The Substance of Civilization Materials and Human History from the Stone Age to the Age of Silicon

Stephen L. Sass
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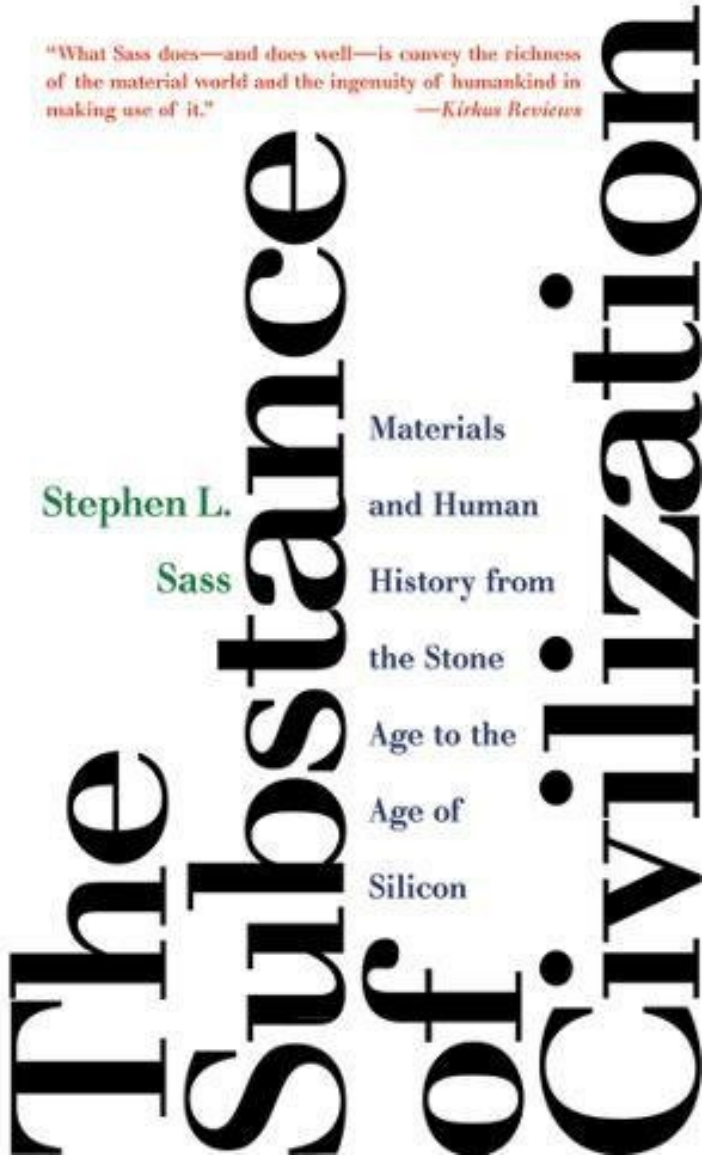

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Stephen L. Sass : The Substance of Civilization Materials and Human History from the Stone Age to the Age of Silicon before purchasing it in order to gage whether or not it would be worth my time, and all praised The Substance of Civilization Materials and Human History from the Stone Age to the Age of Silicon:

7 of 7 people found the following review helpful. melts at a relatively low temperature making it relatively easy to pour into moldsBy Israel RamirezLight and Interesting introduction to the historical technologies behind metals, glass, plastics, and other materials.The exposition was generally non-technical with a strong emphasis on how these materials influenced people's lives. It is studded with quotations, many from the Bible and other ancient sources, illustrating the roles metals and other substances played in the lives of people in the past.I am very grateful for a clear and lively account of the development of iron and steel, in particular. I hadn't understood, until I read this book, that cast iron is a form of iron that though brittle when hard, melts at a relatively low temperature making it relatively easy to pour into molds. The development of furnaces capable of melting steel is a very recent development.I would have liked to see more semi-technical information on the physics of these materials and the chemistry of how they were produced and extracted. There were a handful of figures but there weren't enough of them and the ones that did exist weren't very clear in the Kindle edition.5 of 5 people found the following review helpful. I recommend this book to anyone who wonder how the civilization we have, came to be, and why it developed the way it didBy Joseph G. LiscouskiI thoroughly enjoyed this book and learned a lot from reading it. I've always been curious about how civilizations developed and why they did, where they did. This book provides a an excellent summary of those issues, putting some life into history. The history I was taught was basically facts, dates, and names always leaving out the how and why. This book helps fill those gaps and does it in an easily readable manner. My congratulations to to the author on a fantastic piece of work that should be read by history majors.History is taught from economic, political, religious, and secular perspectives in most cases as if the other aspects didn't exist, and yet all those factors are intertwined. This book overcomes that by treating the development of civilization as a complete entity tying all the pieces together.3 of 3 people found the following review helpful. Perhaps not written for a 6th grade level but easily understood. Thanks MrBy Jane CheekI am not a person that would normall read something this technical, even not understanding all the jargon, I was taken by how the Substance of Civilization moved me through time to the present was so revealing. Thinking of ingredients I use daily being such an integral part of the development of the world was a bit mind boggling.Perhaps not written for a 6th grade level but easily understood. Thanks Mr. Sass.

The story of human civilization can be read most deeply in the materials we have found or created, used or abused. They have dictated how we build, eat, communicate, wage war, create art, travel, and worship. Some, such as stone, iron, and bronze, lend their names to the ages. Others, such as gold, silver, and diamond, contributed to the rise and fall of great empires. How would history have unfolded without glass, paper, steel, cement, or gunpowder? The impulse to master the properties of our material world and to invent new substances has remained unchanged from the dawn of time; it has guided and shaped the course of history. Sass shows us how substances and civilizations have evolved together. In antiquity, iron was considered more precious than gold. The celluloid used in movie film had its origins in the search for a substitute for ivory billiard balls. The same clay used in the pottery of antiquity has its uses in todays computer chips. Moving from the Stone Age to the Age of Silicon, from the days of prehistoric survival to the cutting edge of nanotechnology, this fascinating and accessible book connects the worlds of minerals and molecules to the sweep of human history, and shows what materials will dominate the century ahead.

From Scientific AmericanAlthough the author and his publisher committed the unforgivable sin of omitting an index, The Substance of Civilization indeed contains much of substance and is a good starting place to develop an appreciation for the history and nature of materials science.From BooklistThe word civilization brings images of the pyramids of Egypt, Greek temples, or great libraries and museums to mind, monumental structures that not only reflect idealized social order but offer evidence to support Sass' claim that "materials guided the course of history." None of these awe-inspiring constructions or their contents would have been possible without the ingenious manipulation of raw materials. The symbiotic relationship between the shape of culture and the evolution of technology is acknowledged in terms such as the Bronze Age, and Sass, a professor at Cornell University and a writer of both affability and precision, bridges the divide between history and science as he explains the unique properties of such key substances as clay, iron, glass, polymers, and silicon, and how they have affected every aspect of civilization from warfare to religion, politics, education, art, and economics. Noting the direct correlation between the complexity of any given society and the sophistication of the materials it uses, Sass provides diverse and illuminating examples with unflagging and infectious enthusiasm. Donna SeamanFrom Kirkus sRemember when you learned about the Stone Age, followed by Bronze and Iron? Well, it didn't exactly stop there, and Sass, a Cornell materials-science professor, is our guide to all the successive wonders of luck, pluck, and technology that have enabled us to move from cave days to today's steel-polyethylene-and-silicon world. Moving chronologically, with some time out to explain what makes metal metal or introduce notions like yield strength, plastic deformation, and dislocations, Sass treats the reader to a materials-science course for the layperson, laced with lots of didja-knows: Did you know that smelting copper often meant releasing toxic arsenic gas, which is probably why Hephaestus in the Iliad is described as lame? That ``carat'' comes from the Greek keration, for locust-pod tree, because the dried pod nearly always weighed 200 milligrams (now the standard)? In short, there are gobs of wonderful trivia as well as accounts of the technological innovations that led

to ever hotter furnaces, blown glass, steel from iron, and all the latter-day wonders, from synthetic rubber, celluloid, and rayon to aluminum alloys, Kevlar, plastics, silicon chips, and composites. How each of these material discoveries and inventions affected society is an important subtextbut the point of view is largely apolitical. (The reader will infer that building bigger and better arms, however, has clearly been a strong motivating force for material invention.) Sass is not always successful in getting the reader over technological hurdles; there are pages of photos (unseen), but the text could surely use diagrams as well. What he doesand does wellis convey the richness of the material world and the ingenuity of humankind in making use of it.