

Five years ago, the subject of artificial intelligence (AI) appeared on the agenda of a conference. One of us was on the verge of missing the session, assuming it would be a technical discussion beyond the scope of his usual concerns. Another urged him to reconsider, explaining that AI would soon affect nearly every field of human endeavor. That encounter led to discussions, soon joined by the third author, and eventually, to this book. AI's promise of epoch-making transformations — in society, economics, politics, and foreign policy — portends effects beyond the scope of any single author's or field's traditional focuses. Indeed, its questions demand knowledge largely beyond human experience. So we set out together, with the advice and cooperation of acquaintances in technology, history, and the humanities, to conduct a series of dialogues about it. Every day, everywhere, AI is gaining popularity. An increasing number of students are specializing in it, preparing for careers in or adjacent to it. In 2020, American AI start-ups raised almost \$38 billion in funding. Their Asian counterparts raised \$25 billion. And their European counterparts raised \$8 billion. 1 Three governments — the United States, China, and the European Union — have all convened high-level commissions to study AI and report their findings. Now political and corporate leaders routinely announce their goals to “win” in AI or, at the very least, to adopt AI and tailor it to meet their objectives. Each of these facts is a piece of the picture. In isolation, however, they can be misleading. AI is not an industry, let alone a single product. In strategic parlance, it is not a “domain.” It is an enabler of many industries and facets of human life: scientific research, education, manufacturing, logistics, transportation, defense, law enforcement, politics, advertising, art, culture, and more. The characteristics of AI — including its capacities to learn, evolve, and surprise — will disrupt and transform them all. The outcome will be the alteration of human identity and the human experience of reality at levels not experienced since the dawn of the modern age. This book seeks to explain AI and provide the reader with both the questions we must face in coming years and the tools to begin answering them. The questions include: • What do AI-enabled innovations in health, biology, space, and quantum physics look like? • What do AI-enabled “best friends” look like, especially to children? • What does AI-enabled war look like? • Does AI perceive aspects of reality humans do not? • When AI participates in assessing and shaping human action, how will humans change? • What, then, will it mean to be human? For the past four years, we and Meredith Potter, who augments Kissinger's intellectual pursuits, have been meeting, considering these and other questions, trying to comprehend both the opportunities and the challenges posed by the rise of AI. In 2018 and 2019, Meredith helped us translate our ideas into articles that convinced us we should — and with her continued help, we could — expand them into this book. Our last year of meetings coincided with the COVID-19 pandemic, which forced us to meet by videoconference — a technology that not long ago was fantastical, but now is ubiquitous. As the world locked down, suffering losses and dislocations it has only suffered

in the past century during wartime, our meetings became a forum for human attributes AI does not possess: friendship, empathy, curiosity, doubt, worry. To some degree, we three differ in the extent to which we are optimistic about AI. But we agree the technology is changing human thought, knowledge, perception, and reality — and, in so doing, changing the course of human history. In this book, we have sought neither to celebrate AI nor to bemoan it. Regardless of feeling, it is becoming ubiquitous. Instead, we have sought to consider its implications while its implications remain within the realm of human understanding. As a starting point — and, we hope, a catalyst for future discussion — we have treated this book as an opportunity to ask questions, but not to pretend we have all the answers. It would be arrogant for us to attempt to define a new epoch in a single volume. No expert, no matter his or her field, can single-handedly comprehend a future in which machines learn and employ logic beyond the present scope of human reason. Societies, then, must cooperate not only to comprehend but also to adapt. This book seeks to provide the reader with a template with which they can decide for themselves what that future should be. Humans still control it. We must shape it with our values