer. We live in a grey world but perceive it as black and

white. As a result, contrasts augment and eye for detail decreases. We make errors of judgment and the potential for ignorance is prevailing.

'When categories collide' commences with a brief theoretical conceptualization of Greek philosophy. More specifically, it briefly explains the classical theory of categorization. By quoting Aristotle's reasoning, a contrast is offered to the already described Sorites paradox. The blurred lines of the Sorites paradox are nonsense according to Aristotle. There are clear lines between black and white and categories are very easy to distinguish from each other. You belong to a group when you share the same characteristics. Aristotle described the principle of generalization. He hereby simplified the understanding of reality, but also endangered how we grasp our surroundings. Where do you draw the line? When does white become grey, and grey become black? In today's society we use zero-sum solutions but are increasingly dealing with uncertainty, ambiguities and complexity. As an example, Dutton describes how abortion is perceived differently throughout the world. The categorization of 'embryo' and 'person' is man-made. Every person and every state characterizes it differently. In other words, our binary brain can only handle a maximum number of categories. Too much is just as bad as too little.

In 'The Dark Side of Black and White' Dutton elaborates on the small number of categories our brain can actually manage more thoroughly. We now know that we categorize to simplify reality. How do we know when to stop? According to the theory of choice, we cannot deal with more than seven categories. As soon as it exceeds this number, we reduce it by reverting to heuristics, suspicion and hunches. Differently put, the labels and boxes we use in our daily lives to categorize come with boobytraps. Too little categories, on the one hand, cause discrimination. Over-inclusive thinkers, on the other hand, synopsise too easily. Not only objects, people too. All Muslims become extremists and all young black men criminals. Stereotyping is an endless way of categorizing. Lines are blurred. People no longer know where and when to stop creating labels, categories and boxes.

'The Viewfinder Principle' illustrates through the COVID-19 pandemic how the lines drawn determine our lives. One dollar less turnover and you may be excluded from government support. Already in the *Ancien régime* division was created in the political realm. Ever since we use left and right to determine our political preference. We integrated metaphors such as heaven and hell in our speech and started using the colors red and blue to emphasize our political standing. As humans we differentiate. Because we are short in time, we generalize. We only see the bigger picture and lose sight of the details. As distance increases, our ability to nuance decreases.

So far, Dutton has explained that too much of anything is not good at all. 'The Complexity of Simplicity' argues that the bottom line is that there is no bottom line. Contradictory as it is, we are regularly confronted with making trade-offs, are obliged to approach a situation from a variety of perspectives and consider alternatives. This has not been any different in prehistoric times. The wilderness is not any different from the concrete jungle. When we are confronted with uncertainties, we have two options: fight or flight. Dutton states that human beings are close-minded. By means of perceptual perseveration, a particular stimulus or image is already formed before one is exposed to it. This pre-existing image creates bias with a devastating effect. Research shows that tolerance for ambiguity plays an important role here. As intolerance increases, the smaller the understanding for shades of grey. In other words, how we perceive the world around us is determined by pre-created frames. We perceive and respond to our environment based on basic mental structures which we have acquired through prior experiences.

Through this natural mechanism we are able to predict, interpret and anticipate future encounters and events. Frames are in other words advanced versions of categories and have the capacity to persuade and influence. Language plays a more important role here. It draws the lines between two categories, makes you join a group and exclude the other. In other words, he who controls the language wins the argument.

Like any other chapter, chapter 7: 'The Rainbow That Might Have Been' starts with a Quote, this time from Lyanne Tillman. It ends as follows: "The world hasn't been fully seen, until it is named". Every day we are exposed to countless stimuli. Based on natural selection and through language we are able to create order in the chaos of information. Words do not just define what we see, they determine it. If thoughts corrupt language, then language can also corrupt thoughts. Language describes our reality. Without giving a label to an observation it is of no significance, but these labels draw lines and thus a difference. Apart from language, color is an important indicator of how we view the world around us. In fact, research shows that the more strongly our brain responds to the perception of a particular color, the more likely we will come up with a word for it to describe it. Dutton describes, among other things, how the color blue and orange has taken its place in the British-English dictionary. What is striking, where people will often think the other way around, the experience comes first and then the word follows. Language makes us see things that are not there and lets us experience what is. The development of language is based solely on the need for definition.

In 'The Frame Game' the reader is given the opportunity to conduct a psychological experiment themselves. The experiment, set up by Dutton, asks people to name the middle between two extremes: top and bottom, passive and aggressive, happy and depressed ... As it turns out, many of us do not know the middle. Irrelevant, you may think. Worrying, according to Dutton. Because there is no expedient terminology within the lexical landscape, we are being forced to speak and think in polarized, binary, black and white terms. We see what we say. As a result, language is the key to persuasion: it is legal, democratic and has the power to enable lasting change of mind, perspective and attitude. The most effective persuader knows to change the way others see things the way they are. Kahneman et al. demonstrated how frames are the spin doctors of the, in categories split, world we live in. In addition, frames influence our judgment as they draw our attention to the details of an issue. They make us see what is salient, or in fact, what the manufacturer makes us believe is salient. Through frames we defend, abolish or adjust our conclusion. Persuasion occurs when this is achieved.

'Where There's a Why There's a Way' compares and demonstrates the six evolutionary principles of persuasion by Robert Cialdini and the SPICE taxonomy by Dutton to explain the psychological principles of certainty, closure and self-interest. Both theories have a certain level of overlap and work parallel. The chapter sets out whether there is a limit to persuasion. According to Dutton, there is, but only when it goes against somebody's will. Soon as you get the other on your side, persuasion is limitless. It is about self-interest. Once the persuader can convince the persuaded of good reason, the greater the likelihood the persuaded will do whatever the persuader wants them to. Dutton moves along by describing the guiding principles of decision-making: anticipation of pleasure and the circumvention of pain. He demonstrates this with the hoarding for toilet paper in the wake of the spread of COVID-19. In addition, referring to Kahneman and Tversky's work on loss aversion, he explains why saving a quarter for bringing your own reusable cup to a coffee shop does not work as it leaves us with a positive emotion. Rather, coffee shops must charge clients a quarter for not bringing their own. As we have seen

with plastic bags, leaving clients with a negative emotion motivates them to bring their own next time they visit. It appears that the desire for certainty wins it from ambiguity. Thus, we prefer black and white over grey. This becomes inevitably clear when looking at our present-day track-and-trace society, where waiting and uncertainty belongs to the past.

In chapter 10, Dutton (finally) introduces the reader to the concept of 'supersuasion'. According to Dutton, influence and persuasion is based on three recurring binary categories of basic human exigency: fight versus flight, us versus them, and right versus wrong. Take as an example Trump's polarizing rhetoric in which he pledged to make America great again. An America without Muslims, migrants and Mexicans. He called the Coronavirus foreign and accused the EU from refraining to take proper precautions. Also closer to home, Brexit has shown this pattern: Europe is bad, demands from Brussels are detrimental and our cultural identity is at stake. In a world of 'tribal epistemology', truth or falsity of a statement is contingent. Truth is based on whether the person making the statement is one of us or one of them. Information is evaluated based on group membership. Seeing is not believing, it is belonging. Dutton hereby refers to the psychological power of in-group bias. The need to belong is more important than the need to be right. Reality is in the mind of the perceiver and often similar to those of like-minded perceivers. Thus, in addition to the conclusion presented in 'The Frame Game', we do not only see what we say, who we are determines what we see. Research shows that political affiliation, for example, influences how we perceive the world. Group membership influences our decision-making, our perception and our thinking. Next to the activation of categories through polarized vocabulary, presenting an issue from a polarized perspective, within a polarized frame, can make people think alike.

In 'Undercover Influence: The Secret Science of Getting What You Want' Dutton touches upon tunnel vision. He takes the reader on a brief journey through the history of philosophy. From Archilochus to Goethe, he exposes the different spectrums of black and white, after which he delves deeper into cognitive complexity and its underlying principles: differentiation and integration. Through politics and religion, he explains the binary world view of extremists (i.e. the flag of Isis consists of two colors: black and white). Also in politics, black and white works best. We seek for a leader who can reduce our insecurity. Nevertheless, Brexit shows how this binary thinking can have far-reaching consequences. Once again, Dutton returns to the pandemic to illustrate his ideas. The UK campaign to combat the virus is as black and white as it can get: 'Stay home, protect NHS, save lives.' The clear message reflects the three primeval axes of supersuasion: fight versus flight, us versus them, good versus bad. It leaves no room for grey to emerge. It creates categories and draws lines. It gives the exact certainty we need in a time of ambiguity. We simply cannot swallow reality as a whole. Therefore, Dutton continues to give the reader tips and tricks to become a supersuader. Step by step he takes you along in the process of not being solely a subject of supersuasion.

'Redrawing the lines', the final chapter, commences with the perks and downfalls of social media as it reinforces tribalism by bringing like-minded people together. Drawing lines serves to divide and exacerbate division between people, countries, concepts, etcetera. As soon as an entity is categorized, our appraisal is affected by category membership: us, them, this, that, the other. Not only in (social) media, but also in politics the act of division occurs. When a politician decides he or she divides. The media then frames the context, accentuates statements and stereotypes. As a result, and as evolution intended, we derive maximum information from minimum cognitive effort. We create an in-group and out-group based on natural selection. These power-

ful moral heuristics influence not only what we think, but also what we see. We believe that those who are part of our in-group are right, and those who are against us are wrong. Whenever we find ourselves in a situation of ambiguity, we experience cognitive dissonance. Consequently, we adjust our norms, attitudes and beliefs in an attempt to restore to equilibrium. We either change our mind or reinforce and justify our pre-existing beliefs. According to Dutton, there is a shift in how we deal with cognitive dissonance in contemporary society. Where we previously twisted the truth so that it matched our pre-existing beliefs, we now fall back on partisan, post-truth denialism. As a result, fake news is on the rise. Where reality was previously publicly owned, click-by-click facts are now being privatized. By scrolling and swiping we can pretend that facts do not exist, never have existed. The urge for group membership and the exaggeration of the presence of a line has strengthened denialism. Group identity is becoming more salient. More than ever, we run on difference. We are social creatures behaving in an antisocial way. With so many categories and alternatives at hand, the slightest nuance can change our identity. As a consequence, we lie, deny and pretend. We ideologize information so that it conforms to our existing beliefs. We preserve a balanced and coherent relationship between our thoughts and beliefs on the one hand and our words and acts on the other. We change facts. Dismiss, falsify and accuse. Turning them into private property. We gather people around us to confirm our truth. In the context of the COVID pandemic, the government has aimed to approach the situation from a broader viewfinder. Measures were introduced in the public interest. However, people still act on the basis of self-interest. We forget that humankind has the power to reduce group-related prejudice. Without a 'them' there can never be an 'us'.

At the end of the book, in the postscript, Dutton further elaborates on the dark side of categorization. He states that we do not categorize what we see, instead we see what we categorize. Categorization is fundamental to survival, is often unconscious and is hallucinogenic. Dutton wishes the reader to admit that we are all extremists. We stereotype stereotyping and would not survive in this world without being extremists. Every decision we make involves drawing a line. Yet, we live in an environment of continua rather than binary black and white. Drawing lines helps us simplify our complex reality. However, simplicity lies on a spectrum that is inordinately complex.

After the postscript, Dutton provides seven appendices and an extensive bibliography. All appendices are of added value to what has been discussed throughout the chapters. They help the reader get a better comprehension of the underlying psychological, neurological and lexical concepts. This addition makes this book perfect for those who have little to no knowledge about the field of (political) psychology. He takes the reader along experiments and the history of black and white thinking. Pages 331 to 362 give a clear overview of the references, divided by chapter. He then pays attention to acknowledgments. A handy addition to this book is the index provided in alphabetical order, which can be found from page 367.

To conclude, this book is incredibly educational. It is both practical and theoretical. The writing style is accessible as it contains many examples to illustrate the concepts discussed. The book provides many insights into psychological experimentation. Dutton has written a wellrunning text. Each chapter starts with a relevant quote, after which he introduces the topic with a clear story. With experts he discusses the topics more in-depth. He nicely refers in subsequent chapters to what has been discussed earlier on. The book is fairly priced for the knowledge you gain from it. Perhaps the only downfall is the fact that only Western examples are illustrated.

The book could be even more encompassing by approaching the topics discussed from a non-western angle.