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Silver, Lee M. (1997). Remaking Eden: How Genetic Engineering and Cloning Will Transform the American Family. Toronto: Harper-Collins.

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Lee Silver's book, Remaking Eden, is an insightful and knowledgeable look into the world of reprogenetics, the world of combined reproductive and genetic technologies, and the seemingly endless possibilities that scientific discovery will grant us in future generations. Silver looks at multiple perspectives of society's reactions to these controversial possibilities, from both a religious and spiritual outlook, to scientific, ethical and political ones. He gives readers a detailed breakdown of the journey leading up to these scientific discoveries and the possible implications that these tools could have for society today and in years to come. The book starts off broadly discussing the definition of life and what it means in various contexts and then linearly moves forward into genetics, development and the combination of the two, creating the controversial field of reprogenetics.

Silver describes life in two ways, *in a general sense* and *in a special sense.* Life in a general sense is described at a cellular level, where the material present is able to reproduce and evolve. Life in a special sense is more difficult to define and is based more on the conscious aspect regarding neural functioning. Much of the book's descriptions are heavily biology oriented, but he makes great use of analogies that allows readers without a vast knowledge of the field of biology to understand and follow the concepts presented. He does this very well when comparing human genetic similarity with editions of an encyclopedia and states that the genetic makeup of each individual is very similar to one another, and that each person has essentially a

slightly different edition of the same basic information, meaning a different edition of the same book (p. 42).

A large section of the book is devoted to discussing at what point in reproduction and development, we consider new life to have formed. For this, there is great variation between society's opinions and there is no general consensus. He discusses the three main views of the status of the embryo and at what point it is considered to be living. The religious view, particularly that of the Catholic Church, believes that the embryo should be quantified in the same way as any human being right from its first formation. A biologist's opinion is based on the facts they know from research, and regard the embryo as no different than any other congregation of cells in the human body. The last and most popular opinion discussed falls somewhere between these two and acknowledges that the embryo is in fact a group of cells, but it is the potential these cells carry to become an individual human being that make it more meaningful than any other group of cells within the human body (p. 48).

With advances in technology and further knowledge into the reproduction of our species, came the possibility to assist couples that could not conceive naturally. In vitro fertilization was viewed as unnatural when it first appeared in the media in 1978 with the birth of a baby girl. How a couple could conceive a child out of the womb was shocking. It has since become widely accepted and utilized by couples all over the world that want to have children of their own. Silver discusses this advancement and why it is that we as a society want so badly to have children. He states that it descends from an evolutionary instinct. Our behaviour is "programmed" to give each of us the success needed to pass on our genes into the next generation. There is a basic desire and need to procreate felt by most of the population, and if desperate enough, individuals will stop at almost nothing to have their own children.

Currently, for the majority of individuals, in vitro fertilization is viewed, as an acceptable solution to couple's infertility, but it is not accepted as a solution for cosmetic purposes. Altering any genetic material of an embryo for a parent's own desires is frowned upon. Silver suggests how this powerful desire has the possibility to take over the technology. Is it possible for parents to draw the line? He proposes how parents and potential parents might be so willing to give their child every possible advantage, that they surpass even ethical limits regarding reprogenetics. He believes that people will be interested in any advancement that can be done to ensure their child will have the best chance for survival and success, no matter what.

Cloning is another large topic discussed in Silver's book. He looks at society's fears and reservations regarding cloning technologies. There are many negative connotations surrounding the word 'clone'. According to Silver, many people think of an imperfect and lesser version of the original and in a case such as cloning an individual, many think of the cloned individual as a "synthetic human" that is identical (p. 124). And they are identical in a sense; they have the exact same genetic material, but this is no different than a mother giving birth to identical twins, other than the time of birth. The cloned individual will still develop his or her own unique personality and path in the world.

Additionally, Silver demonstrates the potential problems that can arise from surrogacy and donating gametes. There are many examples in the media that have demonstrated conflicts of labeling the 'mother' or 'father' of a surrogate child. One example Silver used to establish this problem is the highly profiled court case of a surrogate mother gone wrong. A surrogate mother who after giving birth finds herself too attached to let the child go. In the example covered in the book, the surrogate mother went so far as to run away with the child (p. 167-172). After a case

such as this, society views at surrogacy in a different light. There are possibilities that it does not go as smoothly as planned.

Eugenics has become a topic that many individuals would attach negative associations to. In the case of donor insemination, he states that eugenics is an inevitable outcome. Parents actively select the candidate with their most favorable traits to be the donor for their future child. Selection such as this not only go against a natural conception with random selection of genes, but "it alters the gene pool of a small portion of the population" (p. 186). Silver imagines a world where social class divides society into two groups. One that can afford genetic changes, giving their offspring the best opportunities money can buy, and another that can only afford to breed naturally. Eventually, he says, these two groups may become so genetically isolated that we will be left with a sub-species of the human race. Although this idea seems outlandish, with constant advancements in our knowledge and technology, there may be a time when aspects of this vision come true.

Silver's first hand knowledge in molecular biology and public affairs allow him to give a great in-depth analysis of a complex issue such as genetic engineering and its impacts within society. He wrote this book to give readers an understanding of how we have arrived at the point we are at now, and how we may expect to advance in the future. Biologists in many specific fields, such as molecular genetic and evolutionary biology, would appreciate his knowledge. Sociologists, anthropologists and those individuals interested in changes within societies across time would also be interested in reading Silver's book. The book could also prove to be of interest to parents as well as those that create the policies regarding technological trials and advancements in this field. I believe it to be an interesting read for those who do not fully

understand the large implications that genetics can have, and for those who wish to gain an understanding on the subject.

Overall, I enjoyed Silver's ideas and explanations. As a reader with a background in biology, I found the background knowledge to be an accurate representation of how one might explain the concepts to those unfamiliar with the terms and the science. Although, I do question whether all of the background information was necessary for the readers to access before getting to the main idea of the book. A bulky portion of the book is explaining DNA, reproduction and development in such detail that it may distract readers from the direction the book is headed. For those that are not directly interested in that level of detail, the book may be slow to get through. I acknowledge that information was needed so that readers could understand the complex ideas, but perhaps not quite in the depth he presented it. However, I would still recommend it to anyone interested in the topic of reprogenetics, evolution and biological advancements.