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**Instructor: McManus**

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**2057 - Michio Kaku - The Body (Ep. 1)**

**Technological Predictions vs. Current Reality**

The documentary covered many topics throughout its discussion on how technology would be further integrated into every aspect of daily life.

Most of the predictions were not quite right. The first, “intelligent clothing,” told of data-exchanging clothing that could call for help for the wearer. While we don’t have clothing that performs this task today, we do have smartwatches, fitness rings, and airpods that can help monitor vital signs, detect falls and help communicate issues with others. “3D-printed organs” were predicted as being fully-functioning organs; progress has been made but the technology development is more complex than anticipated at the time of the documentary. Today’s researchers have successfully bioprinted tissues and very basic organelles, but complex organ structures have not yet been mastered. Third, “telesurgery” was implied in the documentary by a focus on connected cities and professionals. Telesurgery has been successfully performed, and reduces latency through improved real-time data transmission and minimizing delays. But it is not a regular practice due to regulatory issue challenges.

In contrast, “Robotic Surgery” was predicted and is used widely today. Systems like da Vinci are used for minimally invasive procedures but result in “enhanced precision, dexterity, and 3D visualization (da Vinci, 2024).” AI algorithms analyze real-time data for more precise movements, reducing human error. AI is also used to analyze images and data to help surgeons in identifynig critical structures and making informed decisions during and before surgery.

**AI’s Current Impact on Healthcare**

Aside from the documentary’s predictions, AI is making a significant impact upon healthcare with diagnostics and personalized medicine. AI has accelerated the development of new drugs and therapies. From personalizing care plans based on an individual’s genetics and medical history to predicting disease based on high-risk factors to analyzing medical images through the use of computer vision modeling, AI has greatly impacted the healthcare space for the better. Even administrative tasks, like billing and coding, have been improved.

Improved healthcare via AI advancements are not without challenges, however. Ensuring safety and reliability and addressing ethical considerations related to AI in the operating room and in care planning is a hurdle. Technological limitations in network connectivity and bandwidth as well as regulatory hurdles affect key patient care aspects such as patient safety and data privacy. And, finally, there are challenges in educating medical professionals on the use, and even awareness, of certain AI technologies that may be a help to the professional and patient in their specific field.

**Ethical and Social Implications**

It is imperative that clear ethical guidelines and regulations to protect autonomy, privacy and ensure equitable care access. For example, brain chips could theoretically affect patient autonomy if used to influence a patient’s emotions, decisions or sense of self. And robotic surgeries generate a large amount of patient data. Protecting this data from unauthorized access and breaches is crucial.

This documentary provides a valuable snapshot of how the future was envisioned in 2015. It highlights both the remarkable progress we've made and the challenges that still lie ahead.

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